

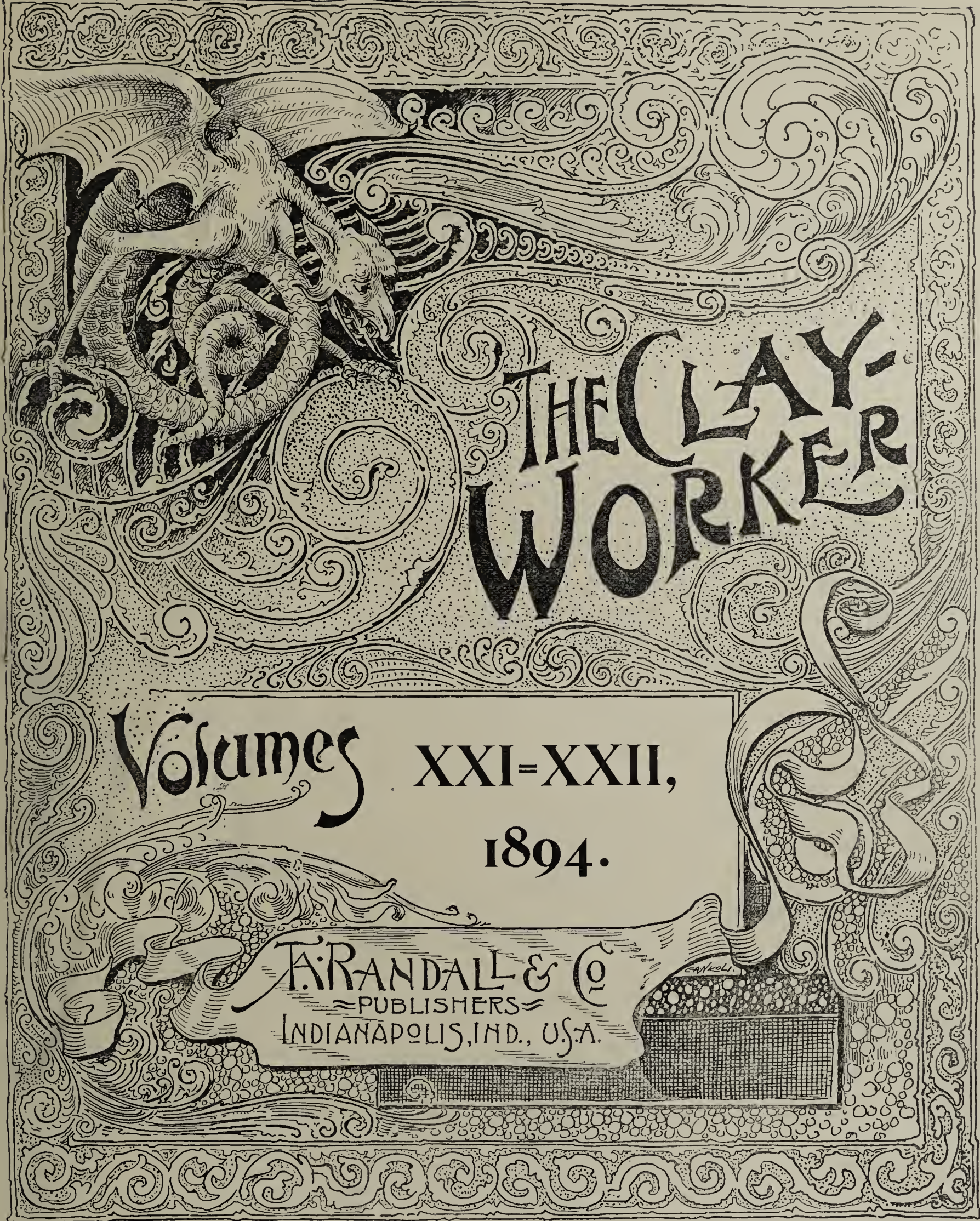


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THE CLAY WORKER

Volumes XXI-XXII,
1894.

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Written for the CLAY-WORKER.

UNIFORMITY IN PAVING BRICK SPECIFICATIONS.

BY DANIEL W. MEAD.



WHILE in general it is very desirable to the manufacturer that a greater uniformity be secured in the specifications for paving brick, yet it is difficult to see how this can be obtained without the concurrent action of the manufacturer and the engineer, as suggested by Mr. Purington in the November number of the CLAY-WORKER. If special attention were given to the thorough consideration of the entire subject of paving brick at the next meeting of the National Brick Manufacturers' Association, and the attention of the various City Engineers who are large users of paving brick were drawn to this fact, and their earnest co-operation solicited a step might thus be made in the right direction.

There are, however, many points which must be carefully considered before attempting to establish a standard. In the first place it must be remembered that although paving brick were first used in this country more than twenty years ago, yet their more general use is only within the last few years, and many cities have used them for the first time within the last year or contemplate their use for the first time within the year. The City Engineers and other municipal officers, are therefore in many places largely ignorant in regard to what the requirement of a good paving brick should be and where unfamiliar with this material personally, must select from the specifications used in other places, such as their good sense may dictate with such variations as their fancy and desire for originality may demand. This state of affairs could no doubt be greatly improved by placing standard specifications in the hands of such engineers or others having to do with the construction of brick pavement, provided such specifications could come with sufficient moral authority to demand attention. Such specifications however, should not attempt too much or they would accomplish nothing, for the subject must still be left largely open to study, investigation and experiment.

There must be a certain variation in the class of brick needed for different

situations. Frost will have its influence in the northern cities more than in the southern. Residence streets will not require as high a grade of material as business streets. And the heavy teaming of the metropolis will be more severe and demand higher qualifications than that of the smaller cities and towns. These variations in the requirements would not effect size or shape however, as much as they do the other physical qualities which are essential to the durability of the brick.

There is really comparatively little known about the essential qualities of paving brick which can be set down in specifications in such a manner that an engineer or inspector, unfamiliar with the material, can readily decide where the limit, between a paving brick which is just good enough for use, and one which is a little too poor for use, should be drawn. Unquestionably both classes of brick are usually taken to some extent at least, from the same kiln.

All know that a first class paving brick is a brick which placed in the pavement will stand the traffic for a long term of years without disintegration from frost or traffic. The difference between an unquestionably good and an unquestionably bad brick is wide and easily defined. The limiting case is where the difficulty arises.

The question which remains to be answered is then, how, in the limited time to be devoted to the construction of a pavement, can those qualities be unquestionably developed. The writer cannot answer that question at this time and believes it is at present unanswerable. Will chemical analyses, or physical tests for compression, transverse strength, absorption or abrasion give the necessary information? Unquestionably they will in the extreme cases, but not at present in the limiting case; although they may ultimately do so when their relation to each other and to the wearing qualities of the brick are better known.

What is necessary is to show the relation under various circumstances between the tests which can readily be made and the actual staying qualities of the brick.

The test for compressive and transverse strength undoubtedly has a value in determining the qualities of a brick, but just what relations there are between either one and durability is unknown. These qualities at present can hardly be claimed to define the

limiting case. Neither can absorption be so considered. The writer is familiar with brick, which, while absorbing four or five per cent. of water, will still withstand frost; while brick of a different manufacture and made from a different clay, will go to pieces with frost if they absorb two or three per cent.

The common rattler test is perhaps of more value than any other, if rightly conducted, as it comes nearer the actual condition of use. As often conducted, however, it gives little information. It is usually made under such widely varying circumstances as to be of no value whatever, as a means of comparison with other tests at other places. These tests are all of value as indicative of the general character of the brick but do not define the limiting case. Uniformity in making these various tests, whatever the specifications might be, or however much they might vary, would certainly accumulate much valuable data which could in such case be compared. Much definite information would thus gradually be accumulated and definite conclusions could be ultimately drawn.

The question of size and shape is believed to be largely a fanciful one and might in a general way be settled much more easily than the other qualities. Whether it should be settled in such a way as to secure a universal standard might, however, be open to serious question. If so, this would certainly be a long step in advance.

Size, shape, physical condition as regards fire cracks, laminations, etc., can be more easily specified and their fulfillment determined.

The desired relations between the various common forms of tests might be more quickly determined, or at least a great advance in this direction might be made, by a careful and exhaustive investigation of

First, the chemical character of various paving brick clays and its influence on finished brick;

Second, the physical character of the same and its influence on the brick;

Third, the methods of manufacture and the apparent influence of each operation on the finished product;

Fourth, the physical qualities of the paving brick both first-class, medium and poor;

Fifth, the results attained under traffic in widely different conditions and under different specifications, with also the careful test of both good, medi-

um and bad brick, which have been long in use in the pavement, and the wearing qualities of which have been practically demonstrated.

These investigations, if carried out on a broad scale, might develop facts which would lead to decided and definite results.

Such an investigation would, of course, be a matter of some considerable expense, and could only be undertaken by united action of those financially interested in the results. But if such an investigation were placed in the hands of a committee which could command the confidence of both the engineer and manufacturer, the results attained would have an authority which no standard, adopted without such thorough investigation, could ever have.

Such an investigation would also materially aid in the immediate improvement of the product. For if the attention of the manufacturer could be diverted from the present necessity of changes in size, shape and some other comparatively non-essential characters of the paving brick, to its manufacture, its durability might be steadily increased, and the cost of manufacture materially cheapened. As the best brick for the purpose is the desired end, surely manufacturers and engineers should be able to agree on reasonable uniformity in specifications if the true principles of manufacture and use can be determined.

A movement for standardization is highly to be desired, and if not attempted in too radical a spirit, could not fail to be accompanied by good results.

Written for the CLAY-WORKER.

THE NEW YORK MARKET.



THANKSGIVING day has passed and the thankfulness of many of the brick-makers was varied. Some, no doubt, were thankful that they were still alive and able to continue to meet their obligations of a business nature; others that the end of the long fight was over.

They have made a brave fight to pull through, but some have fallen by the wayside, like many before them. The slight revival in prices mentioned last month continued and increased so that those who are not too much entangled may, if the Hudson and other water-

ways keep open until the holidays, ship a few cargoes to market. In all likelihood there will be another advance in price—that may reach—will I say \$6.00 per M before the close of navigation? It is the fault of the manufacturer if such a figure does not prevail.

SUPPLY AND DEMAND

Is of such a nature that the supply is fixed and cannot be increased for months by new product; that which is under the shed is all that can be drawn from. The demand can be called good in comparison to what it has been for the past two years, at this time of the year. The market is one that makes the commission man happy. He can sit in his office and the buyer will come to him; he does not need to put on his overcoat and mittens and chase the buyer down on the pier, with the thermometer near the freezing point, and a strong northwester blowing, causing him to shiver till he thinks his teeth will fall out, trying to sell to one who, in all probability, does not want a brick. Now the customer comes to buy, as the season of shipment is about closing and he is placing stock at building as fast as he can. He is also piling stock on the piers to the limit that the dock master will allow him. At the home yard he has sheds, under which he is stocking for use during the winter.

It is to be hoped that the winter may not set in until about the first of the year and then freeze up points of shipment and keep them closed till March, so that the barges cannot be sent in, and the result will be that the accumulation in New York City and Brooklyn will be worked off and the supply at primal points in the spring will hold the winter rates till new brick reach the market.

THE LONG LOOKED FOR

Rapid transit in New York is in a fair way of becoming a reality—that is, "if" politics do not smother it. It has been before the people to see if private capital would not build it. The amount of money required to put it through, with the additional amounts to "see" those in and out of office, made the undertaking one of the kind that makes a man hesitate before he entered into such a scheme.

The last Legislature gave the city of New York the right to bond the city after allowing the people to vote on the matter at the last election, as there was a majority for it. The coming Legislature will then enact a law allowing the

city to own the road; that is, if boss Platt says so, as he has said within the past two weeks, that busybodies must not interfere with his right to own and control the lawmakers at Albany. The busybodies are the committee of Legislators. He may pull the wires so that rapid transit may not become a fixed fact, and again there may be some who will work in their own interests, as some of the Senators did the last session of Congress.

These may all be ungrounded fears, but as the burned child dreads the fire, just so the brick interests are awaiting the result in hope that if it goes through it will be the turning point. Will it? That is a question hard to answer. Certainly there will be millions of brick required and used. Work of that magnitude is not done in a few months, nor a year; it takes time. The extra demand for that purpose may be discounted by new yards being started. The brick made this year will supply the present call and have on hand millions during the winter, with few exceptions, none of them made up to their capacity. The yards that did not run this year would more than furnish all the brick that would be required, and more, for use in the tunnel for rapid transit.

A few years back the new water supply for New York City was talked of and finally became a fact. The brick-makers were ready to tear down their barns and build larger, as the long looked for "era" had come to them, wherein the increased demand would allow them to name the price for their stock. Did it materialize? Far from it. The contractors bought brick at lower figures than they had estimated on. The market showed no change, but went right on, there being a full supply at all times. A slight increase in output by a large number of yards, as well as shipments from as far east as Fisher's Island, one hundred and twenty-five miles from New York City knocked the gilt edge off the fancy price they expected to obtain.

When building the water works many millions of brick were discharged at Tarrytown, N. Y., ten miles from Haverstraw, and thirty from N. Y. City, or one hundred and fifty from Fisher's Island, but cargo after cargo and million after million was brought that distance and unloaded at that point, while brick from Haverstraw passed by on its way to New York. Now, as then,

the Eastern brick will come this way to act as a regulator to the price here. The day of brick playing any great part in the cost of building has passed, if it ever existed. With no regulated output, but make all you can, what can be expected but a buyer's market?

If ever a combination was ripe for formation it was this spring, but a few said, "No, we will make," and some of them who would not listen, but made, are now having the pleasure—if there is any in it—of seeing their business carried on by some one else, and they not in it.

The lime, plaster and cement, with lath and hair trade, will not sell under a certain figure. The poor, despised common brick is kicked about and sold at figures far from paying, and why? Simply because when there is money to be made, men lease yards at a figure far beyond any medium price received for stock. It seems to have a class of men in it that cannot get the idea in their heads that in "union" there is strength, but cling to an obsolete way of handling the business.

Pharoah relented several times and told the children of Isreal to go to, but finally had to let them go. The time

will surely come when the trade will produce a "Moses" that will lead them forth. Speed the day.

THE FEELING

Among brick men is that the long time of depressed prices is about over; in fact, that it is about one year ahead of time, and that they look for better rates from this time on. Why, it would be hard for them to say, only that there has been a gain and with a further advance, and with nothing of any moment to cause it. There has been a larger number of permits granted in the past few months than in the same time last year. The improved market is one of the peculiar things that puzzles them. It has happened before, from a sluggish to an active and continued so. Thus they are inclined to think it will be permanent.

At this time last year there were a number of millions on boats under cover for winter prices that never came. This season there is no disposition to hold stock in that way, as the expense of holding is quite an item, and the present prices are remarkable to what they were a month ago. This week will shut off the Upper Hudson stock and help the other. One of the barges

from here was just one week from the time she left the yard till she was back and ready to load. The same boat was just one month the past summer in making a trip.

THEY DROP BY THE WAY.

After a manful struggle, through the past summer, the effect begins to show itself by failure of some of those in the trade.

THE MARKET.

It is a pleasure to be able to say that the demand is of such a nature that it keeps the market clean of stock, also that my hope of a \$5.00 rate by close of navigation is a back number; it has been reached and passed with a feeling that six dollars will be quoted before ice stops navigation. The past summer being a dry one, the quality of brick has been uniformly good. New Jersey good, \$4.75 and \$5.12½; Hudson River, \$4.87½, \$5.00, \$5.12½ and \$5.25.

A. N. OLDTIMER.

WANTED. Catalogues, price lists and other descriptive matter of brick machinery, presses, yard supplies, fittings, kilns, etc. Also pipe and tile machinery. Address E. ALONZO CORDERY, 121 d Fort Meade, Fla.

FOR SALE VERY CHEAP. First-class brick plant 35,000 daily capacity, best distributing point in Western Iowa, good established shipping trade. Must be sold at once. Satisfactory reasons given. Address BANK, care Clay-Worker. 12 2 c

ZWERMANN, BARGAR & CO.

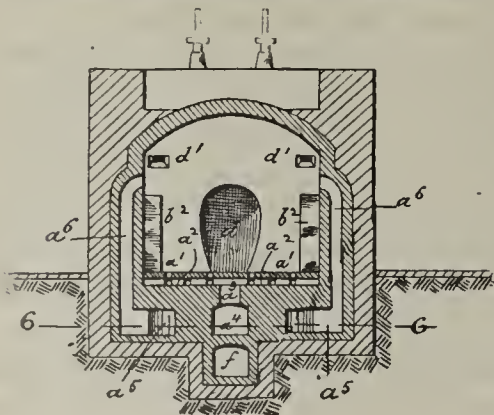
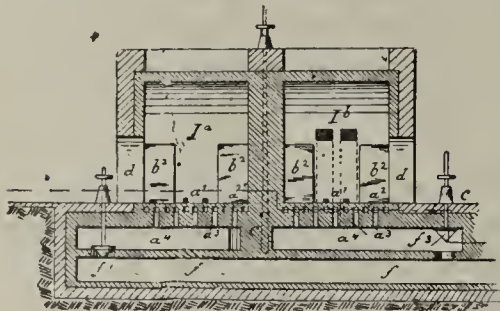
Engineers and Contractors for Improved Industrial Heat Appliances.

THE NE-PLUS-ULTRA KILN

System DR. P. JOCHUM'S
(U. S. Patent.)

PATENTED ALSO IN ENGLAND, FRANCE, GERMANY, BELGIUM, ITALY, ETC

THIS Kiln can be operated either with direct or indirect firing, continuously or intermittently, as required, said kiln being composed of a series of double kilns, of which each individual kiln can be connected with another one of the series, and each with the chimney,—the flues connecting the different kilns of the series being arranged in a comparatively simple yet effective manner, so that the heat of one kiln can be drawn over into the next adjacent kiln, and so on, whereby not only the construction of the kiln is simplified, but the same also operated at a considerable saving in time and fuel. A gain of 35 per cent. fuel over all other kilns in the market.



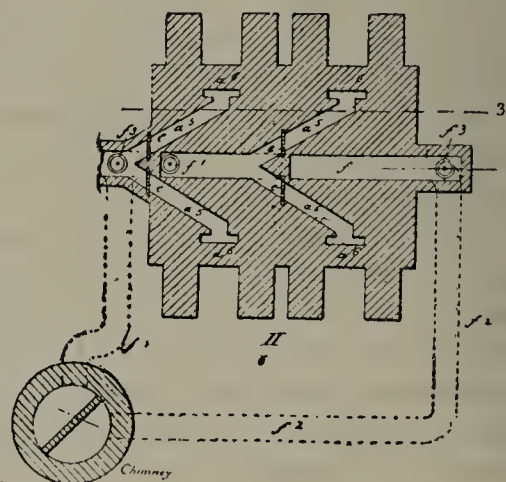
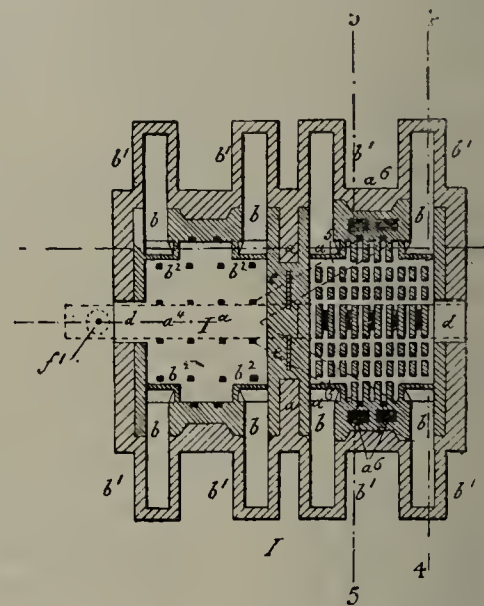
For sale, or royalties given on Dr. P. Jochum's Iron Vitrified Paving Brick The best paving brick having been manufactured up to the present date. The same has undergone a thorough test throughout all the countries of Europe. Its degree of hardness according to Mohs's scale is (9.). This brick can be manufactured with any ordinary clay.

Further information given by addressing,

**ZWERMANN,
BARGAR & CO.,**

No. 1,023 Hanover Street,

BALTIMORE, MD.





VOL. XXI, No. 1.

INDIANAPOLIS, IND., JANUARY, 1894.

\$2.00 a Year in Advance.

SAMUEL ROSS. PRESIDENT.

JOHN MILLER, TREASURER AND MANAGER.

WASHINGTON BRICK AND TERRA COTTA COMPANY,

Delaware Avenue and O St., S. W.,

11th and G Streets, N. W.

MANUFACTURERS OF ALL KINDS OF BRICKS.

WASHINGTON, D. C., November 25th, 1893.

MESSRS. CHAMBERS BROTHERS COMPANY, Philadelphia, Pa.,

GENTLEMEN:—We have now been running one of your Brick Machines for about three months and have not spent one dollar on it for repairs, nor have we had to lose an hour on account of the machine. You know the reason we bought this machine was because the authorities here would not accept for the new Government Post Office building anything but a tempered clay brick, and in order to obtain and fulfill that contract for several millions of brick, which we have, we determined to buy the best tempered clay machine we could and therefore placed the order with you. There is nothing we can say too good for your machine in our estimation.

Yours truly,

WASHINGTON BRICK & TERRA COTTA COMPANY,

By JOHN MILLER, Treasurer.

Brick Making Machinery, Chambers Brothers Company,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,

J. E. EASTES, Chicago Agent,

203 South Canal Street.

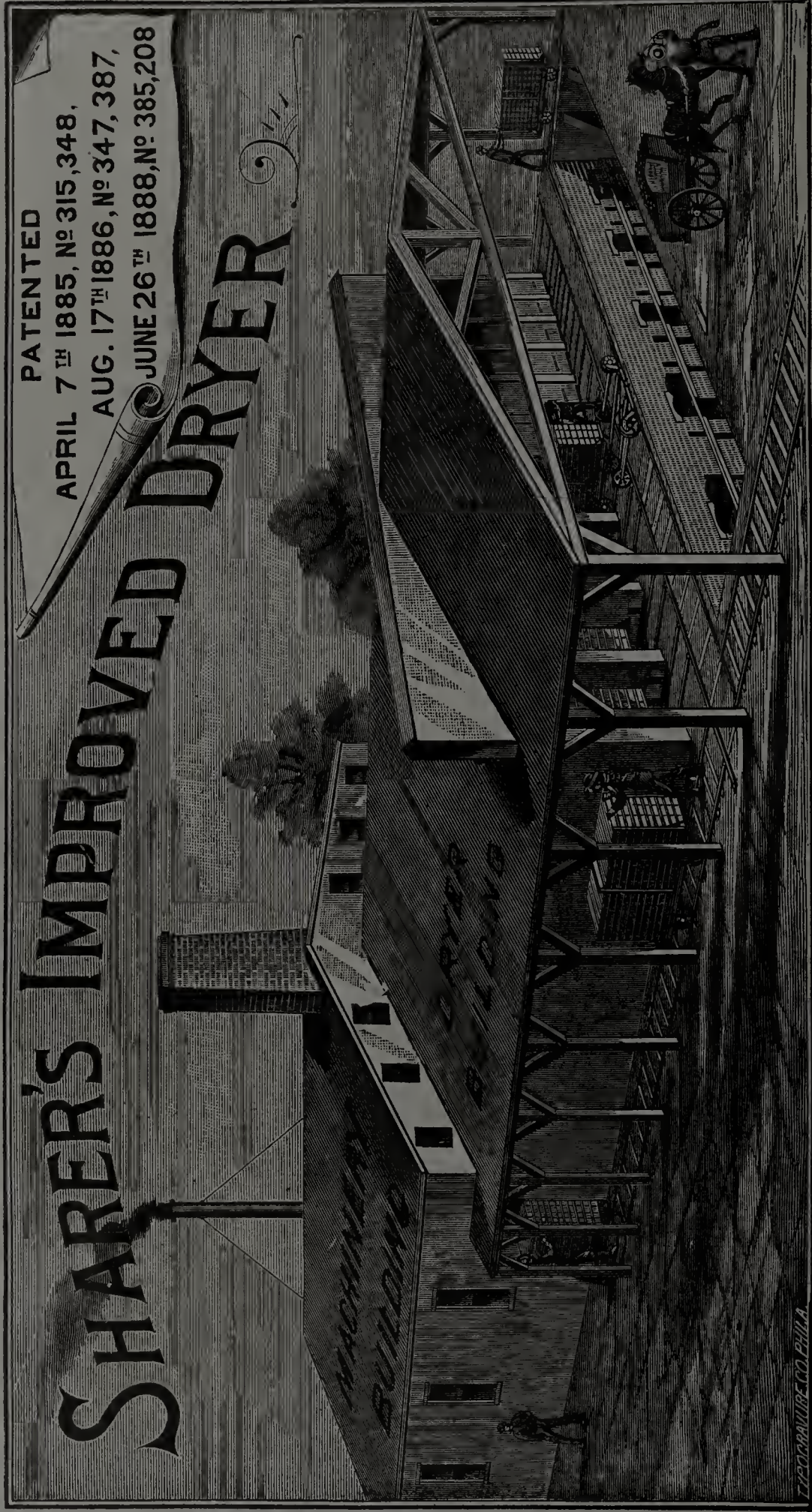
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See ads. on pages 106 and 107.

THE SHARER DRYER AND CONSTRUCTION CO.,

BRICK MANUFACTURING EXPERTS.
CONSTRUCTING ENGINEERS. ÷ CONTRACTORS AND BUILDERS.
COMPLETE PLANTS A SPECIALTY.

Builders of All Kinds of Dryers and Kilns for Drying and
Burning any and all Kinds of Clay Products.



Owners of SHARER'S IMPROVED DRYER;
SHARER'S IMPROVED CALORIFIC KILN.

Manufacturers of Cars, Transfer Cars, Turn Tables, Furnace Castings and Complete Dryer and Kiln Equipments.

.....Dealers in All Kinds of Clayworking Machinery, Engines, Boilers, Shafting, Pulleys, Etc.
New plants built and equipped complete in every particular. Old plants remodeled and modernized. Clays tested and analyzed. Plans and estimates furnished.
Information costs you nothing. Send for Catalogue "C."

SHARER DRYER & CONSTRUCTION CO.,

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HUGH CAMERON, Manager.

Rooms 506 and 507, The Mutual Life Building,
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For Clay Screens

..USED...

In Making Brick,
Tile, Terra Cotta,
etc., etc.

Also for Dry Pan,
Pulverizer, Chute,
Shaking and Re-
volving Screens.



Heavy Iron and Steel Plates

Punched for sizing
Coal, Coke and
Ores; Macadam,
Concrete, Railroad
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS
—USED FOR—

CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

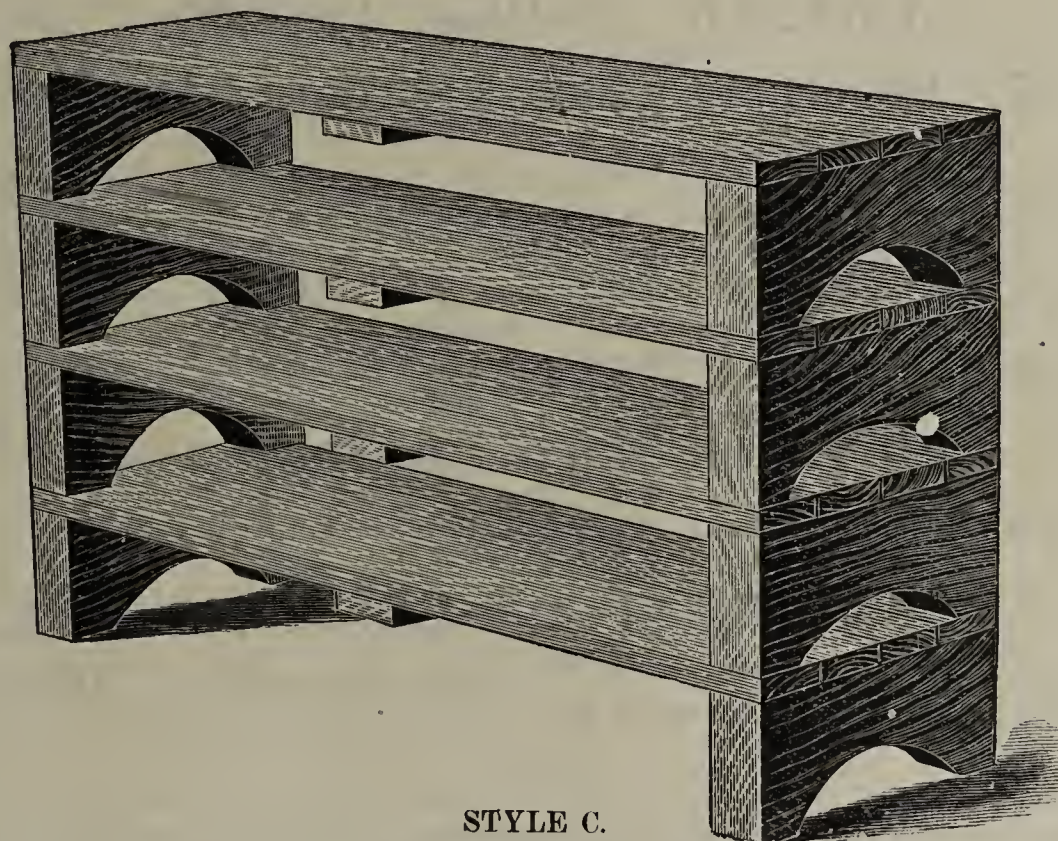
THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,
CHICAGO, ILL.

WOODEN BRICK PALLETS

WOODEN
BRICK
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STYLE C.

WOODEN
BRICK
PALLETS

We manufacture all styles and sizes. Write to us direct for descriptive circulars and prices.

WM. B. MERSHON & CO., = Saginaw, East Side, Mich.

—“*VENI, VIDI, VICI.*”—

Complete Triumph of the
SIMPSON BRICK PRESS

—AT THE—
WORLD'S COLUMBIAN EXPOSITION.

Pronounced by the judges on Brick Machinery in Machinery Hall to be the

∴ **Highest Type of its Class.** ∴

On the following page is a copy of an award given to us by the judges on Brick Machinery at the World's Columbian Exposition. Any award or diploma that may have been given to our competitors was granted on models exhibited in the Mining Building, where the exhibitor was absolutely alone and with no competition whatever. In Machinery Hall where full sized machines were exhibited, and the only place where a just comparison could be made, our press had everything its own way and won on all points claimed.

The special judge on brick machinery, who is an expert in the trade, rendered his decision to the committee of the whole, consisting of thirty-four judges, and gave the award to the

SIMPSON BRICK PRESS.

• • In His Report no Other Award was Granted. • •

We therefore make the emphatic statement that in Machinery Hall, the only building where brick machines came into actual competition, the **SIMPSON** was the only dry or semi-dry brick machine that was given an award by the special judge on brick machinery. His decision was also **APPROVED** and **ADOPTED** by the committee of the whole, consisting of seventeen foreign and seventeen American judges.

In addition to the **Simpson Brick Press** we are also manufacturers and dealers in

∴ **Full Brick Yard Equipments.** ∴

Estimates given on complete plants. For prices, terms and other information, address

The SIMPSON BRICK PRESS CO.,

Agents for Canada,
WATEROUS ENGINE WORKS CO., Brantford, Ont.

87 Washington St., CHICAGO, ILL.

World's Columbian Exposition

* * * *

At Departmental Committee on Awards, MACHINERY HALL.

* * * *

August 30th, 1893.

At the regular meeting of the Jurors in that department, the report on the Waterous Engine Works Co., (showing a Simpson 5-mold press) was read and APPROVED as follows:

Waterous Engine Works Co., No. 6,490 as follows: This exhibit consists of a machine (the Simpson Brick Press) for making brick by the dry press process, good in design, material and workmanship.

This machine shows an advancement in mechanism in regulating and reducing the mechanical difficulties.

FIRST.

Its longer pressure forces partial cohesion of the particles. Longer is better than stronger pressure.

SECOND.

The use of the long lever with toggles, causes long even pressure without excessive strain of parts.

THIRD.

The pressing strain is taken up by two exposed steel side bars and not by the frame.

FOURTH.

The clay moves in the mold during pressure, giving polish to the product.

The brick is made in the bottom of the mold and the pressure is held until the brick is delivered, insuring surface polish.

FIFTH.

The mechanism provides for exact thickness without

shimming or packing, and the modification of their dimensions are easy and quick.

SIXTH.

The discharge of the brick from the mold, by the came on the master gear, is a marked improvement on the lifting of the entire pressing mechanism, together with the green brick.

SEVENTH.

The heating of the charge box.

EIGHTH.

The toggles work inward, thereby giving unobstructed access to the table on which the brick is delivered, instead of leaving them to be pushed out and damaged by the following brick.

NINTH.

The parts are accessible and changeable without delay.

* * * *

For These Points of Advancement in Dry Press Mechanism an Award
is Recommended.

* * * *

The above points of superiority, given the Simpson Brick Press explains the well known fact that The Simpson Brick Press Co., has more successful and money making institutions using their machines than any other dry press brick machinery concern in existance Write us for information and address,

THE SIMPSON BRICK PRESS CO.,

87 and 89 Washington Street,

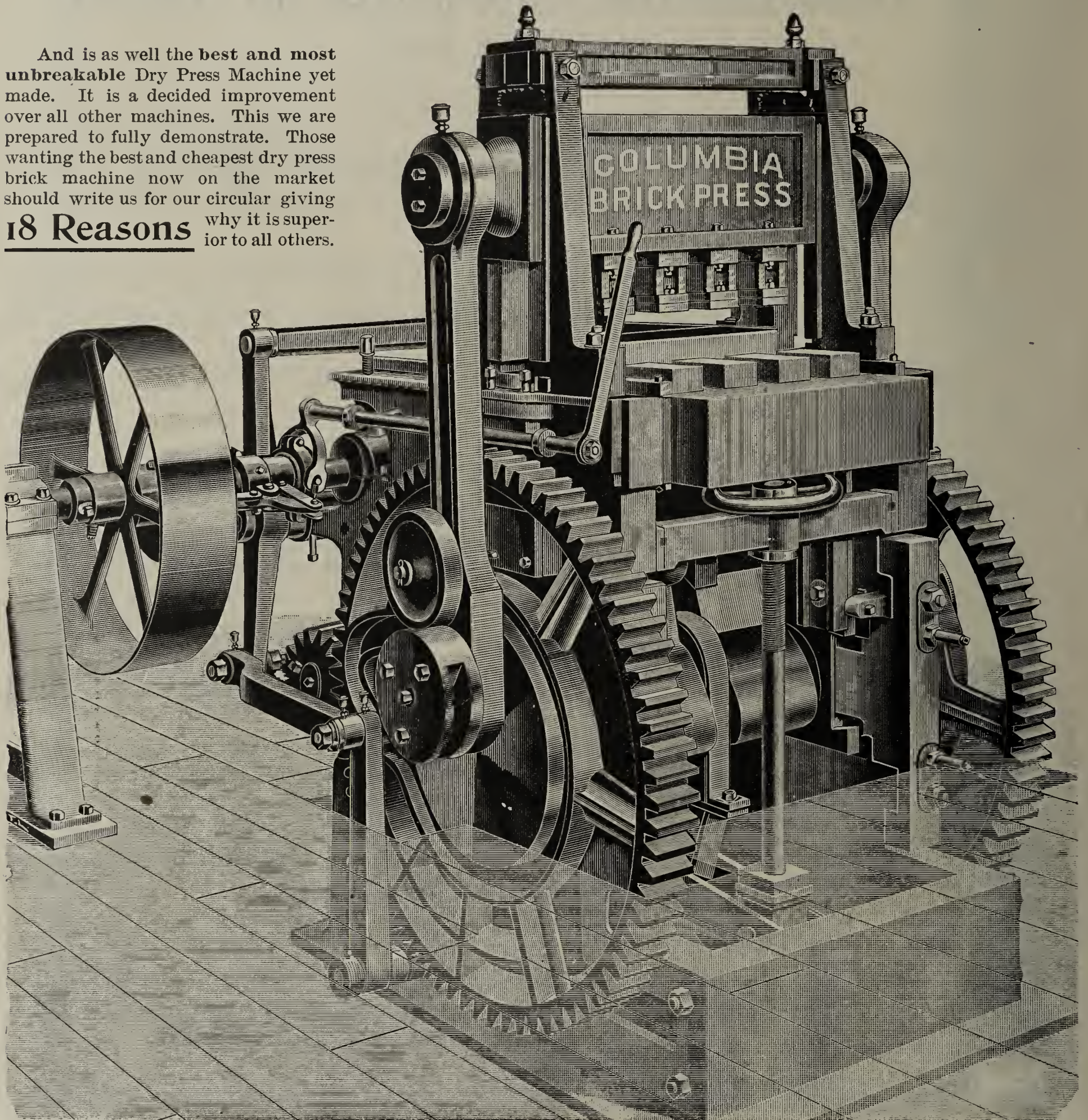
CHICAGO, ILL.

❖ THIS ❖ PRESS ❖

IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF

FINE ORNAMENTAL BRICK

And is as well the **best and most unbreakable** Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

COLUMBIA MANUFACTURING CO.,

Send your clay and we will test it and send you the results....

2119 N. Ninth St., ST. LOUIS, MO.

THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

Refer to . . .

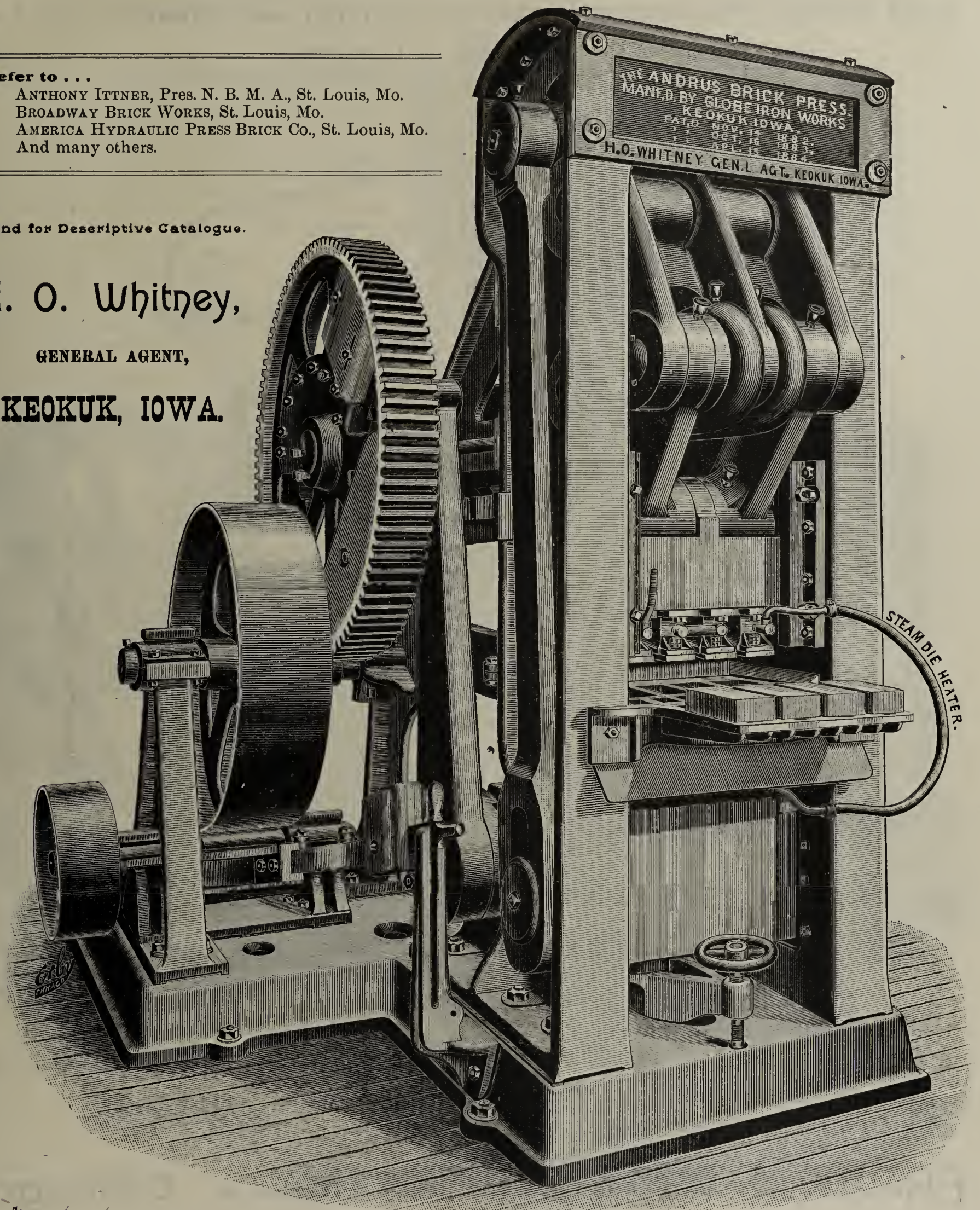
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.
 BROADWAY BRICK WORKS, St. Louis, Mo.
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 And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.



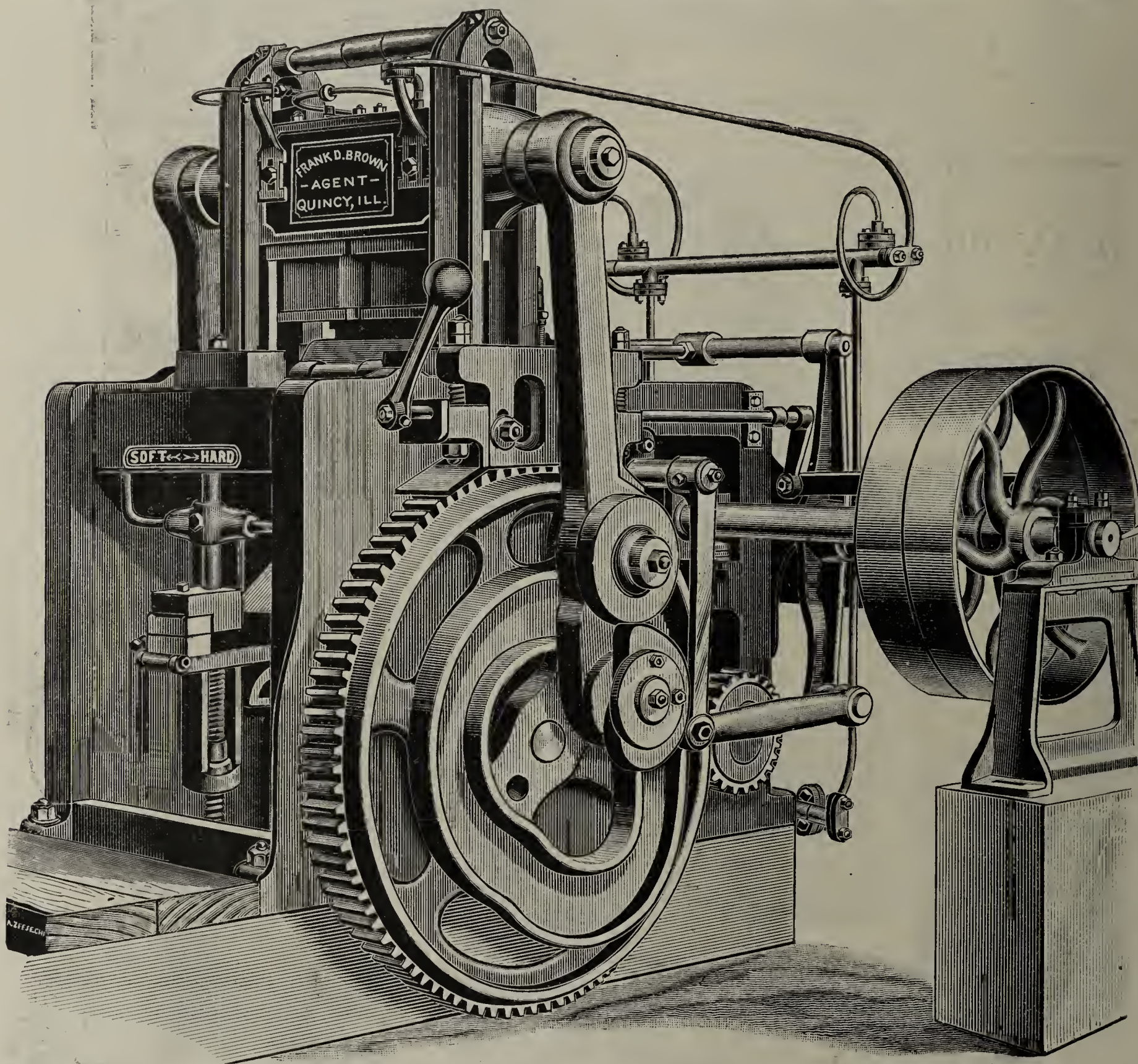
WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

•✱HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.✱•

Best, Cheapest and Most Durable Press in the World.

*—————One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

FRANK D. BROWN, Room 18 Major Block,
Cor. La Salle & Madison Sts. **Chicago.**

The Ross-Keller Brick Machine.

(Triple Pressure)

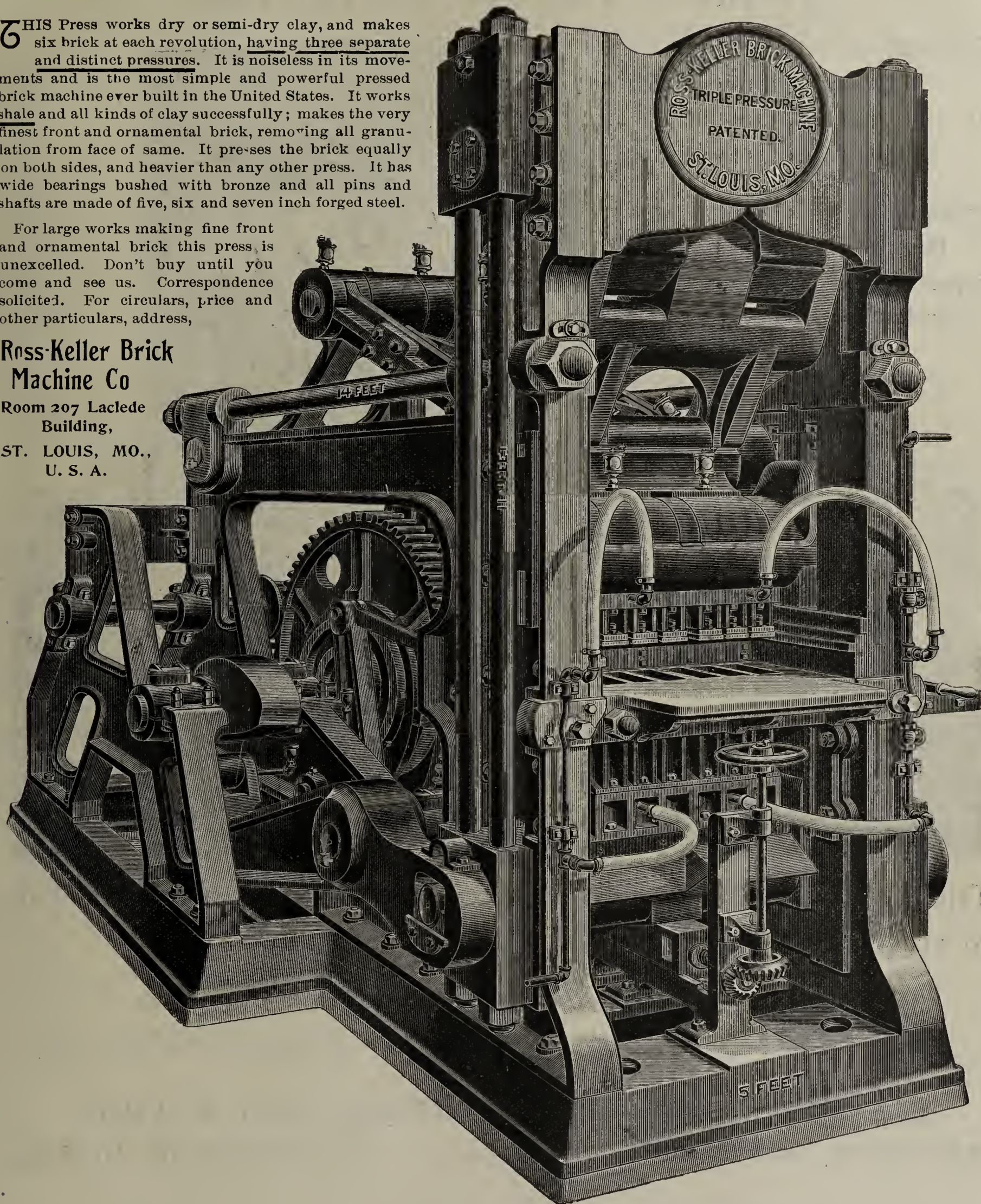
Weight 75,000 Pounds, Capacity 35,000 to 40,000 Brick Per Day.

THIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from face of same. It pre-ses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five, six and seven inch forged steel.

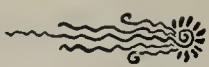
For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address,

**Ross-Keller Brick
Machine Co**

Room 207 Laclede
Building,
ST. LOUIS, MO.,
U. S. A.



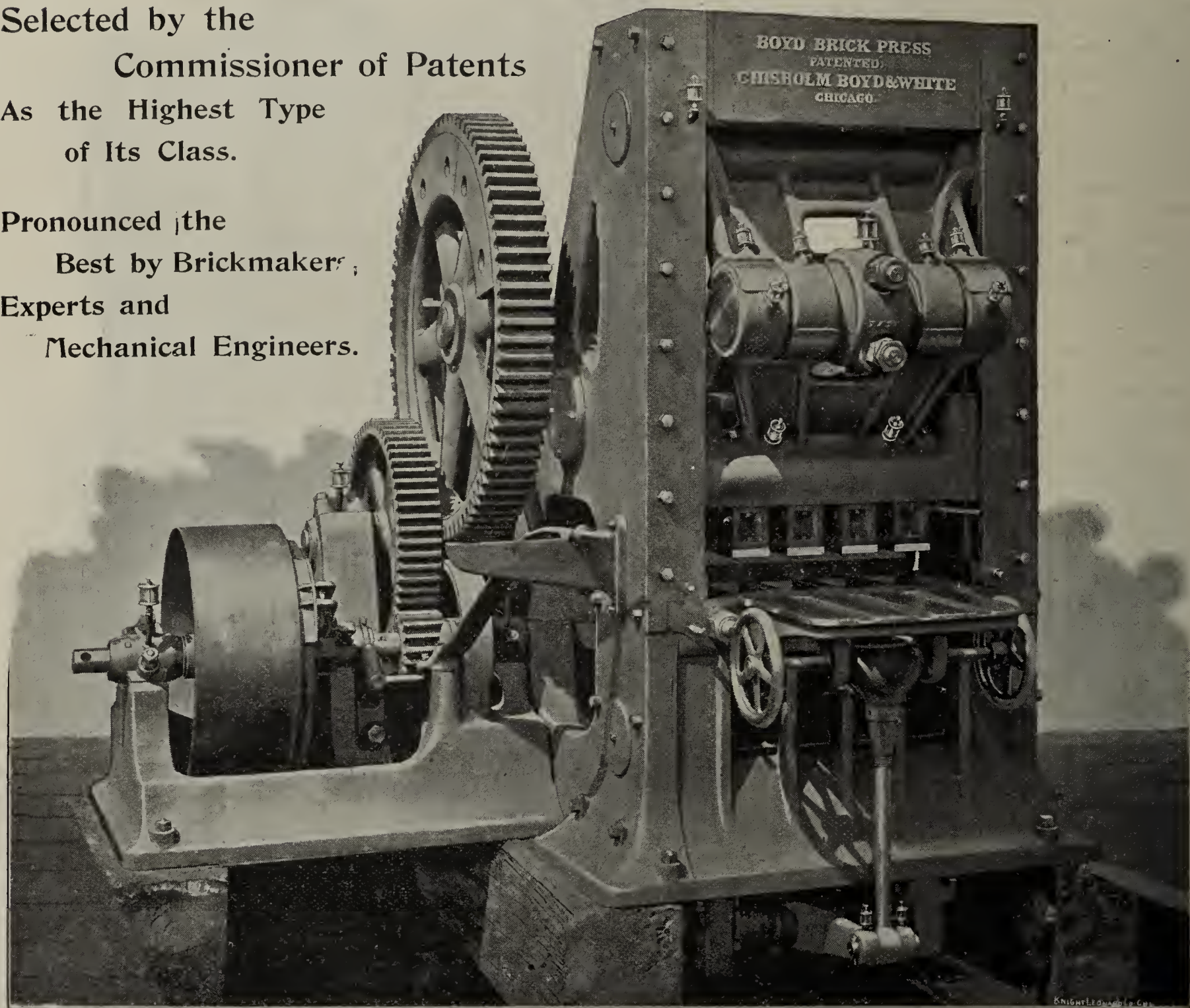
TRIUMPH OF THE BOYD PRESS

.  ALL THE HONORS.

AWARDED A MEDAL AND DIPLOMA.

Selected by the
Commissioner of Patents
As the Highest Type
of Its Class.

Pronounced the
Best by Brickmakers,
Experts and
Mechanical Engineers.



THE BOYD BRICK PRESS IS THE ONLY AMERICAN BRICK MACHINE
TO RECEIVE A MEDAL, DIPLOMA, OR OFFICIAL MENTION AT

✧ The World's Columbian Exposition. ✧



Monon Block:
324 Dearborn Street.

CHISHOLM BOYD & WHITE,
Chicago, Ill., U. S. A.

Improved Clay Disintegrators

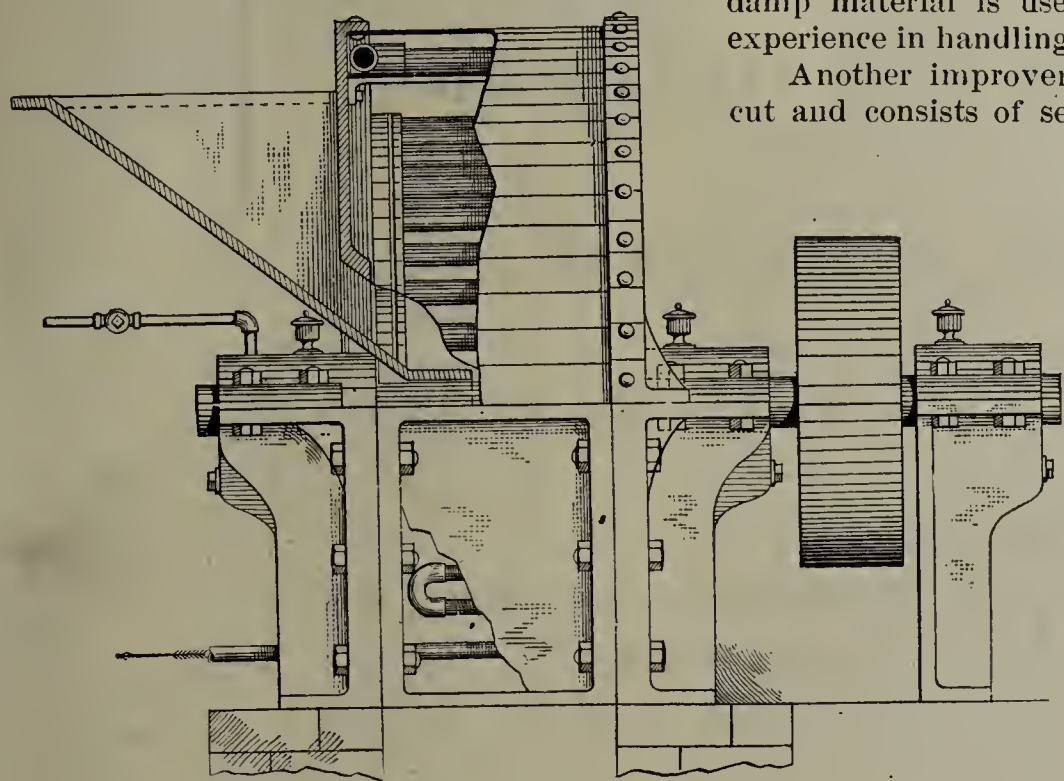
(OUR OWN PATENT.)

LARGE CAPACITY WITH LITTLE POWER.

For Pulverizing Common Clay, Fire Clay, Slate, Paint, Bones, Flint and Ore of Any Description.

WE BUILD five sizes ranging from 30 to 60 inches in diameter. The accompanying cuts will give the reader an idea of the principle upon which our improved pulverizers are constructed. While there are disintegrators now on the market somewhat similar, ours have several patented devices that makes them much more efficient and durable. The steam jacket shown in the larger cut is an especially valuable feature and prevents any tendency to clogging when damp material is used, a great advantage, as all who have had any experience in handling moist clay will readily concede.

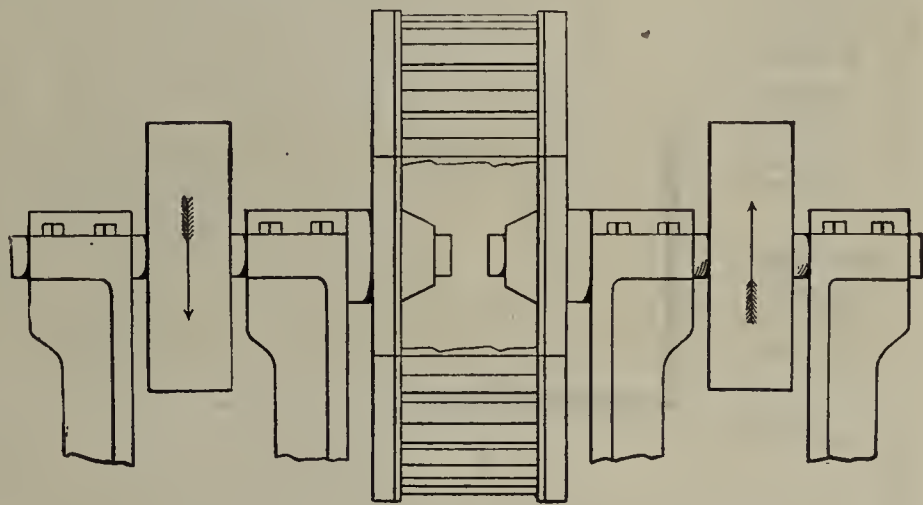
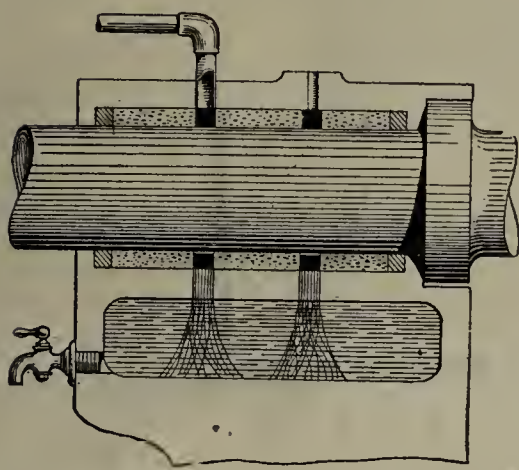
Another improvement (our own invention) is shown in the smaller cut and consists of self-oiling, dust-proof journal boxes, which insure smooth, easy running, and reduces the strain and wear to the lowest possible degree.



Our Disintegrators are built for service. We have a large number of them in use on different materials and all are giving entire satisfaction.



We will be pleased to furnish full description of machines and testimonial letters from users.



If you want the best, write us for prices, etc.

Schoellhorn-Albrecht Machine Co.,

MANUFACTURERS,

609-610 North Levee,

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ST. LOUIS, MO.

“Morrison’s Improved Kiln Record”

IS NOW READY FOR DISTRIBUTION.

Success is the only positive evidence of merit.....

.....Merit without success is faith without works.

Here is a page from “The Record.”

Office of SELMA BRICK & TILE CO.

SELMA, ALA., Oct. 3rd, 1893.

R. B. MORRISON & Co.,
ROME, GEORGIA.

GENTLEMEN:—We have burned the kiln you put in for us second time and are perfectly satisfied with results. Each time we burn your kiln we save \$100 on fuel and \$50 on labor, and in saving of our arch brick and uniformity of color throughout the kiln and large increase in percentage of hard brick, we realize at least \$200 more for the 350,000 brick, making us \$350 saved each burn.

Yours truly,
SELMA BRICK & TILE CO.

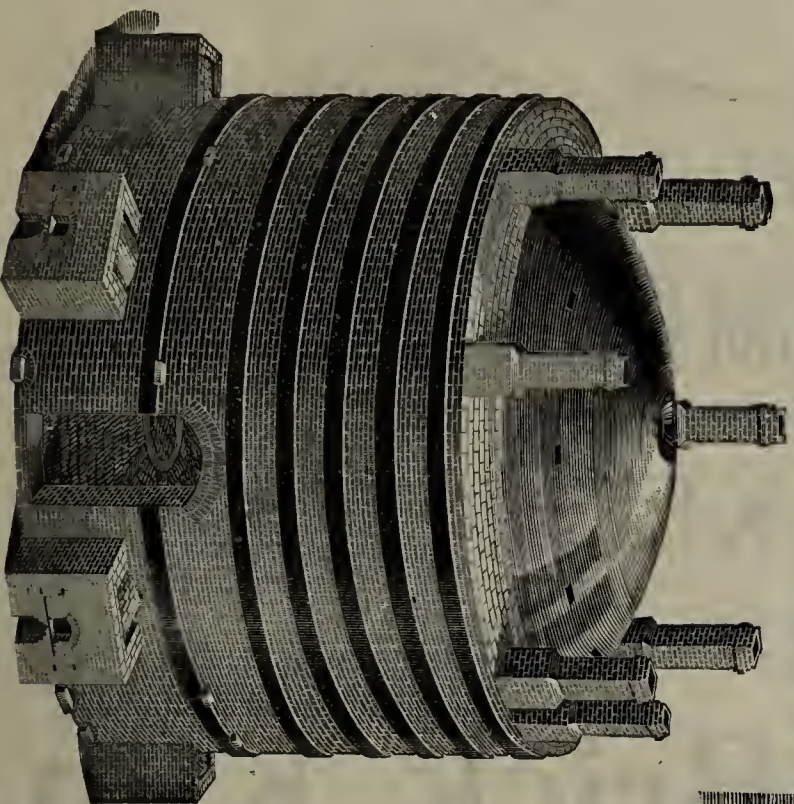
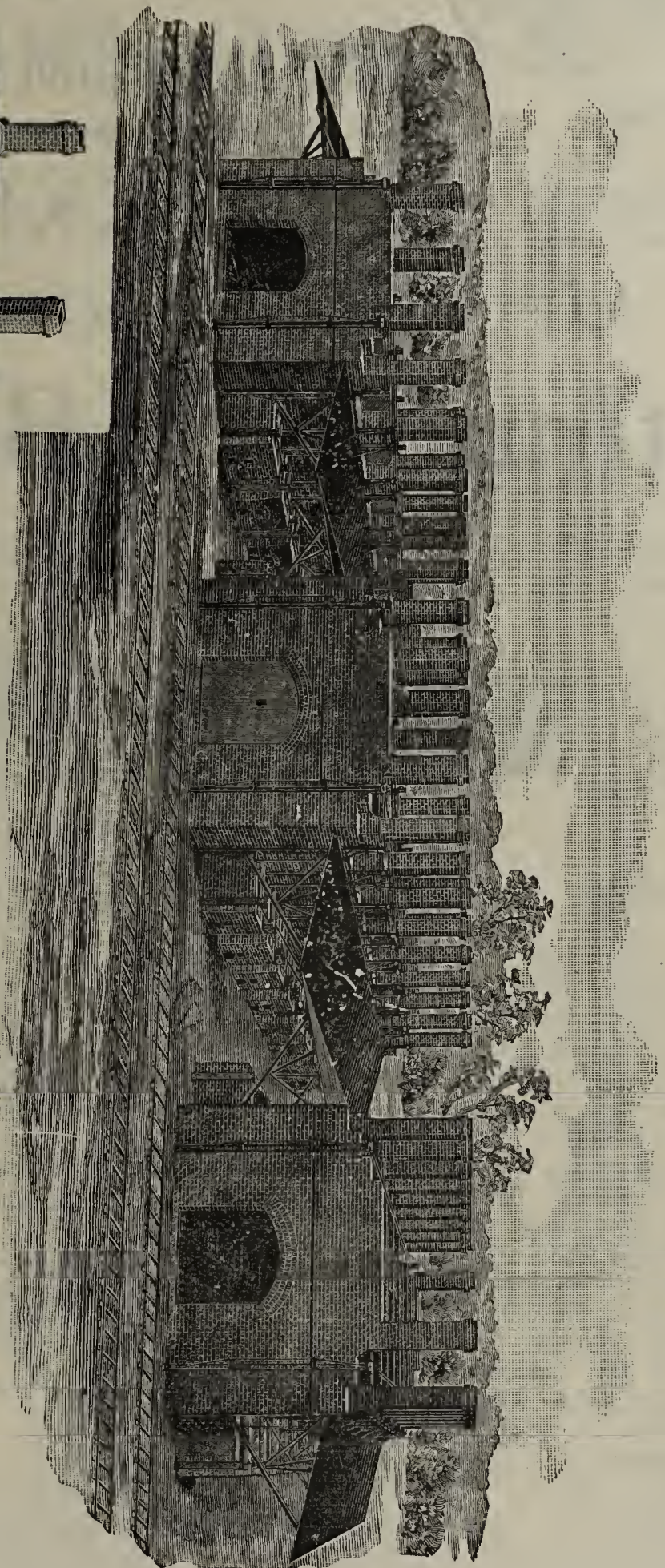
For further encouragement write us for copy of “The Record.” No stamp need be sent.

Brick Manufacturers, you want results! We give them in the Record of our Kiln for seven years past in all parts of the United States and Canada.

For the “Record” descriptive pamphlet, and all information desired, address,

R. B. MORRISON & CO.,
P. O. Box 335. Rome, Georgia, U. S. A.

The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the **EUDALY KILN** for burning all kinds of clay wares, especially **front, ornamental and paving brick**. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

W. A. EUDALY,
64 Johnston Buildings,
Cincinnati, Ohio.

W. H. KELSO, President.

PAUL BOEHNCKE, Treas. & Sec'y.

MAX A. TH. BOEHNCKE, Gen'l Mgr

P. O. Address:
Centinela,
Los Angeles County,
California.



THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:
Inglewood, California.
Tel. Address:
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,
No. 474,807, May 17th, 1892.

BOEHNCKE'S

Several other U. S. Pat-
ents applied for.

UP AND DOWN DRAFT

Continuous Brick Kiln.

12 Kilns in Operation
...in the...
United States.

5 Kilns in course of
construction
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

DON'T LOSE TIME TO INVESTIGATE.

Beware
of
Infringe-
ments.

ADVANTAGES OF THE KILN.

1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

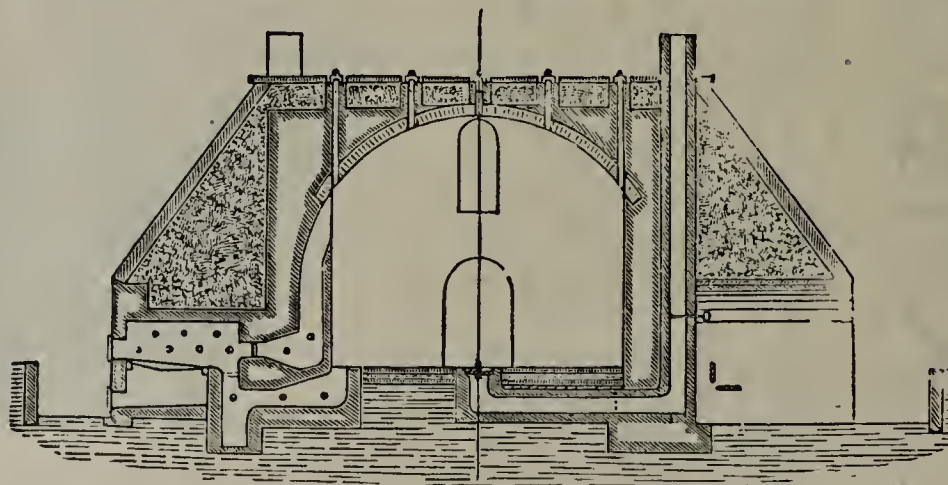
Write for Circulars to

Centinela Brick Kiln & Drier Co.,

Box 35,

Centinela, Cal.

COMMON SENSE KILN.



Patent No. 475,433.

FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

A NEW BRICK DRYER.

does not need any extra fuel or labor in connection with continuous kilns. Write for circulars, catalogue and testimonials.

We have also Boehncke's Brick
Drier, which is very economical

THE · KILN · OF · THE · PERIOD.

THE "PERFECT KILN."

*Sercombe's Patent.***Designed on Economic and "Common Sense" Lines, for Burning Brick, &c., Lime and Cement.**

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.
 Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

NOTE WHAT THE USERS SAY.*Sample of English Testimonials.*

From Messrs. W. T. WRIGHT & CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

TO MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT & CO.

Third kiln now ordered.

From Messrs. WILLIAM THOMAS & COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

DEAR SIRS:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

UNSOLICITED AMERICAN TESTIMONY.*Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.***GOING TO BUILD A CONTINUOUS KILN.***Editor Clay-Worker:*

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "tulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,

Fulton Fire Brick and Mining Co.

FROM CANADA.

TORONTO, February 28th, 1893.

MESSRS. SERCOMBE, OSMAN & WARREN.

DEAR SIRS:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular (Extract.) Yours truly,

N. B.—Messrs. Carroll & Co. are erecting one kiln, and contemplating erecting others.

References can be given to over Forty first-class firms already. For further particulars please apply to

SERCOMBE, OSMAN & WARREN,**EXMOUTH, DEVON, ENGLAND.**

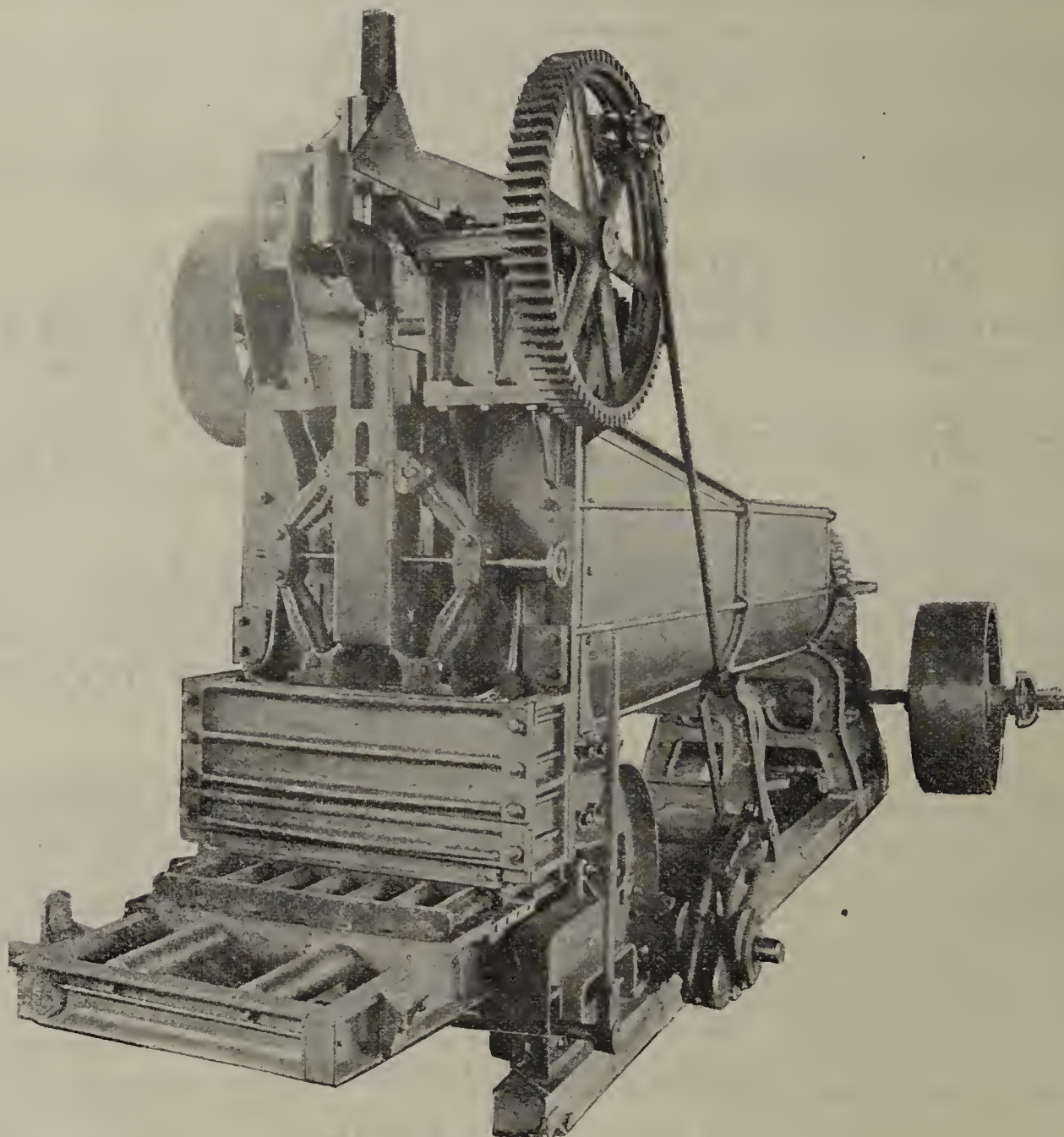
Mention the CLAY-WORKER.

AGENTS FOR CANADA R. H. PYNE & CO., Yonge St., TORONTO.

BRICKMAKERS

Stop to Think!

Of the improvements C. & A. Potts & Co. have made in Clayworking Machinery in the last ten years. They have been leaders in this line and they herewith show their LATEST.



WEIGHT 18,000 LBS.

Perhaps you have had doubts about machines heretofore offered you, as to strength and capacity. This is one that will surely answer all your requirements.

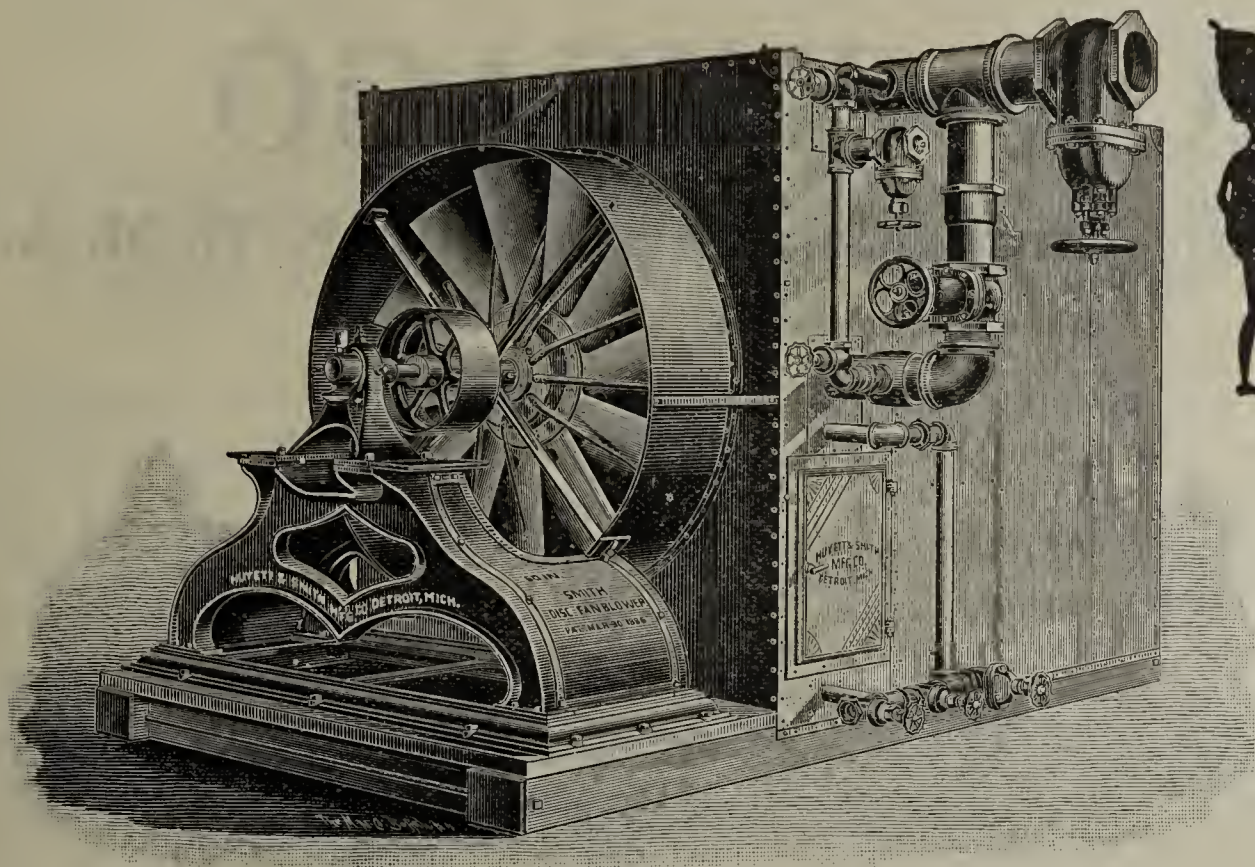
James Demorville of New Orleans, La., writes us under date of December 21st: "Machine has arrived. I am more than pleased with appearance of same. For strength and weight it is far beyond my expectations."

If you want the best, write to us for further information. See ad. on page 97.

C. & A. POTTS & CO.,

INDIANAPOLIS, IND.

[Mention the Clay-Worker.]



BRICK MAKERS

While at the

CHICAGO CONVENTION

Be sure and call at the
Office of

THE HUYETT & SMITH MFG. CO.,

31 So. Canal St.,

And get prices, information, etc.,
on the

Smith Hot Blast Brick Dryer

Manufactured by

The Huyett & Smith Mfg. Co.

DETROIT, MICH.

SMITH HOT BLAST BRICK DRYER

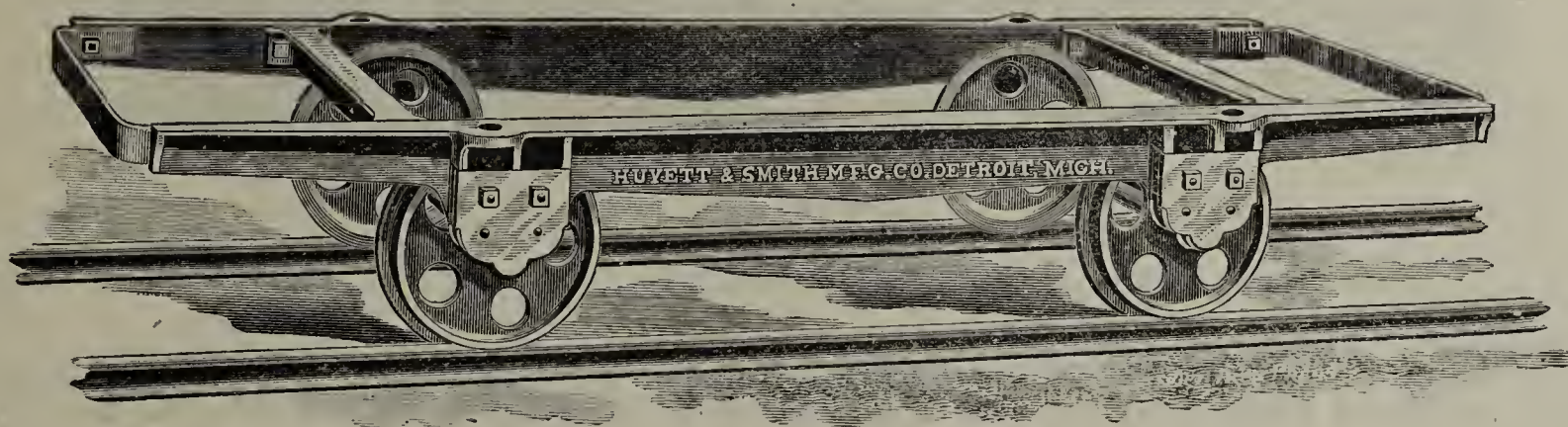
Among the many references are the following in Eastern Pennsylvania :

James E. Dingee, Philadelphia, Pa.
Gunn Bros., " "
Flood Bros., " "

Penn Brick Co., Philadelphia, Pa.
Wm. F. Albrecht, " "
Philadelphia Brick Co. " "

John A. Schmitt, Wilkes-Barre, Pa.
Swoyer Bros., Allentown, Pa.
Montello Clay & Brk. Co., Reading, Pa.

More of these Dryers in operation in Philadelphia than all others put together.



A NEW BRICK CAR.

WRITE FOR CIRCULAR.

For full information, catalogue, plans and references write

The Huyett & Smith M'f'g Co.,

Main Office and Works, 1,400 Russell St.,

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.....BRANCHES.....

PHILADELPHIA, 118 Custom House Place.

LONDON, ENGLAND, 13 Little Trinity
Lane, E. C.

NOW FOR CHICAGO

And the Eighth Annual Convention of the N. B. M. A.

They will all be there—the leading, practical, successful Brickmakers of America, and the technical instruction afforded by this meeting will greatly and directly benefit every clayworker who attends.

If you are interested in improved machinery and appliances, particularly as relates to drying, do not fail to visit the yard of



The HARMS-SCHLAKE BRICK CO., Grace Street, near Western Ave.

This is one of the finest equipped plants in Chicago. A 14-track, 70,000 daily capacity.

Standard Patent Brick Drier

Is there in operation, exhibiting the most convincing evidence of practical merit—PERFECT, RAPID and ECONOMICAL DRYING.

Our representatives will be in attendance at the Convention from whom all information regarding "The Standard" may be obtained.

Get a copy of our illustrated Catalogue No. 15, which shows two views of the above plant.

THE STANDARD DRY KILN CO.,

General Office and Salesroom, 923 and 925 W. Main Street,



LOUISVILLE, KY.

THE CLAY-WORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXI.

INDIANAPOLIS, IND., JANUARY 1894.

No 1

Written for the CLAY-WORKER.

A NEW DEPARTURE IN TERRA COTTA WORK.

Will D. Gates's Beautiful Home.

THE subject of this sketch is an example of the rapid advance in the use of terra cotta and its adaptability to the most modern building construction. This beautiful structure is the residence of W. D. Gates,

recently erected at Hinsdale, Illinois.

In the use of the Steel Skeleton Construction for our tall, fireproof buildings, it soon became evident that terra cotta was the best material for the exterior of these buildings, from sidewalk to top of cornice. In this construction each story rests independently on the columns and is supported by steel ledges and brackets. Terra cotta can be readily molded to lap around the steel, serving at the same

time for ornamental courses, columns or pilasters, and for a fireproof protection. It is also much easier and more securely anchored, so that little by little terra cotta has become a favorite material with the architects.

Mr. Gates is the President of the American Terra Cotta & Ceramic Co., of Chicago, with manufactories at Terra Cotta, on the Lake Geneva branch of the Northwestern Railway. This company



W. D. GATES'S NEW TERRA COTTA RESIDENCE, HINSDALE, ILL., JENNEY & MUNDY. ARCHITECTS, CHICAGO.

has recently completed the entire two street fronts of a large fireproof store building, eight stories in height. The design, particularly the entrance way to the elevator hall and upper stories, is decidedly ornamental. The work throughout was so successful, and showed so conclusively the advantages of terra cotta for this class of construction, that Mr. Gates decided to take one more step in advance and use terra cotta for his residence.

The style selected as one well adapted to the use of the material, is the French Chateau Gothic of about the time of Louis XII, examples of which are seen at the Chateau de Blois.

Terra cotta has long been in use in residences in connection with brick and

and laid with a rodded joint in mortar the average color of the terra cotta, which is a light, warm buff, slightly sprinkled with white and with black.

This residence is, in many respects, a new departure, and is entirely successful from every point of view. It is attracting a great deal of attention, and is, all in all, eminently fitted for the home of a clayworker.

JENNEY & MUNDIE, Architects.

A TERRA COTTA RESIDENCE.

Method of Construction.

Editor Clay-Worker:

In reply to your request for a letter relative to the structural features of my

structed, and with proper care on the inside rooms, the children might be prevented from leaking out on the community, in a search for a warmer, drier and cozier nook than their home afforded them.

Leaving all architectural matters with the very capable and experienced architects and placing all the work but our own line with L. L. Leach & Sons, a firm prominent throughout the country for reputable work, we proceeded to work out the terra cotta problem and produce ware that should give a satisfactory ashlar surface. Avoiding on the one hand the stiff and absolute surface given by one unbroken mass of color, which magnifies and exaggerates every joint and inequality, we endeavored to solve the problem by mottled colors, using a combination of tints that mellowed and toned the surface, yet avoided glare and calico cheapness.

Close attention was also paid to finished surface in its relations to economy of production, as well as its relations to joints and wall surfaces. The result has been a very pleasant solution of these problems, while the artistic skill of the architects planning and designing the whole, with the honest and intelligent efforts of the contractors, have so happily completed their parts that the building stands an honor to all connected with it, and as that most excellent of American institutions, an enduring, pleasant and happy home.

WM. D. GATES.

Chicago, January 3, 1894.

Written for the CLAY-WORKER.

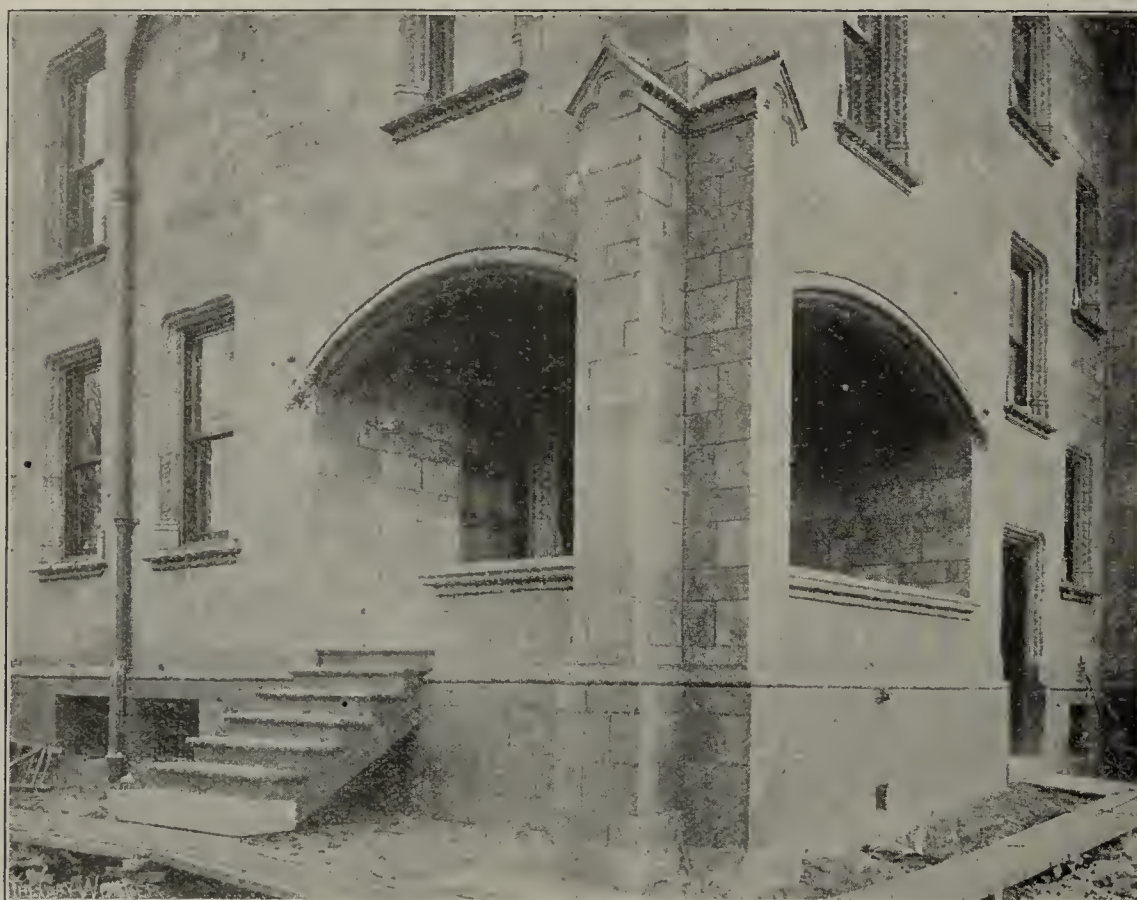
HINTS ON BRICKMAKING.

No. 83.

BY R. BRICK.

SORTING AND PACKING REPPRESSED BRICK.

IN the December number was discussed the burning and cooling of repressed brick. After they are properly cooled, the sorting and packing for shipment is the next and last process, so far as the brickmaker is concerned, unless he delivers them to the building. And right here, it might be well to mention, the bricks receive their roughest handling and greatest damage. However well the manufacturer may handle and pack them for shipment, it is labor lost if they are not as carefully handled from car to building. In fact the brickmaker, where practicable, should see that this part of the work is



A TERRA COTTA RESIDENCE—REAR ENTRANCE.

wood, the brick being used for the plain surfaces, and the wood for veranda posts and railings. In this residence the entire exterior, (the roof slopes only excepted), including the ashlar, the verandas and the railings, the chimneys and the roof crestings and hips, are all of terra cotta. The workmanship is excellent, even the verandas and the veranda railings, about which some little anxiety was felt, offered no trouble, the pieces fitted together perfectly and were held in place securely by iron rods, ties and anchors, so as to leave nothing to desire in the way of stability.

The ashlar is exceedingly pleasing. It is made in blocks about 7 x 18 inches with square edges and tooled surface,

new terra cotta house, I am afraid that there really remains but little for me to say, for the foregoing matter from the architects, Messrs. Jenney & Mundy of this city covers the ground very fully.

After some discussion as to using the terra cotta as a veneer for a wooden frame, we concluded to use four inches of terra cotta facing, backed up with nine inches of rough brick work, laying lath between the brick on inside wall and putting on furring strips, lath and plaster, thus giving a fifteen inch wall with two dead air spaces, one outside and one inside, and making a wall specially suited for a home warm in Winter and cool in Summer and always dry; hoping that with walls thus con-

well done, if not he should bind the buyer, to see to it, for the manufacturer has to answer for it all.

First, the repressed brick must be carefully uncovered. There should always be at least one course of common bricks left on the pressed brick until they are ready to move.

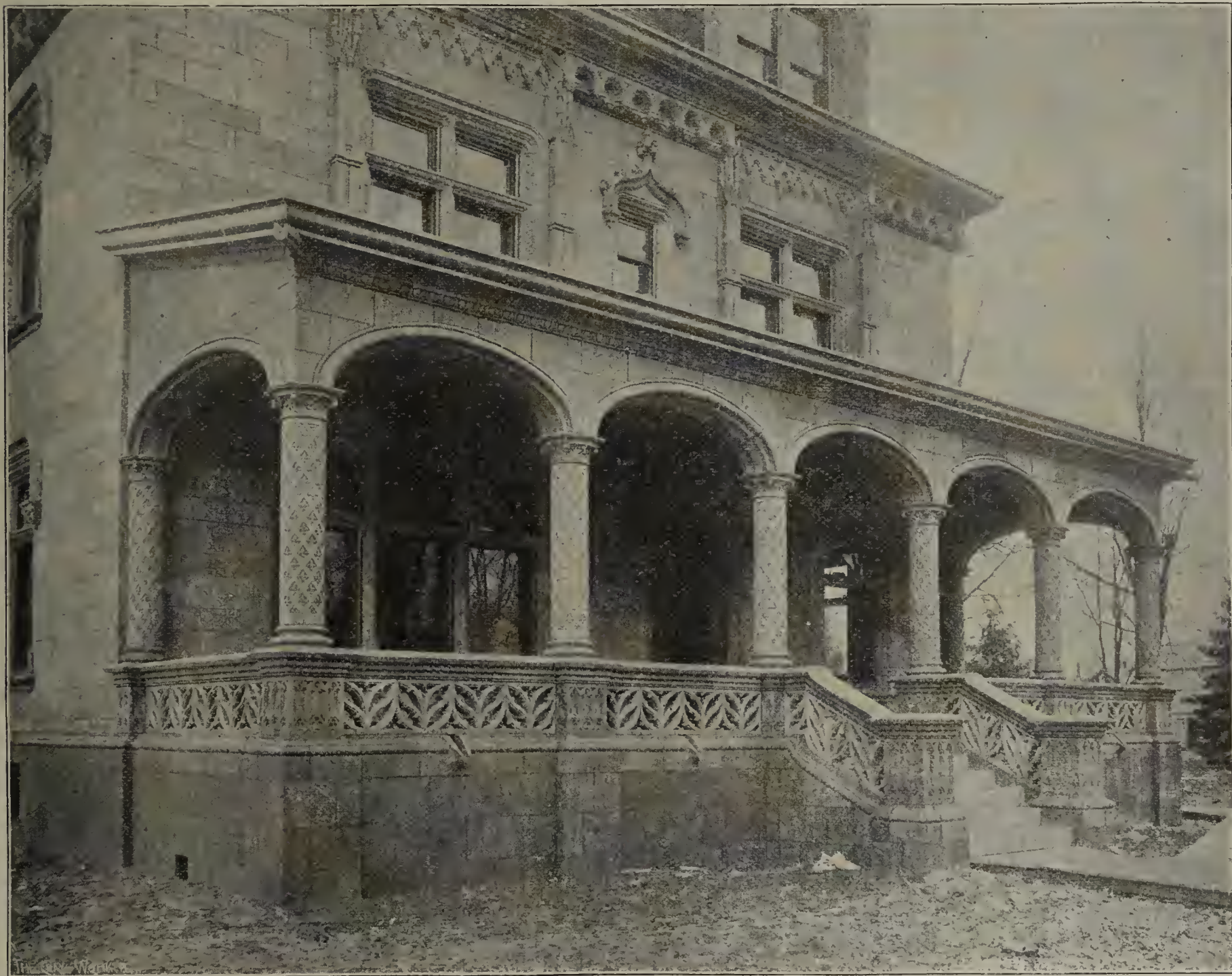
There are different modes of handling and sorting these bricks. The best plan is to load them on spring trucks, such as has been described in former articles. That is, a common dirt barrow, handles and single wheel, with a frame work on rear end, bolted to the handles and projecting forward over the wheel, resting on a pair of strong seat springs, placed side by side at right angles with the handles. Just back of the wheel, the frame has two pieces 2x3, on each side, four inches apart. Upon these rest two rows of brick, side by side, with space between them, twenty-five bricks

in a row. In this way fifty bricks can be carried away, anywhere that a barrow can be run, safely and rapidly.

If this spring truck is not used, then cloth or strips must be placed between the layers of brick when piled in tiers. The bricks are carried in this manner to the stock shed, where an expert sorts them, both as to quality and color, first-class marked A, second-class B. The colors are numbered; the darkest shade marketable, No. 1, next lighter shade, No. 2, next No. 3, and so on as high as No. 10, or even No. 12. These different qualities and shades are placed each kind together in stalls in one long shed, on their flat sides, with best face displayed. The buyer can see just how they look, select his quality and color, and get just what he wants. After the shades become familiar in the markets, builders can order by number without seeing the stock pile.

If the brick manufacturer will keep his bricks up to the standard in color and finish, he will soon build up a large business, for builders will pay more money to the brickmaker for his brick, if they know just what they are going to get.

Where bricks are hauled direct from stock sheds to building in carts or wagons, they are tossed from shed to cart and packed with straw or other suitable material, between their faces and ends, to prevent damage by contact one with another. If they are shipped on cars, they must be either carried into the car on barrows in the same manner they were put into the shed from kiln, or carried in arms. Here they should be carefully packed in straw in the same manner as in cart or wagon. They should be packed eight or ten courses high in the car, carried along at this height as many lengths as desired, then



A TERRA COTTA RESIDENCE—MAIN ENTRANCE.

drop off one course at each length, stopping them down one course at a time, until the last course next to car door is only one brick high. This forms a brace that answers in place of wood braces, preventing the bricks from careening toward the middle of the car, while it is being switched and coupled.

This is one plan of handling and is certainly the best one. The other plan is to load bricks direct from kiln to car without carrying them to the stock shed. In this plan, men who are competent, sort the bricks, placing first quality on their flat sides, and second quality on edge, so that the boys who carry them to the car will not mistake them and mix them. The boys carry five bricks at a load between their hands, with faces up. An inspector stands at the car door, each boy presents his load of brick for inspection as he passes in. The inspector, with a piece of chalk, marks any brick that are imperfect or too light, or too dark. This brick the boy carries back and lays aside. In the car are two or more packers, who also inspect the bricks as they pack them, as all are packed with face side up. If an imperfect brick passes the inspector they throw it out.

This plan is in use where pressed bricks are burned and shipped by car loads—in other words where large quantities are handled. It is evident that the results of this plan are not so satisfactory as the former, especially with regard to uniform shades of color. However, where the first plan is not practicable, a careful carrying out of the latter plan gives very fair results.

It is true that the market has much to do with the plan that ought to be adopted. For instance, in Philadelphia or Baltimore, where uniform color is made a *sine qua non*, the former method is the only one that would give anything like satisfactory results, but in other markets where uniform color is not the first requisite, the latter plan carefully executed may answer all purposes.

There are some architects who do not like unvarying color in brick walls. They think some variation in shades of color gives life and variety to the appearance of the structure. These gentlemen should receive every encouragement from the brickmaker, for we can all furnish variety in color with better grace, as well as profit, better than we can furnish "unsightly uniformity" in running up the manufacture and shipping of repressed brick.

The utmost care, as well as skill and judgment, is required all along the line, from the proper selection and preparation of the clay through every stage of its manufacture, moulding, repressing, drying, burning, handling, and packing for shipment. When this has all been accomplished, still the bricks may make an unsightly structure, unless the same care and skill is exercised by the builder. We may at some future time discuss the "builder."

Written for the Clay-Worker.

HINTS FOR AMATEUR CLAYWORKERS. No. 5.

I HAVE been promising my young friends a good deal, and I will make an effort to be as good as my word. Presumably they are interested in the dry process now so much used, so if they are working in the old soft mud yet, I might open a vein of experimenting to them in a cheap way. They say it is only lately that dry press brick have come into vogue. That dry press brick were made and made well long ago, I have ample proof without going back to find out who first produced encaustic tile.

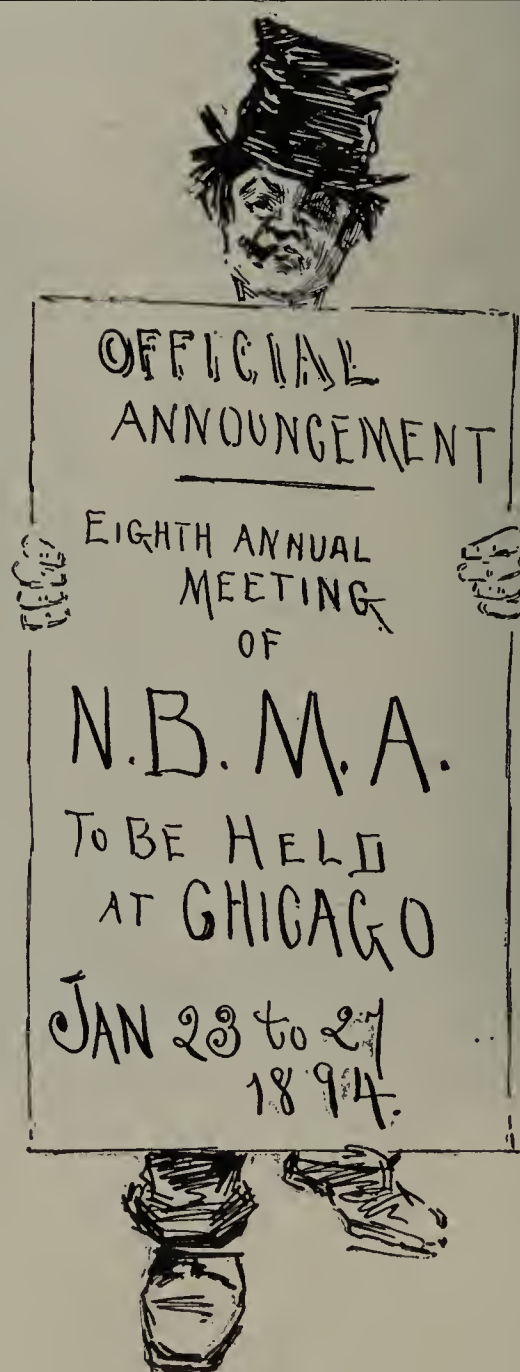
There is in our town a six-story building erected away back in the fifties of dry press brick. It was built and used as a hotel for years, but it was completely burned out leaving nothing but the walls standing, and there they stood for years, or rather hung on and though they swayed with every breeze, they never fell. After a lapse of years an enterprising company undertook to restore it to its former grandeur, put in columns and girders and when they got up to the overhanging walls pulled them plumb into their place put on the roof, furnished and opened their hotel without a new brick ever marring the exterior. They are doing business in this hotel to-day, and it ranks as a first-class house. I have met many old brickmakers who vowed they made "them brick," but I think the most of them have gone to a well deserved rest where we hope all brickmakers go. The machine on which these brick were made was a ponderous big one and cost a fortune, and a fortune had been expended to keep it in repair. Only one brick out of ten was fit to go to the kiln, and only one out of the ten burned was fit to go the building and they went carefully wrapped in a flannel rag and packed in a packing case. 'Tis said the

owner of the yard lost his fortune and his mind.

Other buildings in this section subject to no hotter fires, but built of soft mud brick, left no walls standing, so this was a recommendation for dry press process. They went direct to the kilns (thus the drying and handling was saved). A crop of clay in and worked in defiance of weather—everything sounds reasonable, a better price and a better brick, and the CLAY-WORKER was even then starting to advertise dry press machines, I got anxious to try it. Was it feasible? Was it profitable? Had I the clay that would do it? It would only cost a machine to try it, but the first cost knocked me out, the machine was away up in "G," "out of sight." I determined to make my own machine, I was afraid if I sent my clay to be tested, it might not be the same clay when I got it back, but I tried that, too, and it came back in brick more beautiful, than those I made, and I followed the matter up and found that the difference was only in the burning.

A HOME MADE DRY PRESS.

I made my machine just out of what I had with a little assistance, I converted an old letter press into a brick press by making the mould of a little die, a well fitted follower and plun-



ger, made the delivery of my little brick. Then I tested the clay bank, its top clay, its bottom clay, and its mixed clay. I dried them, I sifted them, coarse and fine, I dampened them, I got fine scales, took exact weights, dry and semi-dry. I got small quantities of all Oxides, I numbered my brick, took an exact record of their compositions, and made sufficient to try them at different heats up on top, bottom and centre; I put them in arches, I tried the up draft kilns, the down-draft kilns, I put them in saggars, I tried my neighbor's clay, and foreign clay; I burned them at home and I sent them away to be tried with coal, gas, wood and oil and I am still waiting for electricity. I went farther than the clay banks; I went under it and got shale, I have tried a good many clays for a dry press and should therefore give my opinion. I believe the brick of the future is the dry press. I don't believe the smooth accurate red brick is the nearest to perfection (if I dare use the word perfection). I feel that the demand for the artistic is growing, the architects and the cultivated tastes of our times are leading beyond and past what was once considered beautiful in your smooth slick dry press.

I have found uniformity in color in even well designed buildings tiresome and uneffective, while shades of color on a rougher surface in buildings less pretentious, were more pleasing, more effective, and more artistic. I have found that adding to clays for color effect any foreign matter, be it ever so small in proportion, runs into too much money, placing the brick beyond being introduced generally. While a mixture of clays will be found to produce equally good effects and is in the reach of most brickmakers, even had they to bring some proportion of their clays from a distance.

The straight true laying surface of the dry press brick will always be desirable. It is not necessary that a brick should be rough to hold a good grip on mortar. For instance, throw a piece of mortar on a plate glass and permit it to set, and see how difficult it is to remove. The size and shape of face brick may and will change, but the efforts of the artistic embellishment will never come from the smooth polished lining of your

mould, but will have the imprint of some crude rough or artistic embellishment from your top, or bottom plunger impression on the surface to be exposed. Your object, my young novice, is to aim for quality, that demands price. Hurred and bad burns makes seconds and culls, and you will receive no more for your bad production with your expensive plant than your neighbor with his old soft mud outfit. True, where many dry press plants have hustled, they have closed the old soft mud yards, have sold the largest proportions of their output below cost, and try to recover themselves with high prices for their firsts,



S. S. KIMBELL, Vice-President and Gen'l Manager Chicago Hydraulic Press Brick Co., Chicago, Ill.

forgetting that all made should be first grade.

Shales I do not look upon as profitable, mining costs more than plowing. It is cheaper to dry clay than it is to mine and grind rock. That is, if you have the correct tools to do it with. I believe that dry press brick are the brick of the future, and that they will be made of any or all clays. I have found few clays that fail to make a good brick, if properly prepared, slowly and well pressed.

Your particular clays may give better results with a mixture of some clays from a distance, that may hold the ingredients, and produce in texture something nearer perfection than your straight bank. My young friends do not rush into dry press before you are sure

you have got all the ingredients, or you may find yourselves like poor Col. Sellers and his eye water, "one ingredient short, or there would be millions in it." That one article short, be it capital, clay shale, slate, fuel, perseverance or a market, I fear you might fail to find the "millions" the Colonel was so near having. In case it should be burning, I will write you a few lines next month on "kilns." M. JAY.

Written for the CLAY-WORKER.

A NEW YEAR'S REVIEW.

Terra Cotta Work in New York City.

BY JAMES TAYLOR.

WHEN the use of Terra Cotta in New York was suggested as A New Year's Article for the pages of the CLAY-WORKER, it seemed to be an easy task, but in going over the ground to gather data for the subject, a serious difficulty soon presented itself—not of scarcity of material, but from plethora. It was not what to describe, but rather what can be omitted. It is truly marvelous, the rapid growth of this industry in New York City.

When we consider the fact, that previous to the year one thousand eight hundred and seventy-seven, there was absolutely no recognition of architectural terra cotta among the architects and builders of New York, it seems wonderful that during a period of only sixteen years, this material should have sprung into such a prominent position as it occupies to-day.

Sixteen years ago the material was unknown to them. Not a single example or specimen could be seen upon the buildings which lined the thoroughfare of our commercial metropolis.

Even the successful relics of the failures made in 1857 by James Renwick and Richard Upjohn, were thickly covered with brown paint, in vain emulation of brown stone; Renwick and Upjohn were often regarded as defeated visionaries, but now they are known as prophets. They, like many far-seeing men, were a little before their time. James Renwick has lived to see his hope for terra cotta much more than fulfilled. The St. Denis Hotel, corner of 11th Street, and the Trinity Building, corner of Thames Street, are both covered examples of the good hope and work of these two architects, who are above all others the pioneer clayworkers of New York City.

It was not until the establishment of the Perth Amboy Terra Cotta Works, by A. Hall & Company in 1877, that architectural terra cotta made its appearance upon the principal streets of New York.

George B. Post was the first of leading architects who dared to try the experiment. His first work was a giant stride. He showed a firm reliance, and produced at once some things which would make some hesitate even now. His design was a grand success, and is now a splendid monument of his professional courage. From that time up to the present, he has always had more or less terra cotta work in hand, and many of the best terra cotta designs have come from his office.

In the use of terra cotta by the American public, we have probably one of the very best exhibitions of the wonderful capacity of the Americans to utilize a good thing when they find it. This faculty certainly was never more thoroughly demonstrated than it is by the vast and unparalleled use of burned clay work.

We doubt if any better illustration of this fact can be found in the world, than that which is presented to those who may journey up Broadway, New York, from Bowling green to City Hall Square.

Every visitor to New York goes to see Broadway, and starting at the Battery begins his journey at Bowling green. Here at the very outset his attention is arrested by one of the largest buildings of America—"The Produce Exchange;" this, the largest brick and terra cotta building of New York, is also the first that was erected of red terra cotta. George B. Post designed it, and the Perth Amboy Terra Cotta Works, then under the superintendency of J. J. Joiner, (now of the Indianapolis Terra Cotta Works,) made the terra cotta. A large addition is being made to this immense building at the present time.

Having examined this initial building, the visitor, whom we assume is interested in clayworking, will leisurely proceed up this grand central thoroughfare of New York. He will not only see very many large and interesting specimens of terra cotta work, but he will find representative designs by the most prominent architects, as well as see the material furnished by all the Eastern manufacturers.

The Columbia Building, No. 15, will be observed; it is a very tall structure, covered with a roof of Spanish tiles from Akron, Ohio. The design was by Messrs Cable & Young, who also designed the "Aldrich Court Building." No. 45, a very fine business block, executed in red brick and terra cotta, made by the Perth Amboy Company. At No. 46 we find another building of red terra cotta, and a few paces farther on, No. 55, a very elaborate design worked out with moulded Peerless brick, and richly ornamented red terra cotta. This was designed by Messrs. Babb, Cook & Willard, whose grand structures for the New York Life Insurance Company in many



EDWIN HARLAND, Vice-President and Treasurer of The Harland Brick Co., Chicago.

of the principal cities of the United States and Canada, have given them a national reputation.

At the corner of Exchange Place the Consolidated Stock Exchange Building is located; this was designed by Mr. Lindsley, and is a land mark.

Adjoining the Consolidated Exchange is what is now, the most notable building of New York. This is the Manhattan Life Insurance Building, nearly opposite Trinity Church yard. This great mass of steel, brick, terra cotta and stone, is twenty stories high and is about fifty feet higher than the spire of Trinity Church, being over four hundred feet high. This is one of the highest build-

ings in the World, and is seen towering over all the spires when the city is approached by water. The design is by F. H. Kimball & G. K. Thompson, and is very elaborate. The name of the Company has suggested the use of Indian masks and trophies as motifs for decoration, and these have been used with good effect, resulting in a very artistic and attractive elevation. The terra cotta is of a light grey color, while the brick are of a buff body, speckled with red and black spots, having been especially made for this building. The terra cotta and brick were made by the New York Terra Cotta Works.

About seventy feet north we again meet the clayworker, G. B. Post, with the Union Trust Building, a gothic design, built of buff terra cotta and brick. Also the Mortimer Building of same material. Opposite the Mortimer Building we find the "Astor Building." This is a red terra cotta work, of very beautiful Flemish design and carefully carried out in every detail. The plans and designs were by H. J. Hardensberg, and the work done by the Boston Terra Cotta Company.

On the north side of Trinity Church yard stands the Trinity Building. This is the building which has keystones and cornice of terra cotta painted brown, designed by Richard Upjohn and made by Young & Company about 1857. It is a good specimen of the work done by them nearly fifty years ago, to supply what they then felt to be a requisite for the building trade, but which failed for want of popular and practical support. The northeast corner of Liberty Street is occupied by the Williamsburgh Insurance Company's Building; made by the A. Hall Terra Cotta Company of Perth Amboy, and designed by Charles F. Merry.

Next we see the "Corbin Building," a very rich design of Francis II style. It is of a very ornamental character, of the best style in the French Renaissance. The design was by F. H. Kimball, and bears his well known detail, every feature being carefully studied and enriched by references to examples of recognized authority in France, which have established this style, particularly the Chateau Blois. The color of the terra cotta and brick is of a warm reddish buff, produced by a mixture of yellow

and red clays, toned or blended by a small quantity of oxide of manganese. The terra cotta and brick were made at the New York Terra Cotta Works.

On the north-west corner of Dey Street there is the main office building of the Western Union Telegraph Company. This is another of the designs by H. J. Hardenburg, and is of red brick and terra cotta.

So far, we have only reached the Post Office Square and City Hall Park. Here we must linger, for there is much to see. There is first the Clark Building, north-east corner Ann Street and Park Row, buff and white terra cotta, and light and dark buff are the colors. This design is by DeLemor & Cordes, and is worked out in a very agreeable manner. Then there is the Potter Building, north-east corner Beekman Street and Park Row, with its three facades of red brick and brown terra cotta. There are nearly five hundred tons of terra cotta used in this structure. It is eleven stories high and designed in massive Romanesque style, by Norris G. Starkweather.

Opposite the Potter Building are the "Temple Court" and the "Morse Buildings." These were both designed by Silliman & Farnsworth. The red terra cotta for the Morse Building was made at the Chicago Terra Cotta Works, and was one of the earliest works used in New York. It is notable as the first good example of Peerless moulded brickwork done here, and it is to-day the largest example of good moulded brickwork in the city. The gilded dome of the New York World Building comes next, and we find that the dome sets upon a very tall edifice, constructed of brick, terra cotta and granite. The design is very attractive, large spandrils and statues decorating the walls and openings, and altogether, one cannot help noticing it as a good representative building. The color is similar to that of the Corbin Building—a reddish buff. It was designed by George B. Post, and the terra cotta made by the Perth Amboy Company. It was once the tallest building in New York, but it has lost that part of its glory.

The "Postal Telegraph Building," on north-west corner of Murray and Broadway, is another especially worthy of notice, because of its size and height (12 stories). It is, also, of interest to the

clayworker, on account of its color. Both the brick and the terra cotta are of a very light grey color, very pleasing to the eye. On the south-west corner of Chambers Street is the Shoe and Leather Bank Building. It is eleven stories high with Belvedere towers on each corner of the roof. The brick are of the Pompeian color, and the terra cotta of a cream white color.

The reader will notice that we have only just reached the north side of City Hall Park, and is probably getting weary of so much terra cotta and brick, but that is what we started out to do. We wanted to show that claywork had taken a good grip upon the building trade of



DR. N. B. RICE, Gen'l Mgr. Wahl Bros. Brick Co., Chicago.

this great city. That although New York had been slow to catch on to the material, she had lost no time in developing the industry when she once undertook to recognize its value as a building material.

There is no such array of important structures in so short a space anywhere, that are designed and produced in terra cotta, as can be shown here on Broadway. Even on this same thoroughfare there is no other building material that is so often used and seen as terra cotta.

Terra cotta is not used because it is cheap. It is not used as a substitute for stone or any other material. It is used

because it has a peculiar fitness for certain purposes, and supplies a place which cannot be so well filled by any other material.

Terra cotta and moulded brick have done more during the past twenty-five years to develop our designers, to improve our mechanics and beautify our cities, than any other one material used by the building trades.

To all clayworkers, we give a New Year's greeting. Be of good cheer, go ahead, claywork is here to stay; it has a great deal to do yet. Terra cotta, front brick, hollow brick, porous blocks, all are now public necessities. The craft is only in its infancy. Every want supplied only leads to new demands. A few days ago a fireproof block maker told me that they would soon have to learn terra cotta model making, because architects were calling for more complicated forms for protecting steel beams and columns. Let the architects make demands; clayworkers will surely respond, and just as surely fill the bill. These new fields show the necessity of our Annual Convention; that is where we can exchange our thoughts and improve our methods by intercourse and communication.

The time comes swiftly, and I trust that we shall have a glorious gathering in the great city of Chicago, which is the Mecca of terra cotta works, and the home of porous and terra cotta lumber. It is also a good place for the understanding, for what can one stand upon more firmly than a good PAVING BRICK?

A WISE PROVIDENCE.

"Say, Uncle Moses, how did de Lawd make de berry fust man?"

"How did de Lawd make de fust man? W'y, he done made him out of de earf, ob de mud; dat's how he made him."

"Den w'y doan' he make 'em out o' mud no mo'?"

"Cause de Lawd doan' nebber do noffin' extrabagant, my chile. Land ain't as cheap as it was fo' de war; fust thing you know some white pussen'd buy up all de mud and put a stop to de poperlation, and den wha'd we be? De Lawd am de best jedge ob how to go about his own business, an' dey ain't no uster sayin' no mo'."—Puck.

Written for the CLAY-WORKER.

STREET PAVING BRICK.

6th Paper.

BY ALFRED CROSSLEY.

THE kind of machine to be selected depends often upon circumstances purely local. The nature of the clay, capacity desired, space available, and financial conditions, are all factors in such a question. The best type of machine is the auger, of which there are several good makes. Some clays work best side cut and some end cut, and for paving bricks it is immaterial which, so far as appearance is concerned. The point is to get a machine that will put as much clay as possible into the brick and work it very stiff. The question of re-pressing often comes up. For soft mud bricks it should be regarded as essential. For stiff plastic bricks it makes really little difference, but as it enhances the sale value, it pays to repress. There is now on the market a stiff plastic machine somewhat different from the ordinary. This machine moulds the bricks very stiff indeed, scarcely any water being added to the natural moisture of the clay, and also re-presses the brick automatically, so that the clay is not touched from the time it goes into the hopper of the machine till it comes out in the form of pressed bricks ready for being loaded onto trucks or barrows. On this account it is claimed that pressed bricks can be made cheaper by this process than unpressed by the usual auger machine. It is also claimed that paving bricks can be made hard enough to set direct into the kiln. On this point the maker has very convincingly argued that it is not the quantity of water that is put to the clay that makes it plastic, but the manner of applying, and that, a small quantity, thoroughly kneaded and incorporated with the clay is all that is necessary.

DRYING.

The drying of paving bricks is so little different from ordinary bricks that little need be said. The literature on the drying question has been considerable and to that the reader is commended. Paving bricks being very solid and of very fine grain, take more time to dry than common bricks especially in some clays. Nearly all builders of dryers

claim to dry bricks safely in twenty-four hours, but it is better to make the dryer wait on the clay than hurry up the clay to suit the dryer. If your bricks don't dry sound and without waste in twenty-four hours give them forty-eight hours, and if that is not enough give them sixty or even seventy-two hours.

BURNING.

The burning of paving bricks probably calls for more skill and care than any other part of the business. Up to a certain point there is no difference between burning these and other kinds of bricks. But the heat must be carried beyond to a point where the fluxing elements of the clay will unite with the



GEO. LILL, Brick Manufacturer, Chicago, Ill.

free silica and the whole brick is fused into an impervious block. The object is to get the whole kiln into this condition from top to bottom, and yet not to overburn or melt any of them out of shape. The best results appear to be obtained by bringing up the heat just high enough for the clay to fuse, and then, without raising the heat any higher, hold the kiln as near as possible at the same heat, until all parts of the kiln come up to it. Here is where the down draft kiln has the advantage. Men may talk all they want to about the natural way for heat being to ascend, and that the down draft is an unnatural draft, etc., but the fact remains that in

the down draft kiln the bricks that are compelled to stand the high heat for the longest time are on the top and have the least weight on them, while in the up-draft kiln the reverse is true, and the bricks that are first vitrified, and hence more or less softened, have to carry the weight of the kiln, set thirty-five or forty high, while waiting for the vitrifying heat to get through to the top. Beside this, a properly constructed down-draft kiln can be burnt more uniformly than any up-draft kiln that was ever built. But it is hardly necessary to discuss the question, the experience of paving brickmakers is all one way. After the bricks are burned to the point

of vitrification, comes the annealing or cooling-off process, which is not surpassed in importance by any part of the business. On this depends the toughness of the finished brick, so important a quality in their durability. No matter how good the clay is, bricks that are cooled off too quickly will be brittle. When the kiln is finished burning, the fires should be allowed to burn down till all the gases are consumed, but not so low as to begin to cool off the kiln. At this point the dampers should be closed tight, furnace and ash pit doors closed, air passages stopped up, and every joint where air can enter carefully plastered over with clay. In this condition the kiln should be left until the heat has gradually gone down till not a sign of red heat can be seen. Then it may be opened by degrees until finally cold enough to take out. This necessitates plenty of kiln room, but that is one of the necessities of the paving brick business. Some people cool off

their kilns quicker, and some clays will stand it, but the above is a safe rule to follow.

A word of advice in regard to kilns may not be inappropriate. There are several designs of down-draft kilns in use, all more or less excellent. To the man or company about to erect kilns we say, go around to where different kilns are in use, and if you find one kiln giving better results, at a larger number of places, that is the kiln to adopt, even if you have to pay for it.

In bringing this article to a close, the writer desires not to be misunderstood in regard to its purpose. It was not intended to be exhaustive of the subject,

nor yet to advance any new or pet theories. It was not written for miscellaneous readers, or much in regard to the advantages of brick pavements could have been advanced, that has been purposely omitted as being unnecessary. Neither was it written for students in the art of brickmaking, and hence the rudiments and details of the different stages, already familiar to those in the business, have been passed over.

But to the practical brickmaker, open to read anything written in the spirit of fairness and common sense, that might throw light on some obscure point, or help to a better understanding of this very important branch of the brick business, these few lines have been addressed, with the hope of clearing up some of the inconsistencies, apparent and real, that some of our brethren have indulged in, and with the endeavor to reduce the leading principles involved in the paving brick business to something like a common basis of truth that we might all agree upon.

That he should have succeeded in all this, is more than the writer expects, but the effort has been made, trusting to the generosity of his brother brickmakers to deal charitably with whatever errors and faults may have appeared.

Written for the CLAY-WORKER.

CLAYWORKING IN OHIO.

First Paper.

BY EDWARD ORTON, JR., E. M.

THE ORIGIN AND COMPOSITION OF CLAYS.

OHIO people are uniformly loyal to their State and proud of her standing; both in politics and in commerce her prominence stimulates their patriotism and gratifies their pride. Perhaps in no other field, as in clayworking, does the position of the State justify these feelings in so large a degree, and in no other large industry has the expansion been so rapid and vigorous.

The causes of this growth can be traced to a number of facts, of which the two most important are:

1st. The recent adaptation of hard burned brick to street pavements and city thoroughfares, and,

2nd. To the comparatively recent application of our enormous shale de-

posits to the manufacture of the grosser forms of clay ware.

It is the intention to confine these articles to a short description of the more important branches of clayworking as practiced in this State, giving such information concerning the underlying principles of manufacture and to the chemical technology of the processes as has been found current among the clayworkers of the State, or has been available from other sources.

But in order to take up properly the discussion of these questions, it is fitting that a brief review of the main facts concerning the origin, composition and properties of clays should be given.



CHAS. BONNER, OF THE MAY, PURINGTON & BONNER BRICK CO., CHICAGO, ILL.

The first question which must be asked is the most rudimentary—

WHAT IS CLAY?

A chemist or mineralogist would say, it is a hydrous silicate of alumina, in which one portion of alumina unites with two portions of silica and two of water. This definition describes clay as it is known to the scientist, but to the rest of the world, it means nothing. What then is clay?

The mineral as it is known and familiar to us all is not a pure chemical compound, nor one to which can be assigned any formula which illustrates its composition. It is a compound mineral, or a mixture of minerals, having no defi-

nite proportions, no definite composition chemically, but always containing some of the real pure elemental clay and always retaining something of its peculiarities.

This pure clay, or kaolinite, as it is called in mineralogy, is not a natural mineral to any large extent. The affinities of silica and alumina and water for each other are not very strong, and combinations of this kind are not easy to make artificially. But silica and alumina are the main elements, which, with others, go to make up the endless variety of rocks which form this earth's crust, and it is found that when other silicates are decomposed by nature's influences, the silica and alumina, newly released from their former combinations, unite then more easily than at any subsequent period to form the base and foundation of clays.

The silicates, which form kaolin by their decomposition, are probably numerous, but the commonest and most important form is feldspar.

Pure feldspar is not itself a common mineral, though many instances of its occurrence, covered and surrounded by the kaolin, formed by its gradual decay, are on record; but mixed with other minerals like quartz and mica, it forms the enormous granite backbone of the continents and one of the largest mineral constituents of the earth's crust.

So when a feldspathic rock is attacked by the agencies of nature, its decay frees not only kaolin, but the other minerals associated with it in the parent work, which are themselves impervious to the attacks of water, air and

variations of temperature. The result is not therefore pure kaolin, but a mixture of kaolin and other minerals, and as the conditions under which this action goes on are very varied, so also the composition of the clay formed varies equally.

Another element of uncertainty is found when we consider that most of the clays that we know now, have been formed many geological ages ago, and have been deposited in water, hardened into rock, exposed again to the rains and frosts of centuries, eroded again, and again deposited in water. No one knows or can guess how many times our clays have been thus treated, and each

time is, of course, accompanied by a more perfect blending and mixing of the clays and other accompanying minerals.

In the light of these facts, we are not likely to feel surprised that our clays are so variable in nature and properties, but more likely to wonder that they retain so much of a family likeness as they do.

There is indeed some difficulty in drawing the line and saying what is clay and what is not, for nearly every sedimentary rock contains it in greater or less amount. Limestones leave a residue of clay when they weather away, and sandstones generally contain enough clay to become plastic if ground vigorously with water in a mill.

It is only by a study of their origin that we can understand the wide variations which the composition of clays show. Pure kaolin has a percentage composition as follows: Silica 46.3, alumina 39.8, water 13.9.

Common clays contain less alumina and water and more sand and other impurities. The alumina is the best index of purity; as it become less in amount, the qualities which mark clay as a mineral become less pronounced. Theoretically, no dividing line can be made between clays and other sedimentary minerals. Practically, the mixture of kaolinite and other minerals ceases to be a clay, when it cannot be made plastic by grinding with water, and when it does not lose its plasticity after being burnt to a red heat.

The minerals which are associated with the real clay or kaolinite base are very various and, as may be expected, they impart to the mixture their own peculiarities in proportion to their quantity.

In this fact is a strong support to the theory of their origin, for *chemical* combinations develop new and fixed qualities different from those of their ingredients, while *mixtures* simply average the peculiarities of their constituents.

THE COMPOSITION OF CLAY.

Quartz, silica, or sand, as it is variously termed, is the chief impurity of clay. It is always present to some extent, even the pure, white kaolin, containing some fraction of a per cent. of it, and on the other extreme it is hard to say where the sandy clay ends and the muddy sandstone or free stone begins. Silica may

be separated from some clays by washing and straining; in others the mixture is too intimate to allow any mechanical separation.

Feldspars and mica's are also found in nearly all clays. The mica may frequently be discerned by the eye. Feldspar can only be identified under the microscope, as it would appear simply as grains of sand to the unassisted eye.

Both feldspar and mica contain soda and potash, and sometimes lime. Hence we can most easily understand the presence of the alkalies in clays, when we believe them to exist, combined in these minerals. It is not possible to imagine free alkalies existing in a mineral which

clays and is probably next to silica the most important. All common forms of iron are represented—oxides, carbonates, silicates, sulphides and even titanates

The oxides are most common and most active in their effect, as they tend to stain or color the clay. The amount of the coloration is not always proportional to the iron oxide present however, as pure, white china clays have been found to contain over one per cent. of iron, while fire clays of a buff color may not contain over one-half of that quantity. The effect of the iron compounds is so variable that even if the per cent. of iron in a clay be known it is not possible to form any accurate

idea of what its effect will be after the clay has been burnt. This variability is caused by the different ways in which this iron may be combined with the clay. It may be disseminated in grains, soaked into the clay from a solution, or perhaps be chemically combined with the clay base itself as a double silicate of iron and alumina; in each case its effect would be different from the others

Lime and magnesia are found in small, but persistent amounts in nearly all clay; in most cases probably they exist as silicate, for it is not possible to dissolve them with water, as would be easily done if they were present as any other lime compounds. Many instances are known, however, of clays containing notable quantities of lime in the form of carbonates, sometimes intimately mixed with the clay and sometimes present as gravel or little grains. In this last phase the lime does enormous injury to the working qualities of a clay. Lime is also very frequently present in

clays, especially in stratified clays and shales of the earlier geological formations as sulphate, and in this condition causes great annoyance and injury to the clayworker, as it is the main cause of the whitewash or stains that disfigure the surface of so much burnt clay ware. If the clays are to be used for very expensive or important purposes, the sulphates can be largely removed by washing and filtering the clay.

Besides these five chemical elements, the alkalies, potash and soda, the alkaline earths, lime and magnesia and the great coloring agent, iron, a large variety of other materials like barium and strontium, lithium, cobalt and copper, zinc



THOS. MOULDING, PRES. THE MOULDING BRICK CO.,
Chicago, Ill.

owes its present condition to slow deposition in water, and the presence of these silicates, insoluble except under certain conditions, seems necessary to explain their continual presence.

In this connection, the question arises how grains of feldspar can exist in clays without having been attacked and decomposed by the same agency which formed the clay in the beginning. It is probable that after the feldspar becomes imbedded or insulated by the kaolin, that the conditions of decay are not facilitated.

VARIOUS FORMS AND EFFECTS OF IRON.

Iron, in its various forms, constitutes the most strongly marked impurity of

manganese, and also phosphoric, sulphuric, titanitic and hydrochloric acids, are occasional constituents of clay. But they are both rare in occurrence and unimportant in effect, and are interesting only as they throw light on the geological origin of the clay deposits.

Another constituent must yet be mentioned among the common ingredients of clay, viz., organic matter or remains of vegetable or animal life. In many of Ohio's clays and shales large quantities of decomposing vegetation was in suspension in the same water in which the clays were being deposited, and as a result, the latter are colored blue or black by the organic matter caught and carried down.

When a clay is colored from this cause it is easily detected, as a comparatively low heat is sufficient to burn out all vegetable matter, leaving the clay to be permanently colored by its mineral ingredients only. Organic matter is seldom a source of detriment to clays; it is usually present in easily volatile forms. Sometimes it is found in grains of lignite, which leave the clay porous when they burn out. In some instances, notably in the Huron Shale of Ohio, there is so much coal matter present that it is a great source of heat in burning, and when rightly managed, is a benefit to the clayworker.

We have now seen that mineralogically, clay is a mixture of real clay or kaolinite, with sand, feldspar, mica and other silicates and colored by the compounds of iron and organic matter.

WHY CHEMICAL ANALYSES MAY MISLEAD.

It is not possible to give a similar definition of it from a chemical standpoint, for by its analysis the total quantity of each element is reported, regardless of how it was combined or in how many minerals it was present. This point alone has caused chemical analysis to be a stumbling block as often as a help to clayworkers, for as has been pointed out, the ultimate quality of the clay will depend more on the way in which its elements are combined than on the gross amount of each element present.

It is possible to report a clay analysis in such a way as to remedy this fault to some extent. For, it is known and generally admitted, that the alumina of the clay is the measure of the amount of real clay or kaolinite base present, and that the silica present over and above the amount required to combine with this alumina, is present as sand or as other silicates than kaolin. Also the

water which is combined with the clay is distinct from that existing as free moisture. Grouping the quantities of alumina, combined silica and combined water together, we have the quantity of the clay base.

Then the rest of the silica is set aside as being a sterile impurity, or one which has no violent effect on the quality of the clay for good or ill. Lastly, the injurious impurities, or those which tend to flux the clay during burning, are grouped together. If any carbonaceous matter be reported it must be grouped in a fourth class with the moisture, as neither of these bodies are a permanent part of the clays composition.

Take as an illustration the following imaginary analysis of a stone ware clay:

Silica.....	65.00
Alumina.....	23.00
Iron.....	1.50
Lime.....	.50
Magnesia.....	.25
Potash.....	1.75
Soda.....	.25
Combined water.....	5.75
Moisture.....	2.00

100.00

By calculation, assuming that the alumina is present as kaolinite base in the clay under question, the combined silica is obtained as follows:

Alumina in Kaolinite	Silica in Kaolinite	Alumina in Sample	Silica in Sample
39.8	46.3	23.0	X
or 46.3 x 23.0		= 26.75	
		39.8	

Next, assembling

Combined silica.....	26.75
Alumina.....	23.00
Water.....	5.75

We have the clay base 55.50

The rest of the silica, or 65.00 less 26.75 = 38.25, is supposed to consist of sand or other silicates than clay.

The injurious impurities are next assembled as follows:

Iron.....	1.50
Lime.....	.50
Magnesia.....	.25
Potash.....	1.75
Soda.....	.25

Amounting to..... 4.25.

The classified constituents can now be assembled as follows:

Chemical Elements.	Mineral Constituents.
1 Silica (combined) 26.75	55.50 Clay Base
2 Alumina 23.00	
3 Water (combined) 5.75	
4 Silica (free) 38.25	38.25 Sand
5 Iron 1.50	4.25 Fluxes
6 Lime .50	
7 Magnesia .25	
8 Potash 1.75	2.00 Water
9 Soda .25	
10 Moisture 2.00	
Total 100.00	100.00

By such a process, which requires no knowledge of chemistry other than the simple computation shown above, any one can transform a common clay analysis, which means next to nothing, into a comparatively intelligent statement, which partly, at least, represents the actual constitution of the clay.

Clayworkers should, in the future, unite to insist on having all analyses made for them, reported by this rational method. But in order to utilize the thousands of analyses made in the past, it will be necessary to remodel them by the plan suggested before they will be of much service.

IS YOUR NAME WRITTEN THERE.



Secretary Randall announces that all preliminary arrangements for the coming annual Convention have been completed and that there is every prospect of a very large and successful meeting.

Every American brickmaker is invited. The local entertainment committee advises us, through its chairman D. V. Purington, that they are fixed for any and every emergency. They will present every visiting member with a medal, the freedom of the city, etc., etc.

THE FAD.

Cushions gay on every chair,
But never a place to sit;
Cushions, cushions everywhere,
Till I nearly take a fit;
Cushions strewn upon the floor
On every side I see—
My wife has taken a cushion craze
And there is no room for me!
—New York Herald.

Written for the CLAY-WORKER.

BRICK MANUFACTURING IN NEW MEXICO.



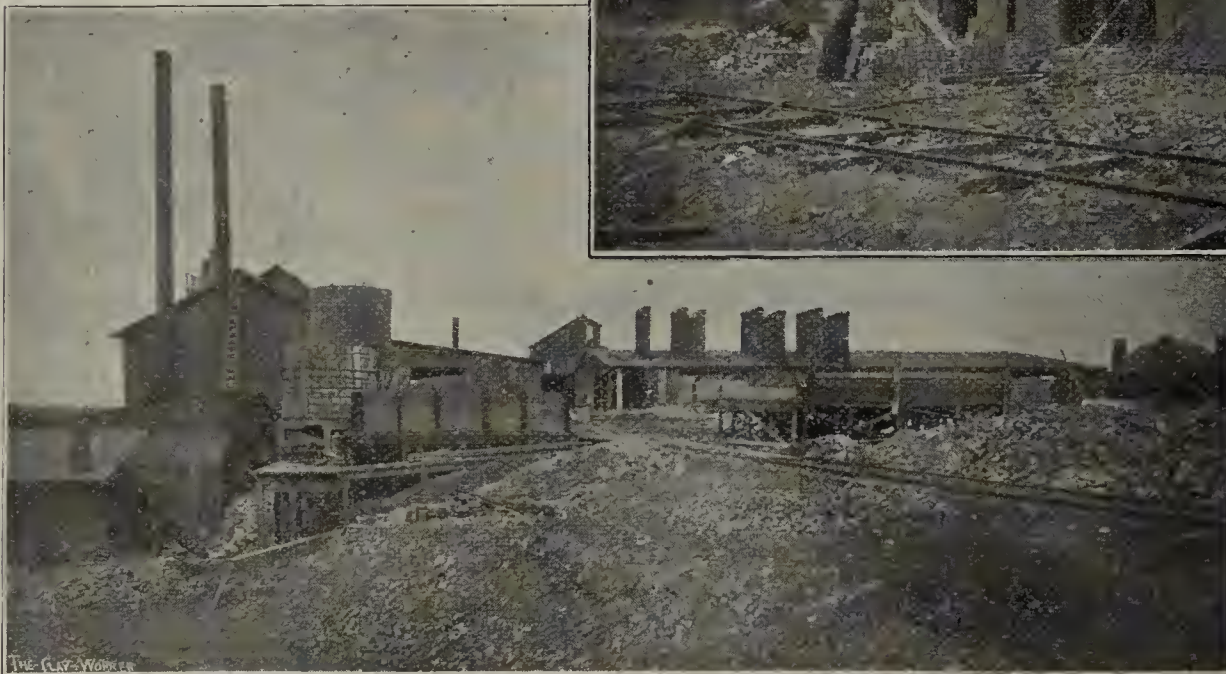
HERE is a kind of spell or enchantment almost, about the very name of Mexico. It is a kind of synonym of much that was romantic, adventurous and cruel, in this country's history. When we begin to think about Mexico a heterogeneous crowd of thoughts come trooping through the brain in the wildest confusion, and cliff-dwellers, Pueblo Indians, Spaniards, Aztecs and others become inextricably mixed.

I set out to write something about *New Mexico*, not Mexico, but the situation is very like Turkey in Europe, and Turkey in Asia, the people are all Turks anyhow. This is Mexico in the United States, and the people are sure enough Mexicans. I suppose one could travel through every country in Europe, and

forsaken country. But many a man here is alive and well to-day, who would have been under the sod years ago if he had remained in his native State. The climate is delightful, the air pure and exhilarating, and the atmosphere so rare that objects three or four miles distant appear almost within a stone's throw. It is called the land of sunshine, fruits and flowers, and it well deserves the name. The peaches and grapes are superior to either Delaware or California, and the gardens are aglow with choice flowers the year round. There are very few days from January to December that

kilns are, in a large degree, independent of the weather, but even they get along better in nice weather than in the opposite kind. For the dry press process this climate possesses a great advantage, in that the clays, as they come from the mine, are in capital condition for pressing.

As New Mexico has no large cities, and as most of the buildings are of adobe, the native demand for brick is somewhat limited, while the supply of clay of various kinds is practically unlimited. The only first-class plant in New Mexico is that of the Socorro Fire



WORKS OF THE SOCORRO (New Mexico) FIRE CLAY CO.

not find scenes or people any more foreign to American eyes than can be seen any day in New Mexico, if it is in the United States, and soon to be admitted as a State. The very signs on the stores are many of them exclusively in Spanish, while all public and legal notices are posted up in both Spanish and English, and those printed in the newspapers are also in the two languages.

On first acquaintance New Mexico is not very inviting, and those accustomed to sylvan groves and woodland slopes, when they ride for miles through this bare and rocky land, with scarce a sign of vegetation, think this must be a God-

the sun does not shine, and in a stay of nearly 8 weeks in October and November, the sun has shone every day, and in that time it has rained but twice, and that not exceeding an hour combined. All of this seems to have nothing to do with brickmaking, and yet some of it is very closely associated. This is an almost

IDEAL CLIMATE FOR BRICKMAKING.

For outside it would be almost perfection itself, for it very rarely rains, and the winters are so short that a yard could be run almost continually for ten months in the year. Modern plants equipped with dryers and permanent

Clay Co., located at Socorro, a town of about 4,000 or 5,000 inhabitants, about 180 miles north of El Paso, Texas, on the Atchison, Topeka and Santa Fe Railroad. The company is composed of wealthy men, who have backed up their faith with their means, and in the face of many discouragements, have built an extensive and well-equipped plant. The works are well located on a commanding elevation, overlooking the town of Socorro on the north, and the valley of the Rio Grande on the East. The machinery consists of five Corliss Engines and two boilers, nine foot dry pan, clay conveyor, elevator, Wallace Pug Mill, Acme Brick Machine and a Wellsville Cutting Table and a Columbian Repress. They have eight tunnel dryers, heated by furnaces, one square and one round down draft kiln, which are to be augmented in the near future, their kiln capacity having been supplemented in the past with clamp kilns when required. The original object of the company, as its name implies, was the manufacture of fire brick and allied products, but through an ill-advised use of inferior clays, have never made a success in this line.

Recent search and experiment however, have demonstrated the existence of fire clays capable of producing a good quality of fire brick, and they are now operating the works on these, making at present by the hand method, and though times are extremely dull, the business connections of the company are such as to ensure them a fair demand. As this is the only fire brick works within hundreds of miles, they are well located for supplying the various smelters situated here and at other points right on down through Old Mexico, and also for the coke oven plants already built and to be built.

VALUABLE CLAY DEPOSITS.

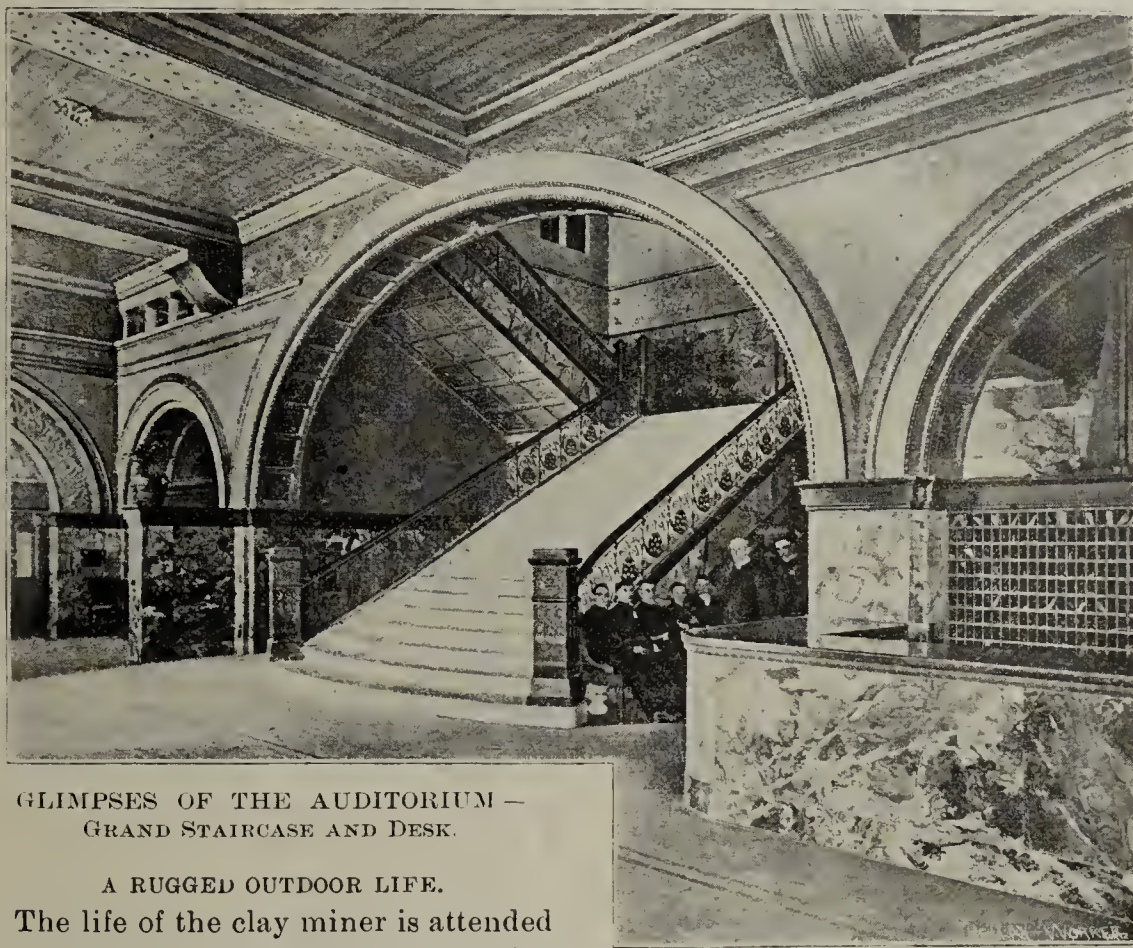
The previous operations of the company have shown the great possibilities here in the line of fine pressed front brick of different colors and a recent extended series of careful tests have fully substantiated and largely added to those previously made. It may be safely said that almost any color or shade can be obtained from an almost clear white down to a deep brown. As the demand for common building brick is so limited, and at unprofitable prices, the company intends in the future to make a special feature of the finer grades of brick, in popular colors, so that they can seek a market in larger and more distant cities.

The variety of clays here is remarkable, and almost incredible. During the recent series of tests, over sixty different and distinct varieties of clay were operated on, all from this immediate locality, and if time and opportunity had permitted, it is highly probable that this number could have been doubled. Taking this fact, and the various combinations that can be made of these clays, it will be readily seen how great are the possibilities within control. Of course, many of these clays are from various reasons undesirable, yet the majority of them are of excellent quality. Some of them are highly suited to the manufacture of sewer pipe and vitrified paving brick, and others to terra cotta, both red and buff. The works are at one serious disadvantage in the fact that all the clay mines are at a considerable distance, entailing considerable expense for teaming. This is one great reason why common brickmaking is unprofitable, and hence attention being turned to a higher-priced product. It should be mentioned that the roads here are good the year round, and when

new roads are to be made, or repairs made on old ones, it is at a small expense, as the materials required are found close by in the greatest profusion. The building brick clays, and some of the fire clays, are obtained on the west side of the river, and are distant from four to six or seven miles. The best fire clays, so far, are found on the opposite side of the river, and are about seven miles from the works. From there the clay is hauled about five miles to the river, over mountains and down canons, then is transported across the river by flat boats, and again hauled the remaining two miles to the works.

business people here are active, energetic and wide awake.

The Mexican people, as a rule are quiet, well-behaved and industrious. They rarely make any disturbance, except when new "Vino" time comes around. Then they have a good time generally, and yell like Indians. Many of them are very intelligent, and can, all of them, with scarcely an exception, read and write well,—to their everlasting credit be it said. The Mexican on the whole makes a pretty good workman, and certainly preferable to the Negro. But when Mr. Mexican wants to take a day or two off there is no holding him.



GLIMPSES OF THE AUDITORIUM —
GRAND STAIRCASE AND DESK.

A RUGGED OUTDOOR LIFE.

The life of the clay miner is attended with many discomforts. Being five miles away from town and across the river, the miners and teams have to live in camps, and cook for themselves. Some idea of the climate can be formed when it is stated that up to the middle of November, the miners and teamsters slept with the ground for a bed and the sky for a roof. Some of our readers would think this was hard lines.

The clay properties of the company are numerous and valuable. On the east side of the Rio Grande they have at least seven mining claims, all but one being fire clay. On the west side they have several mines of red, buff, cream-colored, and white clays.

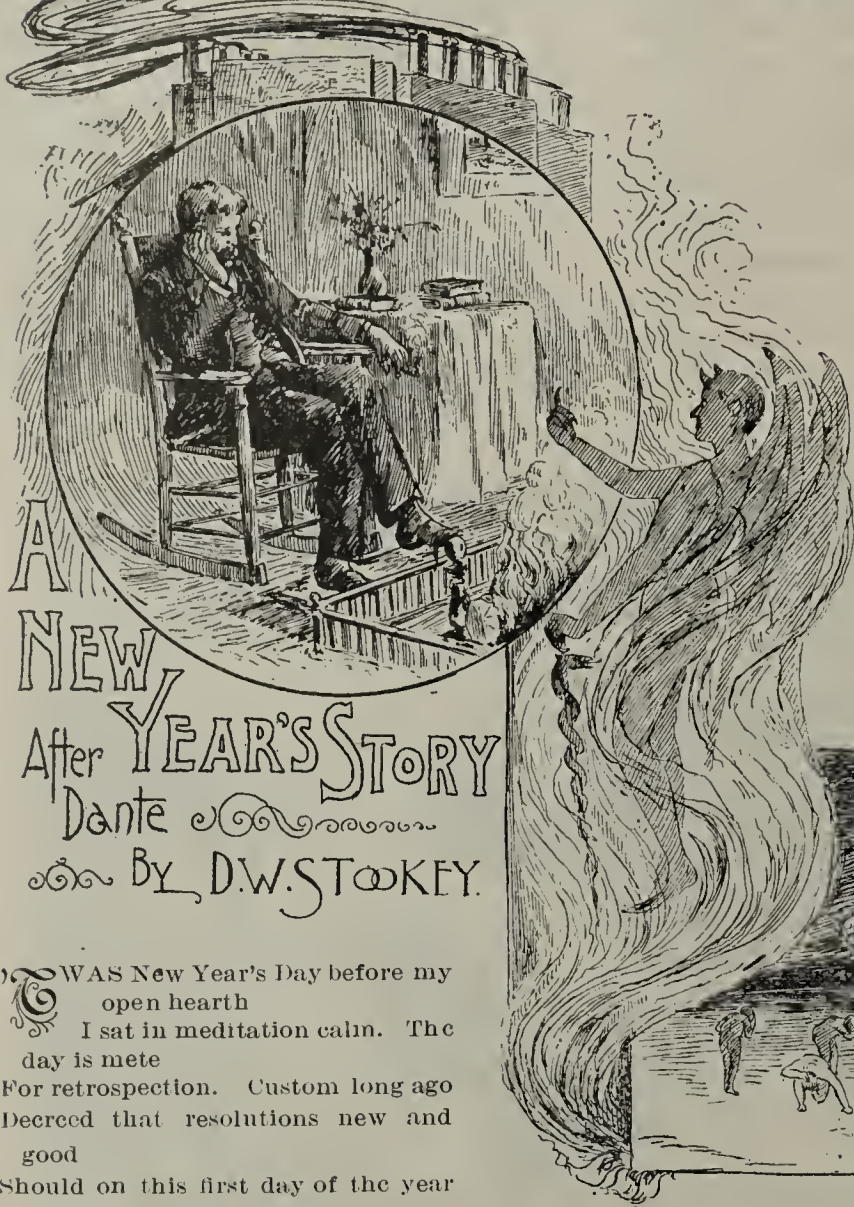
There is a prevalent idea that down in New Mexico the people are slow, and easy going, without any energy. While this may be true to some extent, it is very far from the fact as a whole. The

He is always ready with an excuse, either his father is sick, or he has to go and see his sister, or do something for his grandfather. The accompanying views of the works do not show any of the hands, but if they did there would be little if any difference observable between them and the average hands on a brick works. The Americans employed at the Socorro Works are a fine set of fellows, fully up to, if not above, the average. They are capable, active, intelligent and good natured.

All things taken into consideration the Socorro Fire Clay Company appears to have a good thing, and there is every reason to believe they will make a commercial as well as a technical success, which they certainly deserve, and should be the wish of every good clayworker

ALFRED CROSSLEY.

The Brick Burner's Vision



A
NEW
After YEAR'S STORY
Dante
BY D.W. STOEKEY.

‘T WAS New Year's Day before my
open hearth
I sat in meditation calm. The
day is mete
For retrospection. Custom long ago
Decreed that resolutions new and
good
Should on this first day of the year
be made.
My listless gaze within the fire discerned
Strange shapes. Within my mind weird fan-
cies play'd.
The lumps of coal and flames with ash through-
out
Suggested visions strangely, like to those
By Dante's graphic pen so vividly
Portrayed where "Midst the graves were scat-
tered flames
Wherewith intensely all throughout they
burned,
That iron for no craft there hotter needs."
My mind was dazed, across my eyes to wipe
The gathering haze my hand I drew, when lo!
A form arose within the flame, as shade
It seemed, a spirit from the regions dark.
With spectre hand he beckoned me to come,
"Onward he mov'd, I close his steps pursued."
Straight through the arch that seemed a kiln
he led.
Ere I passed through, inscribed above that arch
"Such characters in color dim I mark'd
Through me you pass into the city of woe;
Through me you pass into eternal pain;
Through me among the people lost for aye,
Eternal and eternal I endure,
All hope abandon ye who enter here."

CANTO II.

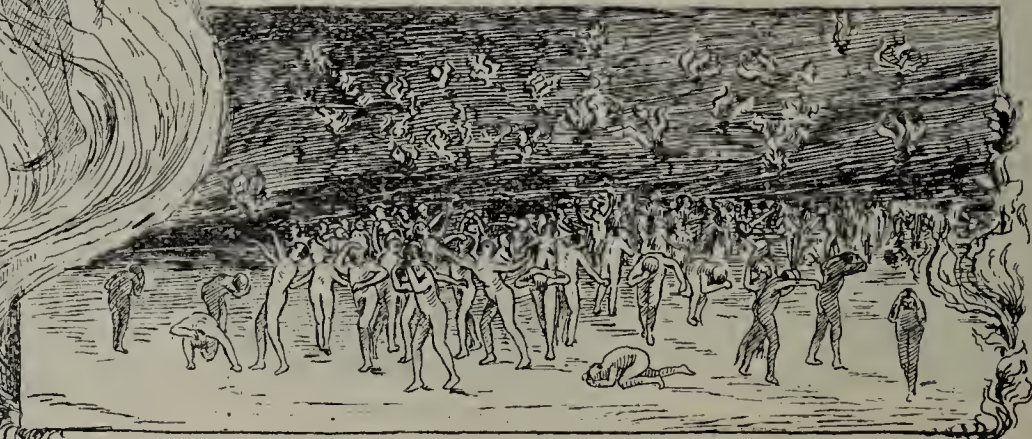
Within such scenes as living man ne'er saw
We met "That e'en I wept at entering."
Upon a barren plain of parching sand
We found a troop of restless, naked shades
That could not rest nor pause and bear the
pain.
"O'er all the sand fell slowly wafting down
Dilated flakes of fire, as flakes of snow
On Alpine summit when the wind is hush'd."

As they passed near I
asked of one, whos
form
I knew to pause and
with me hold converse.
"O son!" said he, "who-
ever of this throng
One instant stops, lies
there a hundred years."
I asked my guide why
these in pain on sands
So scorching hot were
thus compelled to
dwell.
He thus to me replied,
"Of sandy clay
These while in life made
bricks and sold
Them to their fellow
men their homes to
build.
They knew full well the
fate of him

On our right hand new miseries I saw,
New pains, new executioners of wrath,
That swarming peopled the first chasm. Below
Were naked sinners. "Hitherward they came.
Each divers way along the grisly rock.
Horn'd demons I beheld, with lashes huge,
That on their backs unmercifully smote.
Ah! how they made them bound at the first
stripe!
None for the second waited nor the third."
"Behold the law exemplified" my guide
Began, "The harvest as the seed shall be.
Here see the suffering souls of masters hard
Who drove with cruel greed the laboring man."
"Now mayst thou see, my son! how brief, how
vain,
The goods committed into fortune's hands,
For which the human race keep such a coil!
Not all the gold, that is beneath the moon,
Or ever hath been, of these toil-worn souls
Might purchase rest for one."

CANTO IV.

To greater depths and darker scenes of woe



Who built his house upon the sand, and yet
No anxious care they felt for those
Whose joy they thus endangered by their
crimes."

CANTO III.

To other scenes we pass. "Now had we come
Where, crossing the next pier the path
straighten'd
Bestrides its shoulders to another arch.

He who knew well the way he trod, then led
Me on. Ere we had entered well the arch
That led into the course ranged next below
We met a stench that well nigh drove me back.
"And here to shun the horrible excess
Of fetid exhalation, upward cast
From the profound abyss, behind the lid
Of a great monument we stood retir'd.
We make delay, that somewhat first the scene
To the dire breath, accusom'd, afterward
Regard it not." My master said to me.
"A miry tribe all naked" I beheld,
Wallowing in the foul and murky lake.
Some upright stood, some prone, some
near submerged,
Some quite beneath the slime were
buried there.
"One drench'd in mire before me came



and said:
 "Who art thou that comest ere thine hour?"
 My name to thee is naught, my mission here
 To learn the fate of those who wrought in clay.
 Returning to the scenes of life I there
 Shall warning give. What wrong brought these
 Unto this loathsome place? "We all made
 brick

From rich and fertile soil," he thus explain'd,
 "That nature will'd should bring forth food for
 man."

CANTO V.

We on our journey moved to farther depths
 Of Hell. Such moanings, shrieks and walls of
 woe

Were never heard on earth. Below I saw
 Machines of torture far more horrible
 Than those of Inquisition's fame of old.
 E'en as the miller feeds the corn until
 'Tis ground a horde of demons, black and fell,
 Each sinner ground and pugg'd and pressed
 and laid

Within the flame. "He kindled, burned and
 chang'd

To ashes, all poured out upon the earth.
 When there dissolv'd he lay, the dust again
 Up roll'd spontaneous, and the self same form
 Instant resumed." Whose souls are these, in
 awe

I asked. "These agents were for brick mach-
 ines

And led unto the trusting men who bought
 To find that they had been basely deceived."

"Of all malicious act abhorr'd in heaven,
 The end is injury; and all such end
 Elther by force or fraud works other's woe,
 But fraud, because of man peculiar evil,
 To God is more displeasing; and beneath
 The fraudulent are, therefore, doom'd to endure
 Severer pang." These direful visions wrought
 My nerves to such a degree that I awoke,
 May all who read these lines be led to make
 Resolve to work their clay by golden rule.



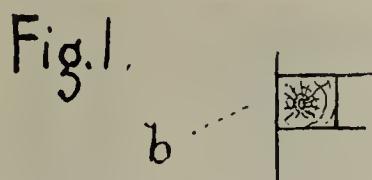
Written for the CLAY-WORKER.

BRICKLAYING.

HERETOFORE, we have spoken of
 bonding in the laying of bricks,
 but only in so far as the bonding
 is accomplished by the manner in which
 the bricks themselves are placed in re-
 lation to each other. In practical work,
 there are other methods for accomplish-
 ing this desirable result, for, as a matter
 of fact, the bonding of a wall is the
 element that makes it very substantial,
 or the reverse.

Another bond that is often used, where
 the conformation of the work permits,
 is the use of wood or timber, and in the
 technical nomenclature is known as
 "the timber bond." Bonding with tim-
 ber is nothing more nor less than the
 placing of pieces of timber of certain
 dimensions upon a finished course of
 brickwork, and then proceeding to place

upper courses so as to enclose the wood
 as closely as is practicable. It will
 readily be understood how necessary it
 is for good work that the timber bond
 covers the entire upper surface of the
 superincumbent course. Sometimes



this timber is concealed within the wall,
 but as is more often the case, especially
 in house construction, it is exposed at
 one side of the wall. The interior side
 of the wall is, as a rule, chosen, as this
 permits the use of the timber for the
 purpose of nailing interior wood work.
 Particularly is it utilized for the fasten-
 ing of dados, skirting boards, and join-
 ery work of all kinds. If it should oc-
 cur that this timber bonding should
 extend entirely around the room, it is
 known as chain bonding, and in such
 cases there are, as a rule, several of the
 chain bonds at several heights. That to
 which the skirting boards can be fastened
 is called skirting bonds. And in case
 a deep dado or wainscoting is used,
 another chain bond is placed at a near
 distance from the skirting bond, to
 which the upper portion of the dado is
 fastened. Then at the top of the wall
 near the ceiling is placed what is known
 as the wall or plate bond.

Fig. 1 shows some views of timber
 bonds. *a* is the elevation view of a tim-
 ber bond placed between courses of
 headers. The surface of this timber
 bond is, as a rule, flush with that of the
 wall in which it is placed. This is
 shown in *b*, which is a section of the
 wall in part.

In order to fasten in the framings of
 doors and linings of windows, it is cus-
 tomary to make use of what are termed
 wood bricks. As the name implies,
 these are made of wood, and are, in fact,
 of the same dimensions as the true
 bricks. And they are placed in the
 same manner as a brick would be laid,
 only in such as to be convenient for the
 purposes mentioned. Commonly, they
 are inserted in the jambs or reveals of
 the openings into which the door or
 window frames and linings are to be

placed. They do not pass entirely
 through the wall, but stop short of the
 exterior surface.

Timber bonding is, however, in many
 cases exposed to the weather, and the
 fact that it is open to decay has led to
 the using of iron for the same end.
 Technically, this material is known as
 the hoop iron bond. The iron is in
 strips about an inch in breadth, and as
 a rule are coated with tar paint, for the
 purpose of preventing rust. The iron
 is usually laid in the centre of the wall,
 and in order to secure a firmer union
 between the iron and the layer of mor-
 tar in which it is laid, holes are punched
 through the strips, and this permits the
 mortar to pass through. And as these
 holes are punched, they leave a burr or
 raised part upon the under side, this al-
 so acting as a bonding projection. A
 special ribbon has been devised for this
 purpose, and although not often used
 now, was in its time a very valuable ad-
 junct to the trade. It is called Tye-
 man's iron, and the ribbon of metal was
 cut at intervals upon each edge in a
 diagonal direction. These spurs could
 be raised at will, and formed ideal hold-
 fasts or keys.

In Fig. 2 are shown several of these
 irons for bonding, among the kind last

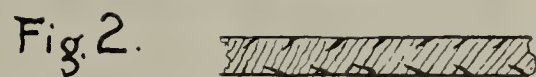
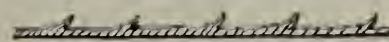
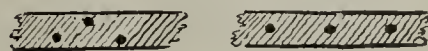


Fig. 2.

spoken of. Lately the iron brace has
 become a feature in the erecting of
 walls, being a plate with shank, the lat-
 ter piercing the wall and being headed
 at the other side. This acts as a brace,
 preventing the bulging of the wall.
 However, these assistants have developed
 the system of shell-walls, and to a good
 workman appear more worthy of con-
 demnation than praise. "NIMBUS."

COMING CONVENTIONS.

The National Brick Manufacturers
 Association, Chicago, Jan. 23-27, 1894.

Illinois—Springfield, Jan. 16-17, 1894.

Iowa—Des Moines, Feb. 7-8, 1894.

Ohio—Columbus, Feb. 13-14, 1894.

HIS RELATIVES.

The sluggard declined to go
 To the ant; because as he said,
 The ant isn't in it at all, you know,
 He'd go to the uncle, instead.

—Detroit Free Press.



OFFICIAL ANNOUNCEMENT AND PROGRAMME.

**Eighth Annual Meeting of the National
Brick Manufacturers' Association,
To be held at Chicago, Ill.,
January 23 to 27, 1894.**

To the Members of the N. B. M. A.:

GENTLEMEN:—It has been determined to hold the Eighth Annual Convention at Chicago beginning Tuesday, January 23, 1894 and continuing the balance of the week.

THE PLACE OF MEETING

Will be the beautiful Banquet Hall in the Auditorium Hotel. This famous hostelry has also been selected by the Executive Committee as headquarters for the members and their friends during the week of the Convention.

THE HOTEL ACCOMMODATIONS

Will therefore be of the very best. In case of inclement weather the delegates will not have to brave the elements at all, as it will not be necessary for them to leave the hotel unless they wish to do so. Such commodious and elegant quarters have never before been obtainable. A uniform rate of \$3 a day on the American plan will be made to delegates and their friends. Those preferring to stop on the European plan will be accommodated at \$1.50 a day where two or more room together. Considering the character of the Auditorium these are very favorable terms. The Auditorium is one of America's largest and finest hotels. It is so spacious and so elegantly equipped that luxurious entertainment can be afforded our entire membership.

REDUCED RAILROAD RATES

Have been arranged for on the certificate plan over all principal lines.

Each person desiring the excursion rate must purchase a first-class ticket and pay full fare to Chicago, taking a printed certificate from the Ticket Agent stating that ticket has been purchased at the regular rate. This when countersigned by the Corresponding Secretary will entitle the purchaser to a return ticket at one-third the regular fare, thus

making a two-thirds fare for round trip.

Those desiring certificates should present themselves at the ticket offices at least thirty minutes before the departure of trains.

Should any ticket agent fail to have a blank certificate, a certificate or receipt for the amount paid, stating that it is for one first-class fare and bearing the agent's stamp should be taken, and will enable the Secretary of the Association to obtain the reduced rate returning which can not be done if proper receipt or certificate is not taken.

THE PROGRAMME

FIRST SESSION, TUESDAY, 2:30 P. M.

Enrollment of New Members and Roll Call.
President's Annual Address,
Anthony Ittner, St. Louis, Mo.
Report of Treasurer,
John W. Sibley, Coaldale, Ala.
Election of Officers.
Installation of Officers.

1. "Brickyard Ethics," Essay,
Donald McDonald, Louisville, Ky.
2. "The Year's Record,"
General discussion, led by Frank McAvoy,
Philadelphia, Pa.

NOTE—At the close of each address or essay, the subject under consideration will be fully discussed.

TUESDAY EVENING, 8:30 O'CLOCK.

Annual Pow-wow, under the auspices of the Chicago Brick Manufacturers, will be held in the Convention Hall, D. V. Purington, Master of Ceremonies.

3. Essay, "Glazed Brick. Their Origin, Value and Use,"
Geo. B. Engle, Chicago, Ill.

SECOND SESSION, WEDNESDAY, 9:30 A. M.

4. Essay, "The Brickmaker,"
J. B. McHose, Boone, Iowa.
5. "Profit and Loss in Brickmaking,"
General discussion, led by a member of the Western Pennsylvania Brick Exchange,
6. "Drying Brick," [Pittsburg.
General discussion, led by J. A. Snell, Barrington, R. I.
7. "Setting Brick in Kilns,"
General discussion, led by
Max. A. Th Boehneke, Centinela, Cal.

THIRD SESSION, WEDNESDAY, 2:30 P. M.

8. Essay, "Progress of Brickmaking in the South,"
A. S. Blaffer, New Orleans, La.
9. "Brickmaking for Profit and Glory (?)"
General discussion, led by Jos. Fairhall, Grape Creek, Ill.
10. Address, "Oil as a Fuel for Burning Brick"
W. S. Purington, Galesburgh, Ill.
11. Essay, "Vitrified Paving Brick,"
W. H. Duffett, Beatrice, Neb.
12. "Is the Dry Press Process Suitable for the Manufacture of Paving Brick?"
General discussion, led by Alex. Neidringhaus, St. Louis, Mo.

FOURTH SESSION, THURSDAY, 9 A. M.

13. Essay, "Waste of Fuel in Drying and Burning,"
Capt. S. P. Crafts, North Haven, Conn.
14. The Question Box.
 1. What chemical substance is it in coal which causes discoloration, or a yellowish deposit to form on portions of the brick which are most exposed to the direct action of the heat? And is there anything that can be used with the fuel that will neutralize this substance or prevent such discoloration?
 2. Should not the requisite of membership

in this Association be more definitely stated in the Constitution, and provision made for the trial and expulsion of members guilty of unbecoming conduct?

3. In view of the demoralized condition of insurance companies, and their unwillingness to insure brickyards, would it not be advisable for manufacturers to organize themselves into a mutual insurance company?

4. Are dry pressed brick improved by being dried artificially before being set in kiln?

5. What is the cause of the discoloration or light streak so frequently found extending through the center of dry pressed brick, and how can it be prevented?

6. Does the admixture of fire clay with shale or common clay increase or lessen the strength or wearing qualities of paving brick?

NOTE.—Other questions may be subsequently submitted for discussion.

FIFTH SESSION, THURSDAY, 2:30 P. M.

15. Essay, "American Enameled Brick,"
Josiah Miller, Oaks, Pa.
16. "How Can We Secure Trained Help?"
General discussion, led by Edward Orton, Jr., Columbus, Ohio.
17. "The Dry Press vs. the Stiff Clay Process,"
General discussion, led by L. G. Howard, St. Louis, Mo.

Reports of Committees.
Miscellaneous Business.

FRIDAY AND SATURDAY

Will be devoted to side trips to various points of interest in and about the city, under the guidance of the local committee on entertainment.

AN EXHIBITION ROOM.

Tables will be provided in the Club rooms of the Auditorium for the display of specimen brick, etc. These rooms will be closed during the sessions of the Convention, but will be open to everyone at all other hours. Those intending to make exhibits are requested to at once advise the Corresponding Secretary, T. A. Randall, Indianapolis, as to the character of the proposed exhibit and the amount of space desired.

EVERY BRICKMAKER IS INVITED

To join the Association and it is earnestly desired that all who can will come to the Convention and take an active part in the effort to advance the material interests of the entire clayworking craft.

HOW TO BECOME A MEMBER.

Craftsmen desiring a copy of the Constitution and By-laws of the Association or the Official Report of the last annual meeting, can obtain same by addressing the Corresponding Secretary. The requisite of membership is an interest in the manufacture and use of brick and the payment of an annual fee of \$2.00. Craftsmen who are unable to attend the coming convention, but wish to identify themselves with the National Association and to secure a copy of the Official Report of the Chicago Convention, are requested to send their name and address to the Secretary for enrollment.

Respectfully,

THE EXECUTIVE COMMITTEE.

ANTHONY ITTNER, *President*,
THEO. A. RANDALL, *Cor. Sec'y*.

Written for the CLAY-WORKER.

FIRE CLAYS AND THEIR PROPER APPLICATION.

BY CHARLES FERRY.

IRON AS AN IMPURITY.

IRON manifests itself in fire clays as the sulphate, sulphide, silicate titanate, and the ferrous or ferric oxides, either in the hydrous or anhydrous state.

Though the presence of iron compounds is advantageous in clays for particular purposes, I am safe in asserting that, where a fire clay is used for resisting a very intense direct heat, iron compounds increase its tendency to fuse. When the iron determined as the sesqui oxide (Fe_2O_3) does not run higher than 3 per cent. by weight, the clay is sure to give good service as a refractory material for all ordinary purposes, though it may fail to withstand the most intense heat—that is, to say, other accidental impurities such as lime, magnesia, and the alkalis appearing only in very limited quantities.

Iron in the form of sesqui oxide Fe_2O_3 bears a red color, while as its condition becomes more hydrous the color deepens.

This furnishes a good comparative test to apply for iron in clays carrying a perceptible quantity, all as the red ferric oxide, when it is only necessary to know which contains the more iron.

Very often this element occurs in clay as *ferrous* compounds, which are *not* red but greenish in color, thus rendering it necessary to determine the presence or absence of any part of the iron in the "*ous*" state, before successfully applying the test above mentioned. Like the minutest particle of permanganate of potassium (K_2MnO_4), which will color a large volume of water to a deep purple. So a small fragment of metallic iron will yield a sufficient amount of hydrated sesqui-oxide of iron ($\text{Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}$), or, better still, the familiar soluble basic-ferric iron salts, to stain a large bulk of clay to an intense red color.

This will furnish a good explanation for the stain which appears in a red, or a red spotted clay.

The most common source for the formation of such soluble compounds of iron is in localities where deposits of iron pyrite FeS_2 exist.

Gradually this sulphide is oxidized to ferric sulphate, which, being very solu-

ble in water, is carried away in solution and distributed throughout large beds of clay. As the iron gradually gives up a part of its acid radical to the aluminum of the clay, the iron salt becomes more basic in character and, finally, is precipitated as the red basic iron salt. The reaction continues till the iron has all been converted to Fe_2O_3 or $\text{Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}$, and the sulphuric acid has passed off probably in solution as $\text{Al}_2(\text{SO}_4)_3$. In

impurity in places, though as such is only a source of great annoyance, in that it never seems to appear in an evenly disintegrated state, or uniformly distributed throughout the strata as the "sulphur ball," or in the crystalline form. The result of burning a clay, containing these impurities, will show black cavities made by the volatilization of the sulphur, as SO_2 , and fusion of the iron.

To say nothing of the little or no ad-



GLIMPSES OF THE AUDITORIUM—MAIN OFFICE AND LOBBY.

some clay beds it is quite apparent, from the evenness of color, that the red iron oxide is thoroughly distributed throughout the mass, while in other cases the clay is only spotted. No doubt, that is due, in part, to the physical condition of the clay, for where it is the most compact, the soluble iron salts could only find their way into the crevices and cracks, but where the clay is less dense it can permeate the entire mass.

Iron sulphide FeS_2 is an important

vantage derived, either in physical or chemical effect, the appearance of a burned clay, in such a case, is very much marred by these grimy and yawning black holes.

Other compounds of iron exist in such limited quantities it would hardly be worth while, or possible to note their individual effect.

Finally, I would say, that I have not discovered a clay yet, no matter how seriously contaminated with foreign

substances, that cannot be used to great advantage in adequately meeting some conditions, if these impurities, whatever they may be, are evenly and intimately mingled with the clay.

[To be continued.]

RAPID STRIDES MADE BY THE FREY-SHECKLER CO.

DURING the past few years hollow building material has come into very noticeable use. Instead of their being used principally as a found-

beauty. Rock face work together with any design which can be successfully worked in clay can be made by this company upon solicitation. There is to-day nearly \$1,000,000 invested in eastern Ohio alone in the manufacture of hollow building material.

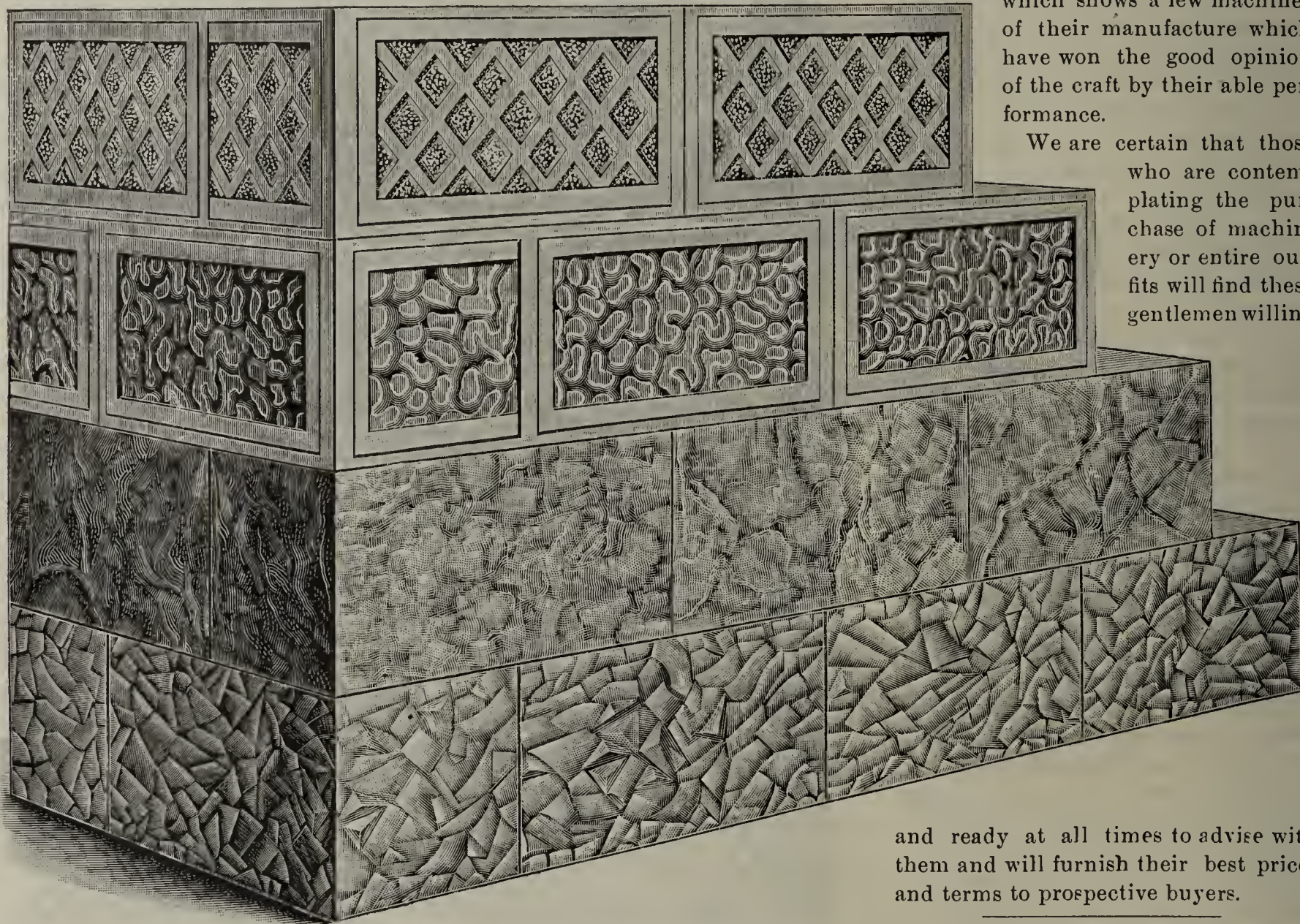
The Ohio Hollow Block Company with their general office at Canton, O., is one of the largest manufacturers in this line, representing fifteen car loads of finished material daily. Aside from their local trade, they ship these goods largely to the Eastern and New England States, where they have met with sur-

of cornices, reveals, string and belt courses, also friezes, panels, and ornamental tiles, thus reducing the expense of manufacturing from plaster moulds.

The Frey-Sheckler Co., would be pleased to give those desiring further information upon this subject a complete description of this machine, also prices and terms upon which it is sold. They are manufacturers of a complete line of clayworking machinery which has proven by performance and durability to be foremost in this class of machinery. On pages 104 and 105 the reader will find their advertisement

which shows a few machines of their manufacture which have won the good opinion of the craft by their able performance.

We are certain that those who are contemplating the purchase of machinery or entire outfits will find these gentlemen willing



ation element, they are now being largely used to form the outside walls of large and handsome buildings. The well known clayworking machinery manufacturers, The Frey-Sheckler Co., of Bucyrus, Ohio, have within the last year come into possession of valuable patents covering the exclusive use and manufacture of a device for ornamenting hollow building blocks and bricks, which machine they have now placed upon the market. The cuts of some of the designs furnished by this company are herewith shown to enable the reader to form an idea of their utility and

prising favor as a foundation material.

They lay up very rapidly into a wall; require a very small amount of sand and cement; look artistic and make a warmer and dryer cellar than stone, as each course in the wall furnishes an air circular chamber.

The crushing strength of a well burned $8\frac{1}{4} \times 8\frac{1}{4} \times 16\frac{1}{2}$ inch block we learn by actual test to be 72,000 pounds, which is much stronger than a brick wall of the same dimensions.

This device is worthy of the attention of the Terra Cotta manufacturer, as it can be readily adapted to the making

and ready at all times to advise with them and will furnish their best prices and terms to prospective buyers.

AT THE CONVENTION

Will be exhibited a working model of the Penfield 4-Mold Dry Press Brick Machine. This model although only 30 inches high, is in design and proportions an exact miniature reproduction of the full sized machine. The model illustrates perfectly the principles and workings of the full sized machine, and it will be worth while for any brick-maker to take the time to examine it. Messrs. Penfield & Son will have rooms at the Auditorium Hotel where the convention will be held, and will be glad to have all in attendance at the convention accept their invitation to call and see the little machine.

SOMETHING ABOUT DRY HOUSES.

Erroneous Ideas, Mistakes Made, and What Constitutes an Ideal Dry House.

THERE are very few brickmakers who give brick drying the study which the subject deserves. All that is desired, as a rule, is to get the brick dried, without fracture in the process of drying: no further attention being paid to the matter. Brickmakers, as a rule, it seems, do not care to know whether a stronger and better brick could not be made by some other system of removing the moisture. Many brickmakers are well aware of the fact, that they produced a tougher brick, when drying with the free open air, than they are now securing, by drying with a high degree of artificial heat, and are blind to the cause, laying the blame to the mixing of the clay, the machine, or the burning, when the facts are, they have thrust aside nature's system, and are cooking the moisture out of their product with a degree of heat sufficient to convert the moisture into steam, never dreaming that the cooking or par boiling is injurious to the clay, and produces, when burnt, a brittle brick, which is very undesirable, especially in paving brick, where the greatest toughness is required.

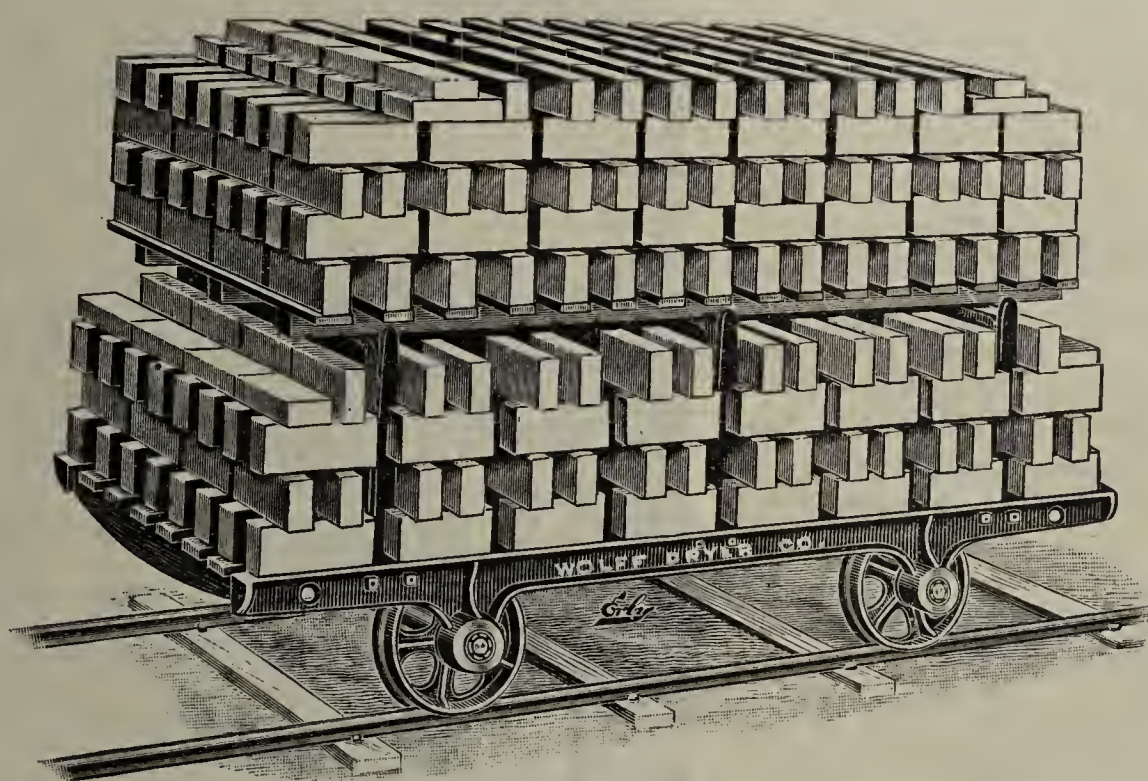
While on this subject, it would be well to mention a few mistakes made in construction of dry houses, and in order to make the subject clear, will again refer to nature's method, which dries by absorption, that is to say, air is wafted over, underneath, and all around each individual brick, absorbing the moisture equally, with rapidity in proportion to the warmth, dryness and velocity of the current. All dry houses should be constructed to conform to the principles taught by nature's laws; therefore, to produce the best possible results in rapid drying, and quality of product, the volume of hot air should not exceed 175 degrees Fahrenheit. Therefore, all dry houses constructed with a view of expelling the moisture by heat, are wrong, it matters not whether the heat is produced by steam or furnaces. This class of dry house is built in various forms, the prevailing fashion being, what is known as the floor system. There are also quite a number of dryers built on the tunnel and car system, which are furnished with a great amount of heating arrangement underneath the cars, to perform the cooking process, and a

very small amount of ventilators above the cars, which are regulated to retard the exit of the steam forced out of the brick, thereby increasing the heat to a temperature that injures the clay.

There is, however, an ideal system of drying brick, which is used by many money making concerns, being modeled after nature's laws and absorbs the moisture from brick in from twelve to twenty-four hours, at a degree of heat not to exceed 160 degrees. This system is on the natural draft principle and maintains a more constant and regular stream of heated air current, than can be produced by mechanical appliances, whether it be exhaust fan wheels, or pressure blowers, producing forced draft. Consequently these appliances are useless appendages, costly to maintain and needless. To the uninitiated at first

in a suitable manner, for distributing the air evenly amongst the radiators throughout their entire length; upon this floor is placed the heating apparatus, which is composed of radiators made up to sustain contraction and expansion, without injury, and easily taken out and replaced, if needed. These radiators are placed between the tracks immediately underneath the cars; an automatic steam pump takes care of the condensed steam, which is discharged back into the boiler, at a degree of heat over the boiling point, cutting the cost of fuel materially.

The cars upon which the bricks are placed, play an important part and are constructed of the best quality of metal, great strength, and equipped with new improved anti-friction bearings superior to all others. A dry house constructed,



This car as constructed is superior in strength to all others, has new improved anti-friction bearings, when loaded, moves easy. The method of setting permits as rapid drying in center as at sides.

sight, this assertion may look wild, but comparison will prove the fact. If a pressure blower is even a good plan for maintaining an equal draft, why not adopt it to produce draft in furnaces for producing steam in boilers, all circumstances considered, it would be as proper in one instance as the other.

The ideal system is constructed in tunnels of from three to six tracks each, with tracks slightly inclined, has a shaft or stack at the front end and an iron damper which can be raised or lowered to regulate draft as required, according to the condition of the atmosphere, also dampers at the other end for regulating the proper amount of air, which is admitted from underneath the radiator floor. This floor is constructed

as described, equipped with heating apparatus of sufficient radiating surface, placed where the work is done, with air distributed equally, and a draft stack capable of maintaining a large volume of hot air in a continuous stream under all atmospheric conditions, at all times, through bricks placed on perfect cars, in a manner that each individual brick has its moisture absorbed from centre to surface, with a temperature so low, that no injury can occur. This description of an ideal Dry House, will be recognized by many as the new improved Iron Clad Dryer, as now built by the Wolff Dryer Co., No. 358 Dearborn St., Room No. 304, Chicago, Ill., who will be pleased to give further details to any one desiring information on the subject of drying brick.

BUSINESS AT THE PENFIELD WORKS.

THE accompanying cut represents one end of the main erecting room in the shops of J. W. Penfield & Son, Willoughby, Ohio, the cut being a reproduction of a large photograph.

In spite of the general business calm, Messrs. Penfield & Son have been enabled to keep their works in operation throughout the entire season, and have been filling large orders from various parts of the country. A considerable number of the leading brick manufacturers have evidently taken advantage of the lull in business and employed their spare moments in equipping their works with improved machinery and appliances, looking toward better results in 1894.

Messrs. Penfield & Son report the following as some of their fall and winter shipments:

Two outfits of Auger Brick Machinery, with pug mills, etc., to Allegheny, Pa.; No. 10 Auger Brick Machine to Kansas City, Mo.; No. 15 Auger Brick Machine, No. 20 Pug Mill, 5-Power represses, and 4-Mold Dry Press Brick Machine, to Wellsville, Ohio; two No. 15 Auger Brick Machines to Shermerville, Ills., for the Alsip Brick Co's. new works; No. 10 Auger Machine, pug mill, dry pan, etc., to Pottsville, Pa.; No. 20 A Plunger Machine, with pug mill and large disintegrator to Biltmore, N. C.; No. 10 Auger Machine to Sayreville, N. J.; two Power Represses to Evansville, Ind.; Power Repress to Sharon, Penn.; Power Repress to Philadelphia, Pa.; No. 6 S Plunger Machine to Milan, O. One of their recent shipments was of a No. 20 A Plunger Machine to the Raritan Hollow and Porous Brick Co., at Perth Amboy, N. J., being the third Penfield Plunger Machine the company will have in operation.

Messrs. Penfield & Son also report orders received for quick shipment to Woodbridge, N. J., East Brookfield, Mass.; two outfits to Pittsburg, Pa., Biltmore, N. C., and Natrona, Pa.

A number of new tools have been recently added to the machine shop equipment at the Penfield Works, and preparations are being made for an active trade in 1894.

JOHN BULL LIKES IT.

AT THE opening of the World's Fair London *Engineering*, the leading mechanical and technical journal of the world, sent a staff of mechanical experts to study the exhibits of machinery from all countries and select therefrom whatever indicated progress or merit sufficient to warrant illustration in their columns.

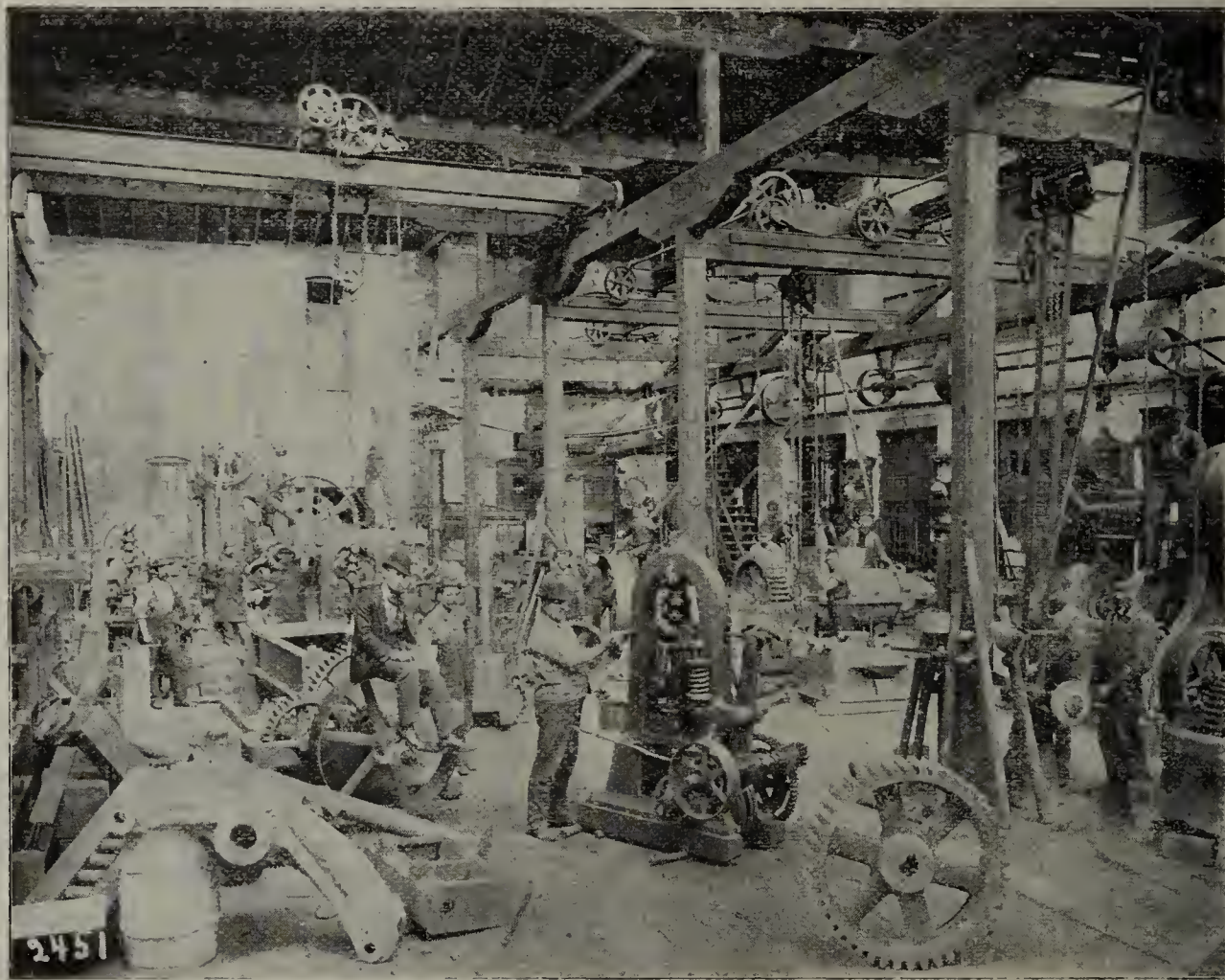
Although there was a vast amount of machinery on exhibition, there were comparatively few machines found of sufficient interest from an engineering

matters the world over. Chisholm, Boyd & White may well feel proud of this high endorsement to the Boyd Brick Press.

IMPROVED DISINTEGRATORS.

On page 11 we introduce a new and improved device for pulverizing clays. That it is doing good work our readers can see by the following extracts from letters from users recently received by the manufacturers, Messrs. Schoellhorn-Albrecht Machine Co., St. Louis, Mo.:

"We have been using your Disintegrators for



ERECTING ROOM AT THE PENFIELD WORKS.

standpoint to merit description. Among the few good things selected in Machinery Hall, however, was the 4-Mold Boyd Brick Press. This excellent press was fully described in an illustrated article, as possessing the highest merit in its class, and best illustrating the notable advance in brick machinery and the art of brickmaking in the United States. Its simplicity and compactness of design, the excellent workmanship shown in construction, and the superior finish of the brick, are alike highly commended. As is well-known, *Engineering* is owned and edited by Sir James Dredge, one of the Royal Commissioners to the World's Fair, and is eminent authority in mechanical

the past six months and it is giving us perfect satisfaction.

AMERICAN HYDRAULIC PRESSED BRICK CO.
St. Louis."

ST. CHARLES, Mo., Dec. 11th, 1893.

Messrs. Schoellhorn and Albrecht,
St. Louis, Mo.

GENTLEMEN:—We have used your machine constantly since last spring, and have not had a stop or delay during that time, nor have we had any repair bills to pay since. It furnishes us with plenty of clay to run our yard and if run at the proper speed will pulverize clay as fine as powder. It has in every way fully answered our expectations and we are more than pleased with it.

I. X. L. PRESSED BRICK CO.

St. Louis, Mo.

"We take pleasure in recommending your disintegrator. We are much pleased with its work on our yard.

ILLINOIS SUPPLY & CONSTRUCTION CO.
St. Louis."

THE "SIMPSON" A WINNER.

THE cut shows our prize machine on its way from the cars to the brick yard in Philadelphia.

This is the indentical press we exhibited at the World's Fair and is considered by experts to be a model of mechanical ingenuity, and without an exception every visiting brickmaker to the Fair pronounced it the most perfect press ever built.

This general opinion was still further corroborated by the official judge on

plains the phenomenal success of this press. We have many machines running daily in the United States and Canada and can refer to them all. Our patrons are always our best friends.

On pages 4 and 5 of this issue will be found the true status of the award question at the World's Fair. It will be seen from this that the Simpson as usual won "under a pull." It was the ONLY American dry press brick machine to receive official recognition by the authorized judge on brick machinery, and received the honor only

in Machinery hall exclusively. Besides the latter place was the only part of the grounds where full sized machinery was exhibited and where practical tests and a just comparison could be made.

We are now publishing a neat little pamphlet containing the points of excellence granted our machines at the World's Fair together with an explanation of the same. Copies will be mailed to all brickmakers and subscribers of the CLAY-WORKER. We will also be pleased to mail one to any address on application.

We are also manufacturers and dealers in full brick yard equipments and are prepared to construct complete plants. We are always ready and willing to submit estimates and also have excellent facilities for testing clays.

All visiting brickmakers to the Convention are cordially invited to make our office their headquarters during their stay in the city.

THE SIMPSON BRICK PRESS CO.
Chicago, Ill.

DRYING DRY PRESSED BRICK.

M R. H. W. GERKE, Manager of the Quincy Press Brick Company, Quincy, Ill., gives his experience in drying:

QUINCY, ILL., Dec. 27th, 1893.

WOLFF DRYER COMPANY,
Chicago, Illinois.

GENTLEMEN:—In reply to your inquiry as to how our dryer works on press brick will say, that we consider it the most valuable piece of machinery we have on our yard; in fact, could hardly get along without it. You know we built it to dry stiff mud brick, but as our clay was not suitable for an auger machine, we concluded to run our press brick through it. We find that we can make them bone dry in twelve hours, and after being set in the kiln, need not be afraid to get too much fire under them from the start. We only use enough wood to thoroughly heat our furnaces, then we put the coal to it as fast as the fire will consume it. Formerly it took from ten to twelve days watersmoking, then a week more burning. Now, we start a fire under the kiln, and the whole business is done in from seven to eight days time, and our brick come out as sound as a dollar, without any checks and of a much better color. Every brick comes as easy as if it had been sanded.

We have had considerable trouble in



brick machinery, who granted to the Simpson every point essential to a first-class dry press. This particular machine was sold to McCay & Co., Frankford, Philadelphia, Pa., together with other machinery. This firm thoroughly investigated every dry press in the market and decided in favor of the Simpson as being the most perfect dry press brick machine in existence.

It is a well known fact that Simpson Presses are never put on any yard where the material is not an assured success for dry press brick. This partly ex-

after successfully competing with other machines of its class. In fact it was so plainly the superior of its competitors that many prominent brickmakers pronounced it "BEYOND COMPETITION."

Any awards granted on models in the Mining Building was done by judges who were only competent to pass on minerals and NOT ON MACHINERY. The only judge appointed and authorized to examine and decide on the respective merits of the different brick machines exhibited, had nothing whatever to do with the Mining Building and operated

the past making ornamental brick, but in putting them through your dryer, we can turn out fully eighty per cent. of perfect brick, against the thirty per cent. under the old system of drying in kilns. Our clay is very short and tender and great care has to be exercised in drying off in kilns. We consider your natural draught system of drying the proper thing. We are satisfied that our clay would not withstand a hot blast or forced draught system.

We think it is only a matter of time when all press brick manufacturers will run their press brick through a dryer, they will find it not a luxury, but a necessity.

In conclusion, I will say, that you can use this communication in any manner that you may see fit, and to those who may read it, want to say, that we have no ax to grind, and we are not under any pecuniary obligations to your Company, we simply make this statement for the benefit of the brickmaking craft.

Yours Very Respectfully,
QUINCY PRESS BRICK COMPANY,
H. W. GERKE, Manager.

AN OPEN LETTER.

TO BRICKMAKERS:—

Our announcement in the CLAY-WORKER that the Boyd Brick Press had been awarded a Medal and Diploma at the World's Fair, has brought out a clamorous advertisement of the Simpson Brick Press Co., the evident object being to counteract the force and effect of the decision of the Judges in favor of the Boyd Press.

The statement that an award was given, or a report made, recommending an award to the Simpson Press by some unnamed special Judge, is surprisingly reckless. In fact, we claim it is wilfully false, and made for the purpose of deceiving the readers of the CLAY-WORKER.

From the opening of the Fair up to the present time, no announcement of an award or report on the Simpson Exhibit has been made in the official bulletins. No official record shows that any report was made, approved or adopted, or any award, medal or diploma granted, to the Simpson Press or to the Watrous Engine Co., as exhibitors of the same; and we challenge the Simpson Company to publish the authority on which it bases its claim to "The only Award" on brick presses in Machinery Hall, or any report recommending an

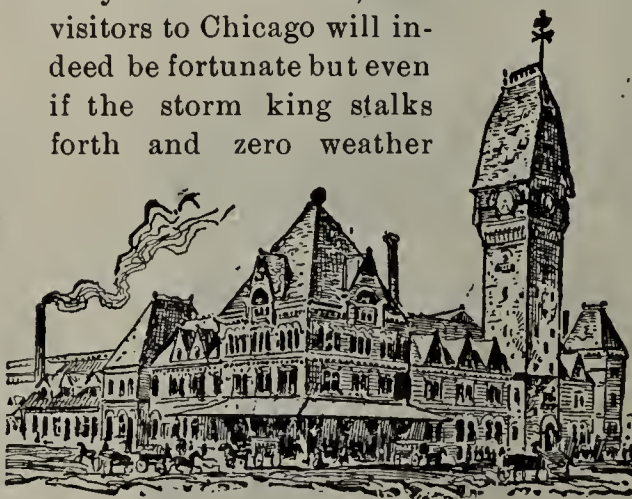
award. In the absence of such evidence the readers of the CLAY-WORKER will not accept the unconfirmed statements made by the manufacturers of that machine.

We had hoped that Company would accept with better grace the inevitable success of the Boyd Press at the Exposition, and that they would not claim an honor which the Judges of Brick Presses in Machinery Hall had denied them. CHISHOLM, BOYD & WHITE,
Chicago, Jan. 1st, 1894.

HO FOR CHICAGO.

THE time is near at hand when many (we hope very many) readers the CLAY-WORKER will pack their grips and start on their way rejoicing for Chicago and the Eighth Annual Convention of the N. B. M. A.

If the weather bureau does the fair thing and continues the present delightfully mild weather, the visitors to Chicago will indeed be fortunate but even if the storm king stalks forth and zero weather



prevails, our southern brethren need fear no inconvenience, for thanks to Mr. Pullman and his ilk, railway facilities are such that one may step into a through sleeper from almost any prominent point and make the journey with as much comfort and ease as is found in a snug drawing room at home. Especially is this the case where the trip to Chicago is made over the Monon Route. This famous rail route is equipped with every possible convenience for the comfort and safety of its passengers. Parlor cars on day trains, through sleeper on night trains and dining cars furnishing meals fit for a king. Solid vestibuled trains from Louisville and Cincinnati.

Leave Louisville.....7:20 a. m. 8:30 p. m.
" Cincinnati.....8:30 a. m. 8:55 p. m.
Arrive Indianapolis..11:50 a. m. 1:00 a. m.
" Chicago..... 6:00 p. m. 7:55 a. m.

The Monon lands passengers in Chicago at the splendid Dearborn Street station a structure of special interest to

CLAY-WORKERS for not only is the exterior constructed of brick and terra cotta but the interior is also decorated with the same material. The terra cotta mantels are very elaborate and pleasing.

See that your tickets are over the Cincinnati, Hamilton & Dayton from Cincinnati, and the Louisville, New Albany & Chicago from Louisville—THE MONON ROUTE.

THE NEW YORK MARKET.

EIGHTEEN hundred and ninety-three will be past and gone before this letter appears. It came in with very cold weather and is going out with extraordinary mild weather.

The ups and downs of the brick trade has in a great measure been controlled by the season. During the winter when it was as easy to ship brick to the sun as to the New York market, prices ruled high, but as the ice embargoes released, they slumped.

The past summer was an exceptionally good one for making brick, but there was no increase in output, except in a few cases, and there was a reduction in rates.

In the majority of cases the manufacture of brick ceased late in October. Some continued to manufacture until their green brick froze on the yards. The prices at that time were the lowest of the season. December came in decidedly cold and closed the upper Hudson from Kingston to Albany. The Haverstraw manufacturers held their stock under the sheds. The stock on the market stiffened in price, from an eighth to a quarter per thousand. The weather continuing cold had the effect of pushing the rates up above the five dollar mark. The weather did it, and nothing more, as the actual demand was only for a barge load at a time, as required to carry the dealer along until the cold spell let up and Coney Island and South Jersey's would come in in quantities to allow him to purchase smaller cargoes.

Ship New York and New Jersey Association is posted as "Lost," nothing having been heard of her for two years. No insurance.

A NEW VENTURE.

Haverstraw has always had some officers in all Brick (may I say) Trusts that have been formed, and, strange as it may seem, they have not been "Old Salts" who came in through the Hawse-

hole but those who came through the cabin windows, and as a success (to use a Hibernianism) they have been failures. Why they never organized and manned a ship of their own, and something they could handle, has often been asked. "All things come to him who waits." The hope of organized effort is about to be realized. In the early part of December, the keel was laid by manufacturers of Haverstraw of a vessel of their own. One that they could command and control. When ready to launch, there seemed to be a difference of opinion among the owners, as to the rate they should ask for their cargo. Some thought that \$6 per thousand should be the selling price. Others said that was too high, that \$5.50 would be about right, and to sustain their argument they said, "It is late in the season. If you put the rate too high, it will shut out our brick, and make the market stronger for Jerseys." It looks as though some of the crew will succumb to "sea-sickness" in the near future.

At this point they seem to have lost their "bearings," and have called in a pilot in the shape of a commission man, and one, too, who is one of the youngest in the trade. Why they did not consult (if they must consult someone)

some of the commission men who are interested in the manufacture of brick, is beyond comprehension. I will give your readers a synopsis of his sailing directions.

He said there were twenty-five barges in the market making ready to cover, and they would not bring \$5 per thousand and if put on the market. He thought that if the brickmakers by concerted action placed the price at \$5.50 it might be obtained but it would also require concerted action among the commission men, and then the manufacturers could to a great extent control the price of brick.

Shades of our Grandmothers! Has it reached such a pass in our trade that there must be concerted action between seller and agent? I cannot see where he enters in the deal at all. If the price is put on and the agent is told to get it, that should end the matter—unless the seller weakens.

On Monday, December 15th, they agreed to fix the price of Haverstraw brick at \$6 per thousand. They agreed that the existing system of forty-five, sixty and ninety day notes that now prevails be changed to cash or thirty day paper. They, also, considered the matter of asking all manufacturers in

New Jersey and Long Island and along the Hudson to form similar local organizations. If they do, what a fleet there will be. It will be a hard matter, however, to get them all, as some will want to be "privateers" to "prey" on the trade of others by sending in while the others hold. It will not be the small manufacturers who will do this, but the large ones.

WILL IT BE A SUCCESS?

It should be, if strictly adhered to. Brick should never be sold below \$6, and even at that figure brickmakers will never become millionaires. Some

say that high prices of brick retard building. I can only point to the low prices of the past year, as well as that of former seasons, and ask, have they increased the consumption? No, decidedly not. The *Building Record and Guide*, of New York City, good authority on the subject, says that never in the history of the building trade, has all material been so low in price, but still there is a steady falling off in the building line. In regard to cost of large office buildings, it quotes the word of Mr. Geo. Hill, C. E., who says that he is fairly certain that a first-class fire-proof building constructed on the modern system could be constructed, with the present price of materials for a sum not to exceed 35 cents per cubic foot. He says that not since the construction of the Equitable Building has any fire-proof building in New York City cost as much as \$2 per cubic foot. Nearly all tall buildings built during the past four years have cost from 52 to 60 cents per cubic foot. The declines in cost of construction, resulting from scientific economy in the methods and from lower prices of building material have been most rapid the past year.

There is the matter in a nutshell.

Now try another task. They should put a price on the product and hold it. When making new leases, they should not make them for such large quantities, and then all pull together, and they will succeed. They should have a \$6 rate in summer, with an advance as the demand calls for in fall and spring. They should remember that iron is the great competitor of brick at present. Possibly, iron may not be used as extensively if an accident should occur in the construction of a building, and there were two cases this past summer where two of the buildings came near having a collapse.

THE BRICKMAKER

Should get at least cost for his material, and should regulate his business so he will be in shape to hold through all seasons. He should bear in mind that if the times have been bad for his trade, that his is a trade that is the last to be effected when a depression comes, and the last to be benefited when business improves.

At a meeting of the Master Builders' Association in New York City, the following resolution was passed. "It is the opinion of the meeting that it is advisable for employers and employes to meet the issue voluntarily, reducing prices



GLIMPSES OF THE AUDITORIUM—NORTH END OF LOBBY.

and wages at least 10 per cent. The brickmaker's remedy for helping himself is to reduce the output of brick, and get a good price for them.

The policy of some of the manufacturers the past season has been in the nature of an enigma, and can only be compared to the story of the Rat and the File. A gentleman had been bothered a great deal with rats. He had stopped up the rat holes with everything he could think of, but had not succeeded in shutting them out. One day, while trying to think what to try next, he espied a file lying on the floor. He picked it up and stuck it in one of the holes. After while, along came Mr. Rat, who laughed to think that they expected to stop up the hole with a "stick." He commenced to gnaw on the file, and presently stopped to see how he was progressing, and, looking on the floor, he saw little heaps of white stuff. "Ah," he says to himself, "I am nearly through," but suddenly discovered that the file was nearly through with his teeth. So it is with those who have made and shipped right along regardless of price. They are wearing away their capital. They may think they can do away with some of the smaller manufacturers and then control the trade, but if continued, it will certainly result in a failure. There have been men in the brick trade who have conducted their business on this principle and the result has always been a failure.

One of the manufacturers in speaking of the hard times, said that the next time a panic came, he would be prepared for it. Yes, he will, if he is where panics are not known.

WILL IT BE A LESSON?

If the manufacturers in the West are like those in this section, as soon as there is a revival in the trade and they get their old debts paid, they will forget all about the panic and fail to prepare for hard times. The more money they make, the more ways and means they seem to devise to get rid of it. They build larger yards, or buy more land, but they always manage to get it tied up in some way.

From 1862 to 1872 were the banner seasons for the brickmakers. During that time, the prices of brick reached as high as \$17 a thousand. Anything in the shape of a brick would sell. Before the year 1875, half the men engaged in the business along the Hudson were "busted." They had simply loaded

themselves with more than they could carry. A few who had invested what they had made, and stuck to the old shed and machinery, were in a position to catch the plums that came their way through the misfortune.

WHAT IT SHOULD TEACH THEM.

It should teach them that, if they can make brick the first three years, when they counted the cost of each little thing and managed to get along without many things that they thought they must have in times gone by, that they should continue in that line. In other words, they keep a closer oversight of the waste that goes on around the yard. They should not build a yard with a capacity of a million brick a week, and so load themselves with debt, when they could easily get along with a smaller yard and free from all encumbrances.

WHAT IS BEING DONE.

Some of the yards that have not shipped all season are loading for the New York market, and others are drawing their wood for next season. On the whole, there is nothing being done, compared to that of a year ago. Then there was quite a local trade, now there is none. One of the yards is loading their third barge this month. The first barge brought \$4.50, the second \$5.00, and they are in hopes the present one will bring \$6. But it is doubtful.

COLD SPOTS.

Friend Cray's method of handling cold spots is different from that in use here. If it is a large spot, they take the shovel and pry the platting apart and pour in coal dust and spread it over the top of the spot. In some cases coal tar is poured over the spot. Both work well, but the coal dust is preferred.

MARKET.

There is a time in the year, that the trade does not require brick, and that is usually about holiday season. There is a market, but with little demand. Saturday before Christmas, there were thirty-seven barges laid up in New York, with covers over them to keep the snow off the brick, waiting for that \$7 price. Twenty-seven barges laying in market, with eighteen loaded and waiting at Haverstraw to come down, with Long Islands coming in, and Hackensack sending an odd load now and then South Jersey sending right along, so that there will be no shortage. At this time last year, the Hackensack River was closed with ice. A. N. OLDTIMER.

December 30, 1893.

Written for the CLAY-WORKER.

CHEMISTRY FOR CLAYWORKERS.

No. 18.

IN continuing our remarks on heat, we must refer again to the thermometer, and having in the last issue of the CLAY-WORKER described the two principal ones used in this country, we will next proceed to examine briefly the principles upon which they are constructed.

Temperature, or *intensity of heat* then, is measured by the amount of expansion it produces on the substances acted on, whether they are solids, liquids or gases; up to the present, liquids are used, being most suitable. Gases expand too much, and solids too little to be available for ordinary thermometers; for high temperatures, however, an instrument called a pyrometer is used in which the expansion of a refractory solid indicates the temperature.

In the ordinary thermometers two liquids are used, viz.: alcohol and mercury; alcohol is used in thermometers intended to measure very low temperatures, while for ordinary and medium high temperatures mercury is preferable to alcohol.

A mercurial thermometer will not register lower than 39° below zero, for at that temperature it freezes into a solid; nor will it measure higher than 570° above freezing point of water, for at that height it commences to boil and volatilize. On the other hand there is no known limit to the downward graduation of the alcoholic thermometer scale as the lowest attainable temperature will not freeze alcohol, but its upward limit is reached at 141° above the freezing point of water; at this temperature it boils.

The Centigrade thermometer has its zero point fixed at the freezing point of water, while the zero of the Fahrenheit thermometer has its zero at 32° below freezing point. Zero in these cases is a misnomer, and calculated to embarrass the young student. We will therefore endeavor to remove the obstacle by putting zero on its proper base.

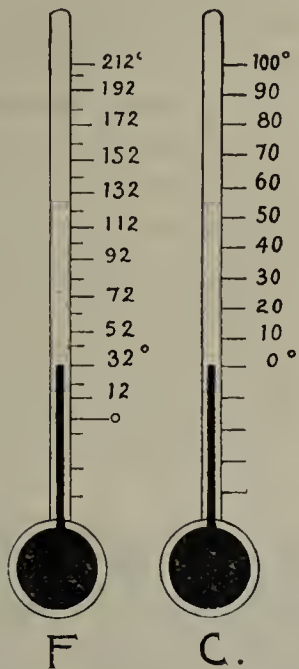
We are told that zero comes from the Arabic language, and means empty, or containing nothing. With this definition of zero, we must place it hundreds of degrees below where it now stands on either of these thermometers.

Absolute zero is a temperature that has never yet been obtained and observed, but 200° F. below its present

zero is not uncommon in the laboratory and lecture room.

Scientists have been able by a process of reasoning to fix upon a zero which they call absolute. This temperature is down where the elasticity of gases disappear, or where they become solid, same as water becomes ice; this therefore is the zero with reference to all gases. This temperature is fixed 461° F. below its present zero. If, therefore, we graduate the Fahrenheit thermometer from this point up, we should have freezing point of water at 493° F. and the boiling point at 673° F. With the Centigrade thermometer this new or absolute zero is 244° below its present zero.

The accompanying sketches may render the description of these two varying scales of degrees somewhat clearer. Here it will be observed that the mercury stands at the same level in both tubes, viz.:



At the freezing point of water, assuming now that they—the tubes—are identical in every respect; we

may confidently expect the mercury to rise to the same level above, if they are both lowered into a pan of boiling water, that level will be 212 in the Fahrenheit, and 100 in the Centigrade.

In showing the difference of degrees on each of these thermometers I neglected mentioning the methods of changing the reading of temperature from one scale to another; this is very essential to any one not quite familiar with both. The following formula—

No. 1, Cent. to Fahr. No. 2, Fahr. to Cent.

$(\frac{9}{5}T^{\circ}C + 32^{\circ} = T^{\circ}F)$ $\frac{5}{9}(T^{\circ}F - 32^{\circ}) = T^{\circ}C$ is easily remembered and easily comprehended by any one familiar with fractions. $T^{\circ}C$ stands for temperature in degrees Centigrade, and $T^{\circ}F$ is for temperature in degrees Fahrenheit. The Centigrade is sometimes called Celsius's thermometer.

The first formula is to convert Centigrade reading into Fahrenheit and reads thus: $\frac{9}{5}$ multiplied by the temperature reading on the Centigrade thermometer with 32° added, will give us the temperature as shown on the Fahrenheit thermometer.

Take for example the freezing point of mercury on the Centigrade scale, and it is 39.4° below zero, written -39.4° . Now $\frac{9}{5} \times -39.4^{\circ} + 32^{\circ} = -38.9^{\circ}$ Fahr.

We will now try an example on the second formula. Alcohol boils at 173° F. What does this equal on the Centigrade scale? According to formula No. 2 it equals 78.3 for $\frac{5}{9}(173^{\circ} - 32^{\circ}) = 78.3^{\circ}$ Cent.

We cannot very well ignore the Reaumur thermometer in this article, although very little used now, in fact, I have not seen one since 1874 and that was in London; I have not seen one in this country.

The Reaumur has its zero marked at the freezing point of water and its boiling point at 80, so you will see its degrees are larger than the Centigrade, and more than twice the length of Fahrenheit's.

If you have mastered the methods and formulæ of converting centigrade to Fahrenheit and vice versa as given above, you will be able to construct formulæ to work in the Reaumur scale.

To the general reader this much writing about thermometers will not be very acceptable reading, it may, however, interest them if they read the following short history of the instruments. I copy them from a scrap book, the source of which I have now forgotten.

"The invention of the thermometer marks an epoch in science, for it alone has permitted of obtaining a knowledge of the laws that govern calorific phenomena. The first idea of it is perhaps due to the celebrated Van Helmont, who devised an apparatus which, to use his words, was 'to prove that the water contained in a bulb attached to a hollow rod rises or descends according to the temperature of the surrounding medium.' (The italics are mine.—W. W.)

In the seventeenth century the necessity of an apparatus adapted for measuring the differences of temperature was so greatly felt that Galileo, Bacon, Scarpi, Flud, Borelli, and other scientists of the epoch devoted themselves in this direction to researches that were not always crowned with

success. It was not till 1621 that we find a beginning of the solution in the experiments of a Dutchman, Cornelius Van Drebbel. This physicist's thermometer consisted of a tube filled with air, closed at its upper extremity and dipping at the other extremity (which was open) in a bottle containing nitric acid diluted with water. According as the external temperature rose or fell, the air in the tube increased or diminished in volume, and consequently the liquid descended or rose. This instrument, called the *calendare vitreum* (indicating glass) by its inventor, constituted what has since been called an air thermometer; but as its graduation was based upon no definite principle, it was incapable of furnishing any comparable reading. Along about 1650 the members of the *Accademia del Cimento*, at Florence, introduced into the thermometer certain improvements that gave it nearly the form that it has to-day; and its principle was based upon the expansion of liquids. The tube was filled with colored alcohol. In order to graduate it, it was taken to a cellar and the place was marked where the liquid came to a rest. Then, starting from this, the portions situated above and below the mark were divided into 100 equal parts. As may be seen, it was impossible with such a system to construct two instruments that should agree. Nevertheless, it was the only apparatus that was made use of for a half century."

This short description of the development of the thermometer will be completed in the next article of "Chemistry For Clayworkers." As will be seen



GLIMPSES OF THE AUDITORIUM—A CORNER OF THE CAFE OR BAR.

above, the members of the Accademia del Cimento, came very near the arrangement of Celsin's, or the Centigrade thermometer.

WM. WAPLINGTON.

BRICK YARD SKETCHES.

In and About the Convention City.



CHICAGO may well be called the Convention City, for no community in the World has ever welcomed within its gates in a single year so many assemblies of various sorts as gathered there during the World's Fair Season.

Perhaps the most remarkable feature of that wonderful exposition was the Conventions or Congresses as they were called. They included nearly every known industry, profession trade and sect. Well nigh every walk or department of life was represented by men and women who met together to consider and dis-

might not be disturbed by the unusual sights and sounds, which prevailed during the Summer. It is to be hoped that the wisdom of this choice will be fully demonstrated by an unusually large and enthusiastic Convention during the week of January 23rd, when the N. B. M. A., will convene for the eighth time.

As the reader is doubtless aware Chicago is a wonderful city. There is something in her atmosphere that exhilarates (for demonstration see the entertainment committee) and buoys up to mighty action. Here brickmakers make more brick in less time than can be done elsewhere. Indeed Chicago clay is rapid. It is dug swifter, runs through the machine quicker, is dried faster and burned quicker and harder than any other.

It is a rare bit of good fortune for the Chicago craftsmen that such is the case, for the remarkable growth of that city and the development of "skyscraper" architecture created a market for brick both as to quantity and quality that Chicagoan's only could meet.

BIG FIGURES.

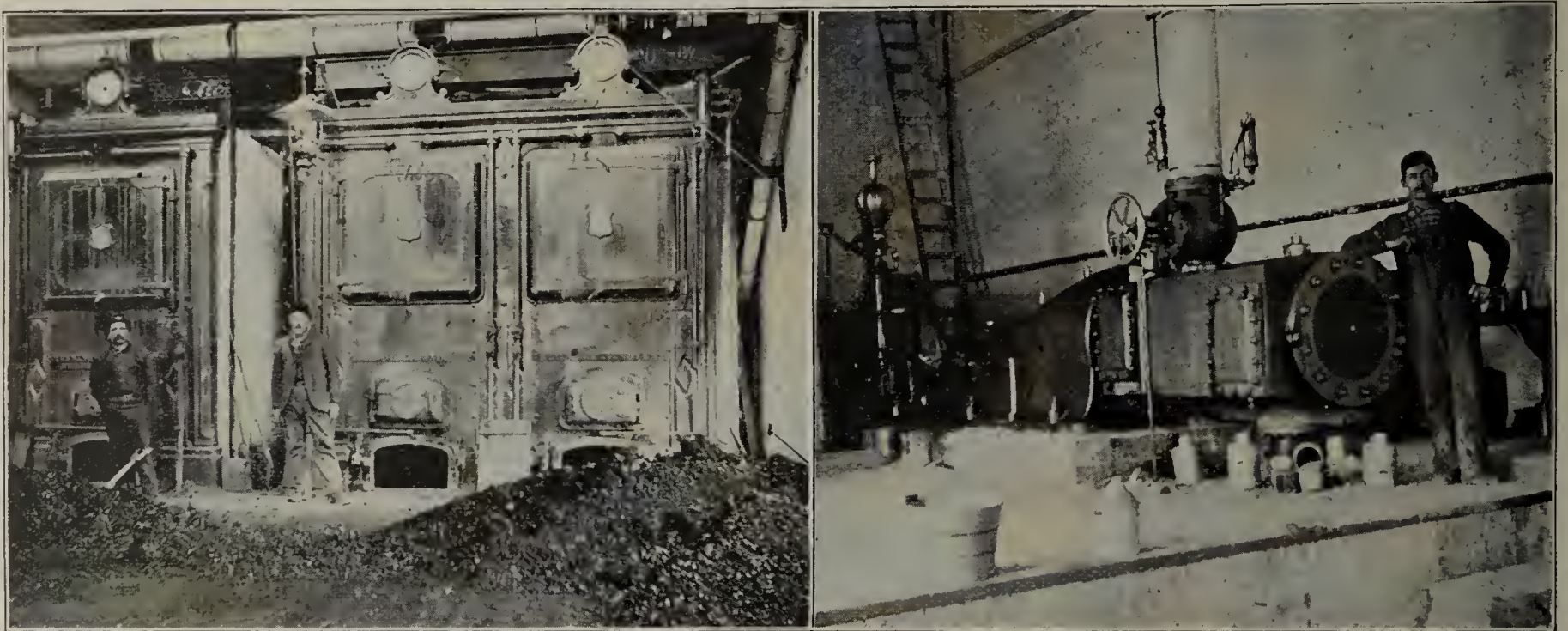
In 1891 the total number of brick used was 650,000,000. In 1892, the ban-

increase is due to the addition of improved machinery and artificial dryers, etc. Nearly all of the yards are now equipped for winter work and can run the year round when the market justifies it. At present nearly all of the yards are idle, but it is thought that with spring they will all be going again.

Chicago is surrounded by a vast clay belt about 20 miles wide and 40 miles or more in length, and varies in depth from 20 to 80 feet. From this our mathematically inclined readers may calculate that it will be 'steen years before there will be any danger of a brick famine in the Windy City.

THE ALSIP BRICK CO.'S NEW PLANT.

Beginning near the extreme northern end of this clay belt we find the Alsip Brick Co.'s new Shermerville works. This plant is virtually a duplicate of the Hayt & Alsip Co.'s works near Blue Island, which were described in the December CLAY-WORKER. The only difference is that here they are running Penfield & Son's machinery. At the time of our visit they were running but one machine, but were getting ready to put in another, being well pleased with the one then in operation



THE ALSIP BRICK CO'S SHERMERVILLE YARD—THE SEAT OF POWER.

cuss matters of mutual interest, and devise ways and means of advancing the interests of their followers.

The brickmakers alone it would seem were not in it. They preferred to devote what time they could spare from their kilns, to the Fair itself and the Plaisance and so put off their annual "congress" till a more quiet and opportune time, in order that their deliberations

ner year, 67 yards were in operation and the total output amounted to 825,000,000. During the past year but half that quantity was made. There are now fifty yards in and about the city with a total yearly capacity of 1,000,000,000. By this it will be seen that while the number of yards has diminished one-fourth, the average capacity has nearly doubled. This remarkable

Mr. Tom Alsip, who we found in charge of the plant and to whom we are indebted for several favors, including Frank Alsip's dinner, said that when both machines were running smoothly he thought they would be able to make 200,000 brick a day though 75,000 to 80,000 was the rated capacity of each machine. The works are 21 miles north of the city on the Chicago, Mil-

waukee & St. Paul Railway and the bulk of the product will in all probability find its way to Milwaukee. The brick are handled in precisely the same way as at the other yard mentioned. In fact the works were planned by the same master mind, Frank Alsip, Sr., and erected under the supervision of Frank Alsip, Jr., two of Chicago's most skillful brickmakers, who devote their entire attention to the operation of their works (they have three or four yards) leaving the marketing of their product to Wm. H. Alsip who has always proven fully equal to the task and with whom many of readers are very well acquainted. Those who fell in with him at Louisville a year ago will be pleased to know that he is a member of the entertainment committee.

HARLAND BRICK CO'S WORKS.

A couple of miles south of the Shermerville (Alsip) plant is one of the three plants of the Harland Brick Co. This plant has been idle for some time and we found it in a state of innocuous desuetude. Making our way to the clay pit, from which smoke ascended, telling that some one was still on duty, we found a sturdy son of one of the proprietors at work about the steam shovel which was ice-bound. He bade us a hearty welcome and invited us down, but not being equipped with a rubber suit and having slid down a steep embankment on our camera into a clay pit a day or two before, nearly dislocating it (our camera), we declined and carried on a short conversation from the top of the bank, and then made our way back through the works, guided by Mr. Harland's helper who afterwards, by Mr. H.'s direction, drove us to our next station, a favor greatly appreciated for the roads were very muddy.

Mr. Edwin Harland, Vice-President and treasurer of the company, is the oldest brickmaker in Chicago; that is he has been longest in the business, and his experiences would make a large and interesting volume. He began work on a brick yard in England when but a lad. He came to America when 12 years old and again went to work carrying brick from molder to floor. In those days they moulded brick by hand one at a time.

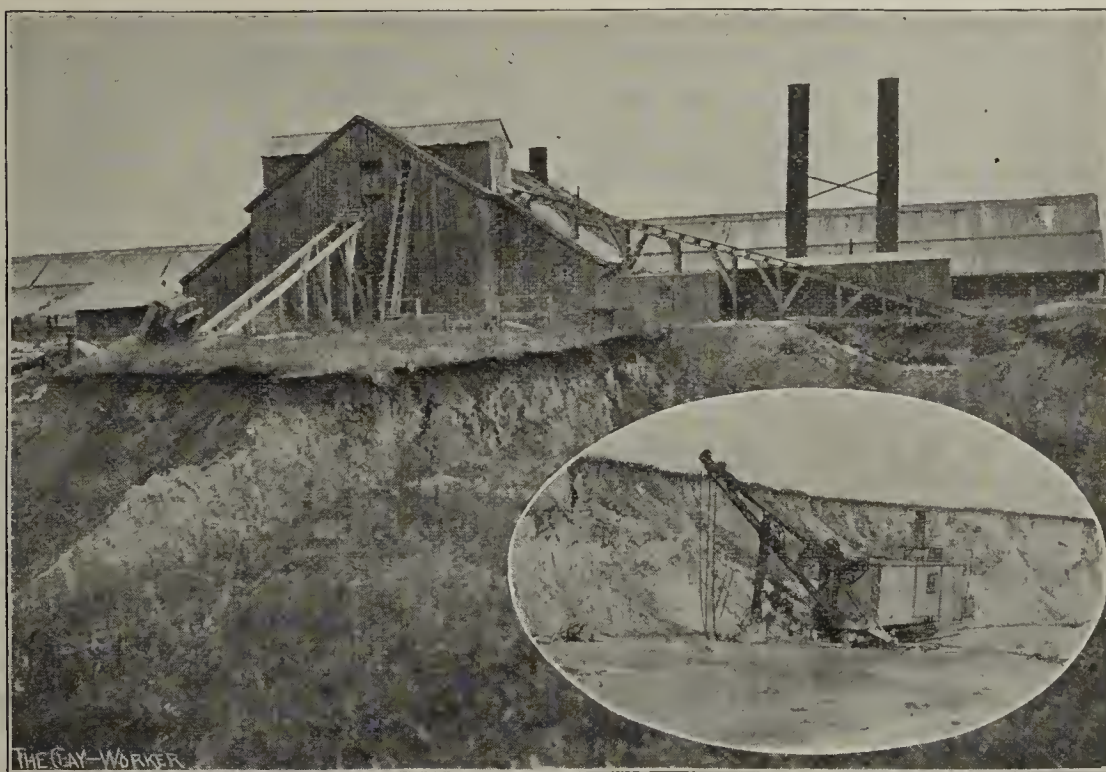
In 1855 he formed a partnership with Jos. Watkins and started a hand yard. Brick were in great demand and sold readily for \$18 a M. The clay was tempered in a pit by sticks driven through

a log which was pulled around the pit by oxen. In due time the tempering wheel was introduced, afterwards followed by the soft mud horse power machine which in turn had to give way to steam. So Mr. Harland went through all formative stages and now is at the head of a company operating three plants with a combined capacity of 350,000 brick a day. Their north side yard a combined summer and winter plant is equipped with two Chambers machines, a Duplex steam dryer, the invention of W. C. Byrne, which they commend highly, and a shutter system of outdoor drying. They have a similarly equipped yard at Bernice on the south side and a one machine plant on the west side.

LILL BROS. BRICK WORKS.

Continuing our search for brick

In common with all the north side yards, Lill Bros. are, at times troubled with wet clay, and, as a partial remedy, have fitted up clay dryer by covering the floor of a room about 30x40 feet square, with steam pipes heated by exhaust or live steam, as the occasion requires. The clay is hauled up the incline from the pit in the usual manner and dumped through the roof of the dry house upon the pipes and then spread by shovel. When dry it is wheeled or shoveled to a cup elevator and is carried up and deposited on a platform beside the pug mill and mixed with the clay as it is needed. They burn entirely with oil. One man will burn a 16-arch kiln that with coal would require four burners. There is no "popping" in the arches, as there used to be when coal was used.



THE HARLAND BRICK CO'S NORTH SIDE WORKS.

making lore on the north side we stopped at the thrifty erstwhile suburb, Evanston. A mile and a half from the station we found the orderly, well kept works of Lill Bros., which were established ten years since as a hand yard. As the demand for brick increased they met it by putting in soft mud machinery and this, in turn, was replaced with a steam power stiff clay outfit from the factory of Frey-Sheckler Co., of Bucyrus, O., with which Mr. Lill is well pleased. Theirs is a summer yard, and had not been in operation for several weeks, but there was unmistakable evidence of good management on every hand. The machinery had been cleaned and oiled, and belts and appliances put away instead of being carelessly thrown down to rust and rot during the idle season.

A little ways beyond Lill's is the immense works of Weber-Labahn Brick Co., one of the comparatively new firms.

THE WEBER-LABAHN BRICK WORKS.

The Company was organized in the spring of '91, and began making brick in July of that year. They have 40 acres of clay averaging 50 feet in depth. They use a Marion Steam Shovel, haul in dump cars in regulation style, and run a complete two machine Chambers plant, making 150,000 a day. They, too, suffer from the wet clay complaint and have put in a dry pan to crush their bats, which they mix with the clay in the pug mill, which affords some relief.

They have two Iron Clad Dryers working very satisfactorily and burn with oil in clamps 42 wide and 45 high.

Nearly all of their brick are shipped to neighboring towns, as they do not care to compete with city prieses, which, they say, have been romping around \$4.50 a thousand, and at times gone down to \$3.85 delivered, or \$2.42 at kiln.

Mr. LaBahn, who has charge of the works, is a skilled brickmaker having started when a boy under Mr. Harland as a roustabout and climbed the ladder, round by round, to his present position.

We did not visit any of the West Side yards, of which there are half a dozen or more, all of the same general type, using Chambers machine, Drake's crusher, etc., owned mostly by those having other yards on the North and South Sides.

Chicago brickmakers are modest but acquisitive. They not only have yards of great capacity, but they, as a rule, have two or three of them.

For instance, there is great hearted Adam Weckler. He and his brother W. H. Weckler and his son-in-law, Alex. Prussing, who, it will be remembered, gave us one of the ablest papers read before the N. B. M. A. Convention at Louisville, have three immense plants with a total yearly capacity of over 50 million. Adam is truly one of the largest brickmaker in the country, for he tips the beam at close to 300, and his brother sees him a

Wahl Bros., which, we were told, is really the best built plant about Chicago, and which is managed by Dr. N. B. Rize, a prince of good fellows, whose face is pictured on page 45, and those near Blue Island, which we described in the December CLAY-WORKER, we come to the SOUTH SIDE YARDS.

These are grouped along the trunk lines in the neighborhood of Hammond, Ind., and are all of one general character. The steam shovel starts the clay towards stiff clay machinery. The brick are dried artificially in tunnels and burned in clamps with oil. From start to finish the work is carried on with a rush that reckes no let or hindrance.

Brick! Brick! Brick!
Is the one and only refrain.
Brick! Brick! Brick!
Mostly for glory, sometimes for gain,
Regardless of wind or rain or snows,
Hard, salmon or soft, everything goes.
Brick! Brick! Brick!

We have, so far, said nothing of the pressed brick interests. Chicago is among the best markets for front and ornamental brick on this continent.

lished there and all of the clay land adjoining. How effectively he did this may be best appreciated when it is stated that he purchased 450 acres. This great tract embraces all of the known available red brick clay within a radius of 100 miles of Chicago.

Mr. Kimbell is a very happy combination of blood and brains—physical and mental power. It was not long till



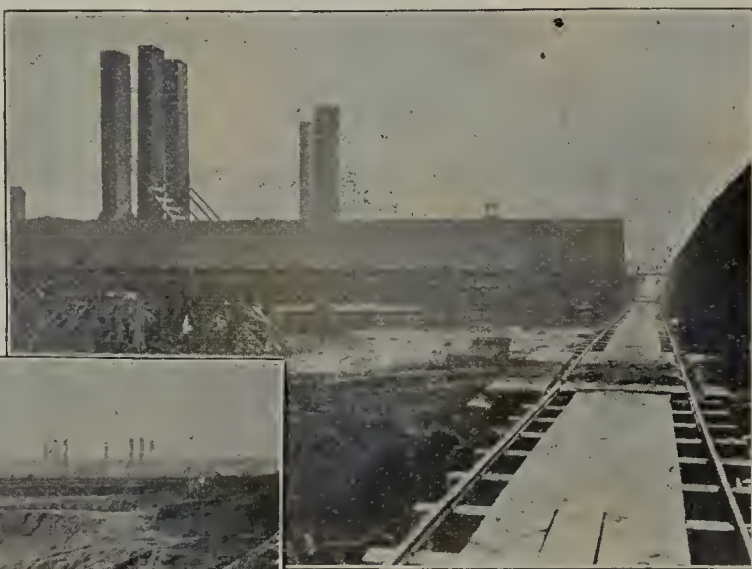
C. H. P. B. Co.'s CLAY SHED.

he had in operation a well equipped plant that can turn out a high grade of red pressed brick in almost any desired form or quantity. During the latter part of last season, when nearly all other plants had closed down these works were running night and day.

The clay is plowed with a traction engine and gathered in an automatic shovel-like cart and stored beneath a great shed 360 feet long, 66 feet wide and 18 feet high, through the entire length of which run four permanently laid tracks. The clay is shoveled into end dump cars that run on these tracks and hauled by horse-power to the grinding machinery. It is thoroughly pulverized and screened in the manner common to the dry press process and fed into hydraulic presses that mould five brick at a time. They have one small power screw press with which they make special shapes and fill *rush* orders. Their ornamental brick are all dried thoroughly in steam heated rooms before going to the kiln.

They burn with oil exclusively in Graves's square down draft kilns. Waresmoke four or five days and finish in five or six more. They now make 117 different shapes and can execute special designs in short order.

The works are located at Porter, Ind., 45 miles east of Chicago on the L. S. & M. S. Ry. There is no "wall" about them. On the contrary, visitors are welcomed courteously. There are no



AN IRON CLAD DRYER.

Her supply is drawn from the various manufactories throughout the country, but the bulk of her pressed brick are made of Indiana clay and are furnished by the

CHICAGO HYDRAULIC PRESSED BRICK CO.

In 1890, Mr. S. S. Kimbell, one of the Windy City's best known and most successful brick men, organized a stock company with a capital of \$600,000, and in genuine Chicago fashion proceeded to arrange for the establishment at Porter, Indiana, of a dry press brick plant. His first move was to obtain an option on each of the brickyards then estab-



LILL BROS. CLAY HOLE, WEBER-LABAHN'S WORKS IN THE DISTANCE.

few better. Mr. Prussing don't count much, relatively, in avoirdupois but is a hustler from way back, and when it comes to landing business he weighs a ton Troy, net. He is a walking encyclopedia of information on all matters pertaining to Chicago interests in general, and brickmaking in particular.

Skipping their plants and that of the

"sink holes" about the plant that they have to apologize for or hide from view.

Mr. Kimbell thinks the prospects for the coming year are good, notwithstanding the greatly increased use of terra cotta for exterior decoration, which, one would think, must materially lessen the market for pressed brick. However that may be, Mr. Kimbell is kept busy filling orders. Wonderful is Chicago!

OBITUARY.

Death of Professor Hermann Seger. of Berlin.

We omitted to notice in our last issue the death of Professor Hermann Seger, at his home in Berlin, Germany, Oct. 30.

Probably no man of the present day has done more to advance the ceramic art in Germany, or any other country, than Dr. Seger. Those of our readers

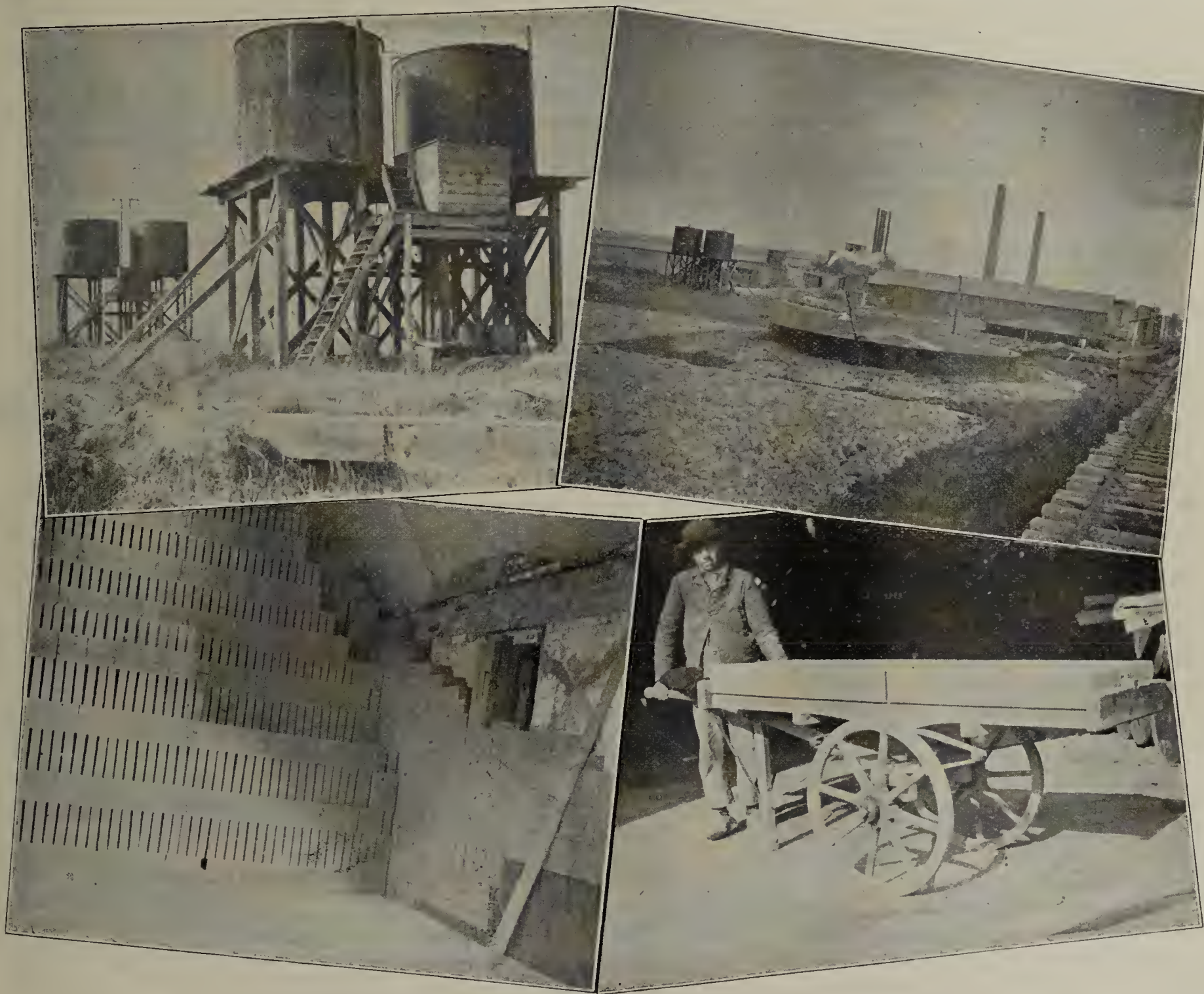
who examined the exhibit of the Laboratory of Thonindustrie-Zeitung, at the World's Fair, saw some of the results of his labors, and we opine that not a few of them will profit thereby. In fact we know of one who left an order for a complete outfit of Dr. Seger's furnace and apparatus for the testing of clay and enamels. There were also exhibited apparatus for testing cements and the high temperature cones described in the November CLAY-WORKER and which in Germany are known as the Seger'sche Brennkegel—the most accurate and approved means of measuring kiln heat.

We wish we were able to give a more detailed account of Dr. Seger's work in ceramics. To show in what esteem he was held by his countrymen, we quote from resolutions that were published in the German clay journals immediately after his death.

"Deeply will our readers mourn with us this heavy loss. Not easily will our ceramics find again so talented, so faithful, so persevering an investigator, who with equal love and generosity, and at the same time with such highly successful results, placed at her service all his thoughts and energies. The annals of our trade testify upon every page to his beneficent and fruitful activity."—*Staff of the Thonindustrie-Zeitung.*

"Copious light for the scientific understanding of ceramic problems, manifold and beautiful results in their practice are due to his labors. We mourn deeply the loss of the faithful friend and judicious adviser of our industry.—*German Association of Manufacturers of Fire-Clay Products.*

"With him has departed an extraordinarily rich treasure of knowledge and experience from which he was



THE CHICAGO HYDRAULIC PRESS BRICK CO.'S WORKS AT PORTER, IND.

ever willing to communicate in a friendly and generous manner to the public or to the individual. As our association enjoyed in a special degree the promoting interest and the fruitful labor of the departed, so it is the most severely afflicted by the loss. But whatever the dead friend has been to the association and to its members, his unassuming and amiable personality will remain in the grateful and honored remembrance of all who approached him as a co-worker or as a seeker for knowledge and advice."—*The German Association for the Manufacture of Brick, Clayware, Lime and Cement.*

Written for the CLAY-WORKER.

SOME TIMELY ADVICE.

Pointers by a Hardened Chicagoan for the Visitors of the N. B. M. A. to the Aeolian City.



HAVE been stranded in Chicago long enough to justify my going on the stand to testify as to Chicago's wickedness. Everything is wicked in Chicago. I didn't know it until last summer when I attended the World's Congresses Auxiliary Circus at

the Art Palace, on the Lake Front, and absorbed and experienced seventeen kinds of religion—but I am not going to discuss religious matters, for I don't know any more about them than I do about bricks. I simply want to inject into my friends, the readers of the CLAY-WORKER, some kindly advice. I am just oozing advice, and I am full of Don'ts. I have'n't arranged my Don'ts in alphabetical, or any other order; they are a lot of haphazard Don'ts, and you can take your pick. They are all, however, a yard wide and warranted not to crock the most delicate skin or run in the washing.

Here goes:
When in Chicago——
Don't imagine that every loudly dressed man is a "Con." man and is going to steer you up against a bogus lottery

ed and fond of his parents, who may have been wealthy before the Big Fair, but who are now in reduced circumstances. I have known hotel clerks who looked very haughty, but who would at times, when approached in the proper manner, condescend to tell patrons of the hotel where the mail box was situated or even point out the way to the bar.

Don't imagine that the policeman whom you ask to direct you to the place of meeting of the National Brick Manufacturers' Association, means to be insolent when he steers you to Hodcarriers' Hall. He means well.

Don't take the hotel key with you when you go out in the street. You may be arrested for impersonating a Columbian guard or a Pinkerton policeman.

Don't, when you see an old man with 1863 whiskers, a cap with "Commissioner" engraved on a nickel-plated door plate on it just above the visor, imagine that he is a park commissioner or Hiram Gore, the commissioner of Public Works. He is simply one of several very tame old men, who will run errands, carry your cane for you or even eat your breakfast for you if you have that dark brown taste in the morning.

Don't believe all that you read in the sandwich man's signs. But don't blame him; he doesn't own the things he advertises, nor is he even allowed to edit the advertisements that adorn his front and back.

Don't get a jag.

Don't believe everything you hear about
CHARLES LEDERER.

An experiment that is watched with a great deal of interest, is being made at the Adamant Brick and Tile Co., Kansas City, Kans., viz.: that of burning vitrified paving brick with water gas, it being claimed that this process will very materially cheapen the manufacture of brick.



THE CLERK MAY MEAN WELL.

ticket, or that the cigar he hands you is drugged. The man you suspect may be an ex-director of the World's Columbian Exposition, or a publisher of Gospel Hymns. Never judge a man by the clothes or mustache he wears. He may be a very nice man, popular in the bosom of his family, but merely lacking in artistic temperament.

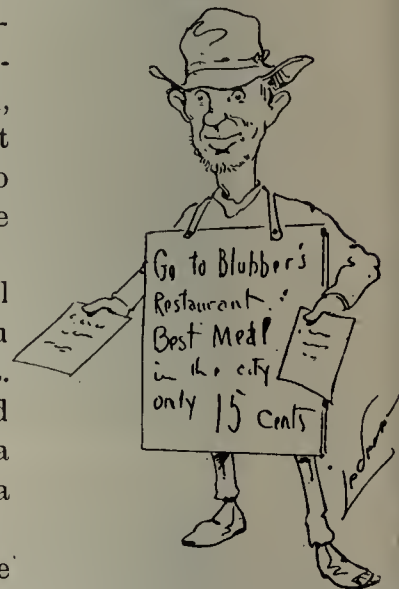
Don't, if you go to a hotel, instead of a free lodging house, (which latter is quite a fad of late, even among visiting millionaires,) think because the clerk yells out the moment you register: "Ahyes mister-ah-yes Brown glad to see you going to stay long this time? nice weather several of your association here already certainly one of the best rooms in the house—TEL KEY. froNT!!" that the clerk isn't really glad to see you, nor is he necessarily totally depraved. The chances are that he is kind heart-



THE POLICE STAR LIKE HOTEL KEY.



HE USED TO CARRY THE HOD HIMSELF.



HE IS NOT RESPONSIBLE



NOT NECESSARILY A BUNCO MAN.



NOT A PARK COMMISSIONER.

Written for the CLAY-WORKER.

OVER PRODUCTION AND ITS CAUSE AND EFFECT.

The Brick Industry the Best Test of the Times.

BY J. W. CRARY, SR.

NO intelligent observer of the business and financial condition of our country at the present time, will question the fact that the main cause of the general depression in nearly all the industries of the country is *over production*. I have no space here to give figures. I would only ask the reader to refer to well-known, reliable statistics, made up and published officially, as well as by the press. Mr. Edward Atkinson, the most expert statistician in the United States, says, that at least one billion of dollars worth of the general products of the country has been produced this year more than was needed for the home consumption or for foreign demand.

THE CHIEF CAUSE OF THIS IS SWELL, PUSH, ENVY AND AVARICE.

In every line of business, competition has run into the most extravagant proportions. The farmer has tried to double his crop by more acreage and a higher and cheaper cultivation. The iron industry and the coal, has been increased and pushed to excess. It is the same with all the manufacturing establishments, and the mercantile. There are stores that cover many acres of floor, and have a full brigade of employes; they would like to do all the trading of their line that is done in the city. There is no limit to their ambition and recklessness.

TO A VERY GREAT EXTENT, THE BRICK-MAKING INDUSTRY

Partakes of the same aspiring, extravagant spirit. Brickmakers that make a handsome competence by a nice, easy, smooth business, making three to five million brick every year, become infected with the very contagious "Swell brick fever," and so the plant must be swelled out to make ten millions every year. Perhaps the swell would extend to twenty or twenty-five millions. Many of this class are regular, practical brickmakers. Then there is the experimental, speculative class of brickmakers; they have plenty of money, but very little *brick brains*; they accidentally get hold of a big clay bed, and like the Indian, that found a flint, said he "would have a gun put to it." So our new-fledged brickmaker forms a company, and be-

gins to canvass for skilled men and machinery. Of course, he is quickly supplied; he has been "scented a far off" by the shrewd patentees of brick machines and kilns, and also by 'showy, pretentious expert superintendents, brick setters and burners. His plant is soon up and in full operation; five million brick per month, is the output. At the end of the first year there are bats and salmon brick enough piled up around the works to build a fort. In fact, the dividends are bats, salmon brick, and broken or useless machinery and fixtures. The second year may be an improvement on the first, but it is five years before the plant can turn out brick at a profit, and then the market is perhaps glutted, and the stock on hand cannot be sold at any price, operations stop, employes forced to idleness, and all small well skilled brickmakers, doing a legitimate business, must partially suspend operations until the *glut* in the market is cleared.

DIVERSIFIED CAPITAL AND INDUSTRY THE ONLY LEGITIMATE POLICY.

All great concentration of money to build up and establish large industries, to be controlled by a few of the speculative class, is unjust and fatal to legitimate enterprise and good society, and is a menace to the peace, welfare and progress of the State. Let us apply this argument to brickmaking. It is claimed by some companies, that they make and burn, one hundred millions of brick every year. Now, these concerns have a half dozen little bosses and one big boss, and about 1,000 common employes, who feel very little interest in society. The six, or perhaps ten, head men of the establishment, have excellent homes and refined families, say, altogether, fifty persons, making what may be called respectable citizens, while nine hundred and fifty poor hapless laboring men, with an average of four in the family, making about four thousand people, who live in tenement houses, and are mere servants, with very little chance to ever be at the head of an enterprise that will place them on a grade with their employers. Such a place or city grows up with the few rich, select, selfish and snobbish, while the masses rise very little above serfdom.

Now, let us look at this industry, with its wealth diversified. We will suppose there are thirty-three distinct, independent, well-skilled brickmakers, each having a brickyard that will turn out, at least, three millions of first-class brick

every year. Each of these brickmakers have nice homes, with refined, intelligent families—in all, about one hundred and fifty first-class people, instead of fifty, and thirty-three excellent homes, instead of ten. Now here is a gain in society of over three to one, and the laboring class having thirty-three bosses instead of one, are much more independent and better cared for, and their opportunities to improve their conditions are largely increased, because it is the interest and policy of their employers to encourage the best quality of labor and improve it in skill, as well as morally and socially.

SUCH SMALL BRICKMAKERS HAVE A PERSONAL INTEREST IN LABORERS,

While the interest of a corporation, as brickmakers, is almost entirely impersonal. Moreover, the big company employer deals with one thousand men, and can subsidize or coerce them to a great extent, in public affairs, so that one man can control one thousand votes, if he acts for a corporation; but if the votes were employed by thirty-three independent employers, they would never combine to subsidize or influence the voters.

BETTER BRICK WOULD BE MADE AND BETTER PRICES MAINTAINED.

"Competition is not only the life of trade," but it improves the goods. If one single concern is making 100,000,000 brick every year in a place, that concern will not only control the market, but will compel the consumers to take such brick as they may choose to make. The majority of builders will always buy the cheapest material, and if a small brick works, making first-class brick, will not sell his brick as cheap as will the big brick works, he cannot sell his brick, and the big brick works will be sure to keep prices at zero until his small competitor is "frozen out." But this is not all the evil of combined capital. Consumers of brick must go to one, or perhaps two, big manufacturers to get their supply, and they must accept their terms, and their terms are sure to be most favorable to large consumers. In fact, consumers have no option where capital is thus combined, so as to rule both product and prices.

If there are thirty or forty brick works, instead of one, the community will always be well and fairly supplied. Competition will always be regular, and the supply will keep pace with the demand. Some brickmakers have the idea, or I'd better say, "big-head," that the more

brick they make the more they know about brickmaking as an art or science, and will insist that if consumers want the best kind of brick, they should call on them for a supply.

I received a letter not long since, from a man in one of the large cities of Missouri. He said, that he "Needed no book on brickmaking, and if he did, he would not go down into the piney woods of Florida for it." He said, "He had burned more brick in one year in his city, than I had burned in all my life." From the literary look of this man's letter, I would think that he had never been far enough from a brick kiln

THE DEMAND FOR BRICK A GOOD CRITERION OF BUSINESS.

General enterprise and prosperity induce good building, and good building cannot be done without brick. There is no building material so sensitive in the market as brick. It is one of the common, false impressions that brick is a sort of luxury or extravagance, and if permitted, most men will build with lumber and other combustible material, when there is a stress in money or business. They do not stop to think that the difference in risk, insurance and durability in favor of such building will more than compensate for extra

large-sized articles; and though expeditious drying may be effected, it is attended with considerable risk from over heating and "Checking," and the expenditure is excessive in the heat escaping readily from but a comparatively thin covering of drying material.

Remarkably favorable results have been secured where bricks and blocks have been piled in hacks on the slatted or open floor of a two track, inside fan dryer. The cars had been removed and the material was placed between or near the rails of the track.

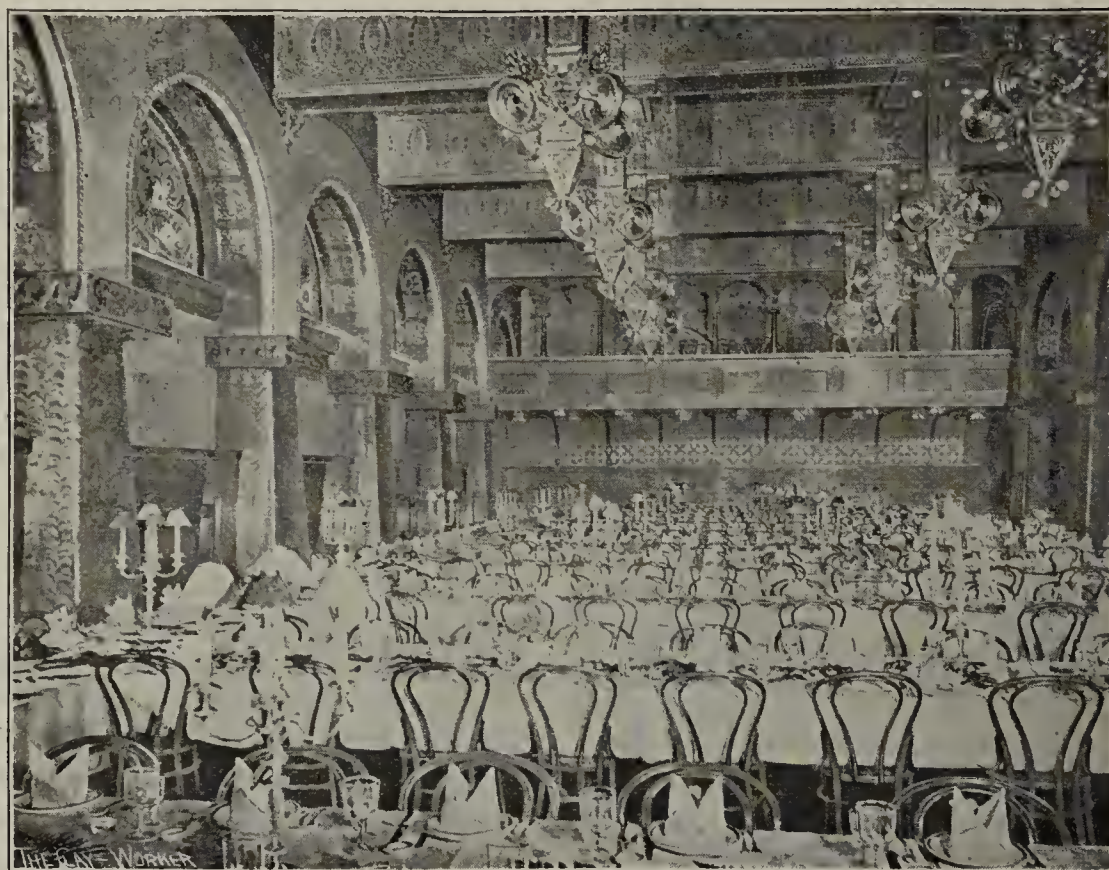
Fans of the larger (54-inch) diameter were employed, and as they extended about fifteen inches below the rails, they created a considerable current of air below the floor as it descended through the blocks and the floor on one side of, and to, the lower portion of the fans, and was also pushed by them up through the floor and drying material on the other side.

In this instance of drying blocks, they were about 3x5x15 inches of fire material, rather more moist than bricks in a suitable condition for repressing, and were piled in two "benches" to occupy a little over 30 inches of the space across the track and about as high as the ordinary brick hack, and it was observed that those so placed at 10 o'clock, were sufficiently dried to be put in the kiln at 4 o'clock in the afternoon, the drying having been effected in about 5½ hours, as the engine stopped for half an hour at noon and the fans were not run, nor the heat from the engine exhaust steam supplied during that time. The tracks were 24 feet long, about 336 square feet of floor-space occupied, and 1,000 feet of 1-inch pipe used.

Let me note, in this connection, that regular-sized fire bricks, made from "soft mud," placed on boards on the cars of the same dryer at 7 o'clock, were taken off, as in suitable condition to repress, at 10:30 o'clock the same morning, they having dried stiff enough for the purpose in 3½ hours, and free from "checks."

These results would probably have been as well secured in a space two feet less in width ($12 \times 24 = 288$ square feet), and I know of no more advantageous use of space, nor quicker or better drying, than in this case, where no other heat than the engine exhaust steam was used.

There are floors arranged with openings between the boards or plank, and steam pipes below suited to the current



GLIMPSES OF THE AUDITORIUM—THE BANQUET AND CONVENTION HALL.

in his city, to see a school house, and as to clay and brick burning, he thinks that whatever will do well in his city, must certainly succeed anywhere else on the globe. In fact, this man is a self-conceited, ill-mannered ignoramus; he thinks that I have never been out of the "piney woods," of Florida, and of course, could know nothing worth knowing in a big city. It is quite likely this man can burn brick of clay like that of the city he lives in, but if put in clays differing in mineral properties, he could do nothing but brag about the great experience he had in his big city. While there are many honorable exceptions, the most accomplished fools, ignoramuses and rascals, are to be found in our big cities.

cost of brick in five or six years, to say nothing of the intrinsic market value of the property.

It would be well if the N. B. M. A. would have a committee to report every year, the condition of brick market, the quantity made and sold, etc., etc.

Written for the CLAY-WORKER.

DRYING BRICKS.

BY S. GREEN.

DRYING ON THE FLOOR.

HEATED floors on which bricks may be placed, are of the earliest artificial means for drying.

Where no system of drying on cars is established, and even where the cars may be used, the dry floors are convenient for placing and handling, especially

merely from ascending heated air, and to these the fans may be favorably applied, for while the standing radiators may be preferred for the chiefly horizontal direction of the current of air created by the fans, and the greater fall and steeper drainage be more desirable, the current of air created from the lower portion of the fans, extending below the floor, increases the radiation from the surface of the pipes to such an extent that the drying capacity is greatly increased from the use of more air and accompanying radiation.

It may be noted that the lessened friction from the fact of the same amount of heat being obtained from less pipe, is not only preferable for the use of "live" steam, at its high pressure, but especially so for the relief of the engine in the employment of its exhaust steam.

If more than one, parallel line of fans is applied to a floor, at a distance of about 12 or 14 feet apart, and from 6 to 7 (or 10 feet, in case a truck or barrow way be provided,) at the outer or wall sides. All the fans may move the air across the floor, and in the same direction. This would admit of the use of racks both sides of each line of fans and a brick way between the racks, or rather tracks for cars of brick to run quite close to, and each side of, the several lines of fans, as the drying material could then be conveniently piled upon the floor by simply removing the cars when such special handling might be desired.

The current of air could be carried in a horizontal direction from one set of fans to another and directly across the entire floor, or if temporary partitions of something like canvass be placed about half way between the sets, or lines of fans, and board air guides are arranged above, the currents may return over the fans and be confined to each line and and closely resemble the regular two track plan, but it would also be well to have some partitions or means of checking the horizontal current below and also above the floor to about the height of the car platforms and placed about half way between, or 6 or 7 feet from, the lines of fans, in order that the current of air may be compelled to descend through the brick and floor on one side, and ascend through the floor and brick on the other side of each line of fans, though the general current above the floor may move in the horizontal direction.

One or more lines of fans have been

satisfactorily used above the flue — tile covered—dry floors, but chiefly with racks to hold the brick, on boards, for drying preparatory to repressing; arranged, also, on both sides of the fans with truck and barrow way between the racks and lines of fans, yet depending mostly upon standing radiating steam pipes for heating, and bricks are also dried very successfully on these flue dry floors after being repressed and when piled in hacks.

The air is drawn through the radiators to the first set of fans and from the furnace heating end of the floor, then forced from them to the next set of fans, which are placed about 20 feet further toward the cooler end toward which the air is further pushed, and also in a direction paralleled with the length and flues of the dry floor, the press being used on the floor between and beyond the fans, and piled brick are dried in hacks also in rows running in the same direction as the flues and the current of air.

This is a very simple and effective means of drying, the fans necessarily running entirely above the flues, and floor, and those of the smaller, or 36-inch diameter, are more peculiarly adapted, as the tops of the fans are about equally and sufficiently high as where the position admits of excavation for the larger or 54-inch diameter fans to extend about 15 inches below the floor. The bricks dry quite uniformly in these hacks and may remain in the same position as placed from the press handling, till ready to go into the kiln, thus avoiding unnecessary handling and injury to the bricks.

The results are about the same as in using the wooden floor with pipes below, or also above it, and when the lower portion of the fans extend below; but some head should be supplied from the furnaces of the flue dry floor to aid in drying the bricks on or near the floor.

The floors in the upper stories may also be used, with the fans of the smaller diameter, but as they must run entirely above the floor, or it may be more convenient to have them so arranged, it seems to be better to pile some of the material to be dried on raised platforms somewhat corresponding in height with those of cars on which bricks are piled to insure more uniform drying of the lower brick, and especially to provide ample air space in case the current of air be required to return over the fans, and this system is peculiarly desirable

for upper floors, because of the dryer being not only smaller in proportion to the product than those requiring more time to dry, but the material of which it is constructed is of much less weight.

Greer To Jenkins.

Editor Clay-Worker:

Geo. H. Jenkins in November number of the CLAY-WORKER asks for information with regard to bricks cracking in the kiln. Though Mr. Jenkins states his trouble very clearly, it is impossible, without seeing and experimenting on the material, to do more than guess at the cause and suggest a remedy. In my opinion, the brick are checked in the last stage of burning if perfectly dry before being set in the kiln; this can be found out by rapping them smartly together. If set before being quite dry, as likely from the fact that the bricks are broken about two inches from the end, just where the space between the bricks in the course below would come, it occurs in the watersmoking, and now to the remedy. My experience is, that the great majority of the ills that clay ware is heir to, can be cured in the selection and preparation of the clay. I would throw off the 18 inches of black prairie soil and mix the remaining strata where "Wind and rain will have a fair swing at it" for a few months. I would then soak it over night in the round pit before proceeding to temper, and protect the bricks, either by closer hacking or covering during the last stages of hacking, and let them be quite dry before being set in the kiln.

I notice, from time to time, a great many of your readers ask advice upon various points, which is almost always given by some of your contributors. This is advantageous to all concerned, but that the full benefit be reaped I think those receiving advice should report as to the result. It would only be courteous to those who take the trouble to advise them.

R. M. GREER.

A Hoosier in Texas.

C. W. Northrup formerly of Colfax, Ind., is now running a brick yard in La Porte, Tex. He is well pleased with his new home and writes that he is making good brick that sell for \$8. The yard is equipped with The Decatur Leader Manufacturing Co's machinery, and a small dryer of Mr. N.'s make. He used 96,000 brick to build it. It is 94 feet long, 40 feet wide 52 flues 4½x8 in. Five fire boxes at each end. Two stacks in the centre with four dampers in each stack. They are going to add dry press machinery soon.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Good Opening For a Tile Plant.

Editor Clay-Worker:

Replying to your favor of the 5th inst., enclosed please find P. O. Money Order for \$4, \$2 for subscription to the CLAY-WORKER and \$2 dues for membership in the N. B. M. A.

I cannot be without the CLAY-WORKER even if I go out of the brick business, it is by far the best of any of the journals that I have seen, and I think much credit is due your enterprise. The December number is the best I have ever seen.

I am very sorry that I cannot attend the next meeting of the Association, as I know of nothing more instructive, elevating and enjoyable. Our people in this section are very slow to use tile for farm drainage, nor will they listen to a brickmaker about its advantage. I only wish they could see what is being done in your state and the results, in the way of products. Can't you send one or two of your enterprising farmers to this section? They have little idea of the good markets here for farm products, and the poor results on land that is as susceptible of producing as much and a larger variety of products, as any part of your state.

Brick business in this section has suffered like the rest of the country. I do not know of a yard that has been kept running all of the season, and the sales made are at less than cost to make the brick. I have just made a sale of one million of stiff mud for a cotton manufacturing company at Portsmouth, Va., and shall start up my yard, I hope, for the season. I have an almost unlimited machine capacity and only lack the market. My two yards are both within seven miles of Newport News, which has a population of about 9,000, and are in easy reach of Hampton and Old Point, which have 9,000 inhabitants, and also of Norfolk and Portsmouth. There is plenty of room for some of your enterprising people, and a warm welcome for all good people.

If convenient I would like you to send me 15 or 20 of your little hat calendars, as I want to give them to my friends. They are the nicest and most useful little ads. I ever saw.

With kind regards, I am truly,

R. M. BOOKER.

Hampton, Va.

Enameled Brick.

Editor Clay-Worker:

I did not intend to trouble you with any further papers on the above subject, but notice in the September issue, a paper by an old correspondent on the same subject, in which paper he expresses "disappointment," because there has been "no hostile" criticism on his former papers. I desire, therefore, that our friend shall have no further cause to complain and will at once venture to offer a few criticisms on his present paper. I cannot notice any others which he may have written, as he says, during the "last two years," for I have not had the pleasure of reading them.

Whatever I may say, will not be in a spirit of antagonism but in the most friendly way, and I trust our friend will so receive it, especially so, as he, in a measure, invites criticism.

In the first place, our friend says, "Our methods for making enameled brick are as widely different as possible." He does not mean this,

but simply the "modus operandi" of applying the enamel to the brick already made, is as "widely different as possible." Let us see. "The early method of applying the enamel," he says, "was by brush and then dipping." Is not this the method used to-day by some very notable firms? The Kilmarnock (Scotland) brick, which is largely imported into this country, and which many dealers recommend is enameled in this very way.

The Snoya Colling Co., Limited, Burslem Staff, England, also use this method, and their brick is are highly recommended also, so that this method is not abandoned, as our friend would suggest, but is also in operation here, as many of your readers are aware.

The objection to this method is not so much on account of the contraction, as our friend would have us believe, it not being at all difficult to give the same contraction to the slip lining put on by the brush, as to the body of the brick itself, despite the disparity in that there is another principle at work, namely, that of volume between them, expansion, which is far more destructive, and herein lays the difficulty. Not being capable of the same degree of expansion the thin film of enamel cracks and the glaze peels off.

ENAMELING WITH A PALLET KNIFE.

This is the method our friend "presumes is adopted in Jersey and called a new method of glazing brick." Our friend may endeavor to make a little fun at the Jersey brickmakers, with whose methods I am not altogether familiar, but I venture to assert that not one of them is so insane as to try, much less to "adopt" this impractical method of enameling brick. Jersey judgment, however erroneous in some other matters, would never lead a person to such an extent of blundering. Our friend, however, spoils the fun he endeavors to have at the expense of his Jersey brethren, when he gives the cause which prompted the above method of enameling brick. He says, "You will see that the idea which lay at the root of all this speculation and experiment was, that the fault was in the brick, or the clay materials from which the brick was made, or, in other words, that the contraction was so widely different from that of the enamel that they could not agree and that some point of agreement must be found, and the point to start from must be to take on the contraction from the brick." Now, how the contraction can be taken out of a brick by putting on a stiff plaster of enamel with a pallet knife, is a problem, the solution of which, will puzzle more brickmakers than the subject of up or down draft kilns, or the question of the best composition for vitrified brick. Yet this is just how this part of our friend's letter reads.

Our friend also states that "this" (the above method of preventing contraction) gave rise to "three distinct methods, leaving out the one already named." With the first I won't deal, as I treated fully on this process in a former paper, but the second, which he says "has been tried with a great amount of success, i. e., to put on the enamel (clay slip) and burn the brick and afterwards glaze the brick and burn again." Now it seems to me, that if the slip (enamel) cracks while drying, when put on a green brick, and in a few seconds after being dipped, won't the same thing happen to it, only in a larger degree, when burned in a kiln? If so, then the method of enameling by this process is too risky, and consequently a failure. If the slip varies in contraction with the brick, it will vary in itself in degree as it is applied in a thinner or thicker coating, therefore, there is absolute uncertainty and consequent loss. So that in this method there is nothing novel.

With the remaining process, which our friend says was expected to overcome all difficulties,

it was called "a new dip" but proved to be "four" dips. All sensible men will shun such a method.

The one thing of which I complain, and of which other readers will complain, is, that while our friend condemns some of the modes adopted, he has no advice to give to his struggling brethren as to the best method to adopt to produce a good enamel brick.

Now, for the information of our friend, and those whom it may concern, I may say, there is in existence a "new dip" which produces a good enamel. The method adopted is to dip the "green," unburnt brick in it "once only" and, after drying, fire in the ordinary open kiln. This is producing enameled brick, not only by one burning, but by one dipping also. The enamel does not crack while drying, nor fall off, nor does it peel during the burning, nor craze afterwards. The more fire it has and the greater the degree of heat, up to a certain point, the better it is. The point being the heat that a good "fire brick" will stand. This, I believe, will be of some service to the company who are adopting it. This method of enameling bricks is what is needed. By it there is less risk than any other I know of. It will stand pretty rough handling after being dipped, and before burning, and will not fall off, however smooth, and oily the surface of the brick. This, I believe, is what the inventor claims for it. Something new.

TRUE, PROPER ENAMEL FOR BRICK.

Our friend I. H. concludes his article by declaring what is, and what is not, a "proper enamel for brick." After his statement respecting the burning in saggers, and in muffle kilns, he says, "There is the crock glaze theory and the Fritt glaze craze and the enamel made easy on a brown brick, with particulars how to set them in the kiln to prevent the enamel running off altogether." He declares this to have no claim to enamel. "The proper enamel will not flow or run at all, no matter how hard it may be burned."

Let us see how correct our friend is here. Take the enamel suitably prepared for a brick, made from fire clay, and to be burnt with one burning, but instead of using a fire clay brick, use a red clay one. Give the brick a suitable fire for red clay brick and what would be the result? Would it appear to be a proper enamel because it had not run? Not at all. There would not be an enameled surface, but a rough and bisque exterior. The point of fusion scarcely having been reached.

Now, on the other hand, take the enamel suitably prepared for the red brick and put it on the fire clay brick and burn with one burning, at a degree of heat necessary to burn the fire clay brick and what is the result? The enamel will all run off, except those placed horizontally, and these will all be blistered, the enamel having had too much fire, while the brick itself has been properly burned.

Our friend would declare neither of these to be a "proper enamel" and the one that run off to have "no claim to enamel," but both of these are proper when applied to the clay brick, for which they are suited and prepared, and exposed to the right degree of heat.

The great hindrance to most people who are endeavoring to make enameled brick is their inability to adapt one to the other. This is possible, with whatever kind of clay the brick is made, providing always, that the stones are either out of the clay or ground up fine and you get a good surface.

I think our friend I. H. will not have the disappointment any longer under which he was laboring, because of not being criticised. What I have said, however, has not been said, as I stated at the commencement, in a spirit of antagonism, but rather in a spirit of a little friendly rivalry.

Before I close my paper, I would like to refer to another matter. I mean the suggestion thrown out by Mr. Crossley in his paper on "Street Paving Brick."

A technological school or college for clay workers is not only what is needed, but what is absolutely necessary, if the clayworkers of this country must keep pace, and as true Americans, a little a head of European countries.

The great success of the Germans at the World's Fair is the result of their Technological schools, and nowhere on this planet are they more necessary than in this country, and if I may venture a suggestion I should say, that a paper read on the subject at the forthcoming Annual Convention would not be out of place. Mr. Crossley for instance might take up the subject more fully than in his paper before referred to.

WM. CLAYTON.

Paving Brick in New York.

Editor Clay-Worker:

Enclosed please find check for \$2 for subscription to CLAY-WORKER to 1895.

In regard to brick interests in our section will say we furnished this season 1,600,000 paving brick to pave our main street in this city. The contractors were Homer & Co., of Olean, N. Y., under the supervision of Mr. F. A. Dunham, C. E., of Plainfield, N. J. The opinion of experts who have examined the pavement pronounce it the finest piece of pavement in New York State. We invite parties interested in brick pavements to come to our city and inspect same.

We have also had a good season on building brick and have furnished in this city about 2,000,000 and the outlook for the coming season for paving brick especially is, that the demand will far exceed our capacity and the same conditions seemingly exist in all paving brick plants in our section. Wishing you a prosperous season

PRESTON BRICK CO.

Hornellsville, N. Y.

Philadelphia News.

Editor Clay-Worker:

Despite all that has been said the building prospects for the coming year are believed to be good.

Philadelphia is being served with a trolley system which will revolutionize city travel. By next spring these lines will have been extended into suburban sections where land is cheap, and all of which is good for building purposes. The belief is, that thousands of houses will soon be built in the outgoing regions. For several years past this city has grown beyond horse car limits. Two cable lines came, but they were no better for speed than horse cars. We will soon have trolleys extending over a good part of one hundred square miles of our 130 miles of municipal territory.

It is one thing to fix the price of brick, but quite another to compel all brickmakers to not sell below that price. Charges of underselling have been quietly made of late, and, only recently the Brick Manufacturers' Exchange was called upon to consider the truth or falsity of certain charges. Cuts of \$1 per thousand, it was alleged, have been made. Some of the biggest concerns are outside of the combine, and last week one large concern threatened to go out unless those now out came in. The big concerns outside are the Jarden Brick Company, Samuel Huhn, the Penn Brick Company and the Philadelphia Brick Company. The matter has assumed formidable proportions. Those who are willing to continue the established prices say they

do it for protection, not to be crowded out of business by those who do not care to come up and help. Those on the outside say they can get along very well, as they are.

The bringing in of outside bricklayers at \$2.50 per day instead of \$4, the regular wages established, has given rise to threats by bricklayers, that they will not lay brick made by offending parties. This year will not be a good year for differences and disputes, and it would be well for neither employer or workmen to give needless or avoidable offense.

Building operations for 1893 cost \$23,826,859, against \$26,489,387 for the previous year. In 1892 there were 10,471 operations, last year 9,110. So that this was not as bad a year as might have been expected. Of this sum over eleven million dollars were spent for dwellings. The builders feel encouraged, but would like to see all squabbling over financial and economic questions terminated as soon as possible, so that they and their backers may make their calculations for the year.

This year eight additional building inspectors will be in office, with a chief of the Bureau, which will bring the number up to sixteen. The object is to have all features of the new building law honestly enforced.

The extensive fire brick works of Wigton & Sons, Phillipsburg, Pa., shut down indefinitely to the terror of a large number of dependent employes. This is on account of the provision in the Wilson Tariff bill, which proposes a reduction of duties of \$2.00 per 1000 on fire brick.

The brick business has held its own fairly well. With new machinery and new appliances it is not so necessary as it once was to produce ahead.

The Jarden Brick Co., have had a very good year and some others that might be named can justly make the same claim.

Murrell Dobbins' extensive plant has had a good year. All are anxious for obstacles to good business to be removed. Investors have money ready to invest. The labor question will probably remain quiescent.

Building material of all kinds has declined in price, especially iron, steel, lumber and cements. Engineers and contractors do not believe the depression can last much longer. Houses have sold pretty well and there is no very serious trouble among builders.

The lessons we have learned during the past six months will be valuable in the future. The brickmakers of Pennsylvania do not propose to go to sleep, or to become frightened over the condition of things. They know the country possesses extraordinary recuperative powers and they know there are prosperous times ahead.

ANON.

Good That Way But Better Attend.

Editor Clay-Worker:

Enclosed find \$2 for CLAY-WORKER for ensuing year. I have been making brick for twenty-seven years at this place. Commenced the manufacture of tile eight years ago, since which time our rainfall has been correspondingly small. I use a surface clay to the depth of 2½ feet, which is underlaid with a strong yellow joint clay, which, so far, I have been unable to make brick of, because of its propensities to multiply during the drying process.

Trade the past season, in the brick line, has been fairly good, but the demand for tile has been curtailed, in sympathy with the dry season and depressed condition of business.

For the first twenty years I made brick by main strength and awkwardness, by the soft mud, hand moulding and out door drying process, now I have a steam power plant with an auger machine, shedding fitted up with racks and pallets, and can retire at night without anxiety from storm. The joint clay spoken of above makes a No. 1 tile and requires no more

additional care than the brick made of the strata above it in drying.

While I do not expect to be able to attend the N. B. M. A. I shall absorb at second-hand its deliberations.

D. J. SPENCER.

Afton, Ia.

Excellent Clay.

Editor Clay-Worker:

Enclosed you will please find draft for amount due you on subscription. Building has been very limited here for the past season. We have a very fine silica clay, that burns an excellent color, does not warp in drying or burning and has stood a thorough test for making roofing tile and terra cotta. Wishing you continued success, we remain

Very truly yours,

Salem, Ohio.

PIDGION BROS.

Buffalo, N. Y. and Vicinity.

Editor Clay-Worker:

Well, another season has closed—all the bricks are made and sold that will be, and books ready to be written up to see which side the balance will be on. We have had a very fine dry season for making in this vicinity, but owing to the stringency in money matters, sales and demand have dropped away off since August, in fact most of our yards shut down first of September, having brick enough on hand for winter and spring trade. There have been some improvements put in on one of our old yards.

The Brush Bros. built four oblong down-draft kilns about 100 M capacity each and put in a Monarch soft mud machine, and are also experimenting with a dry floor.

Charles Barrick & Sons made brick the entire season, their output was nine millions. They are large contractors and use all they make and more too.

The Star Brick Co., at Lancaster had a good season, they furnished most of the brick for the new works at Depew and delivered them by team.

The Lancaster Brick Co's works about two miles east of Lancaster, have five large up-draft kilns, capacity of 2,500,000, they have added two round down-draft kilns for burning hollow brick and drain tile in. They employ about 150 hands and turned out 10,000,000, they have two Martin, one Potts and an Acme stiff clay machine, they are building up a large and increasing trade in hollow brick and drain tile. This firm turn over about 10,000 yards of clay in the fall and winter; they take a strip about 350 feet long and plough furrows the whole length of the strip and have men stationed every thirty or forty feet to throw the clay over as fast as it can be ploughed. They claim it can be done some cheaper in this way, than by hand labor exclusively.

VIDETTE.

A Big Offer Refused.

Editor Clay-Worker:

Enclosed find \$2.00 for CLAY-WORKER for 1894. I have been a subscriber for nearly seven years. I am not, as yet, a member of the N. B. M. A., but am anticipating the pleasure of attending the Chicago Convention, and becoming a member, and will do so if nothing happens to prevent. Enclosed you will find a clipping from the *Atchison Globe* of January 5th that may interest you.

Hoping to meet you at the Convention, I am
Very Respectfully,

Atchison, Kan.

JOHN GAFFNEY,

[The clipping referred to states, that Mr. Gaffney had declined an offer of \$50,000 in cash for his patent kiln, and \$50,000 of stock in the company organized to operate it. \$50,000 in cash is a large sum of money to refuse, and is proof that Mr. Gaffney has great confidence in the economical features of his kiln, which is of the continuous order.—ED.]

THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK
MANUFACTURERS' ASSOCIATION OF THE
UNITED STATES OF AMERICA.

PUBLISHED MONTHLY.

INDIANAPOLIS, JANUARY 15, 1894.

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to Clayworkers is solicited. Communications
from practical men will always be welcome.
Address all communications to

T. A. RANDALL & CO.,
5 Monument Place. INDIANAPOLIS, IND.

MANY THANKS.

Since the dawning of the new year, the mails have brought us a vast number of substantial tokens of appreciation in the form of subscriptions—both renewal and new—for which we are duly thankful. There are many, though, who have not yet responded to our annual call. To those we beg to say, in our blindest tones, now is the time to subscribe.

NEW YEAR'S GREETINGS AND REFLECTIONS.

It was a great mistake for that crusty, cranky, selfish, old Roman emperor, Julius Cæsar, to arbitrarily change the beginning of the calendar year from the winter solstice to the first day of January. He never did give any satisfactory reason for it, simply because he could not. And then as a striking instance of following bad counsels, it transpires that after many intervening modifications and changes every christian country except Russia, has fallen into the habit, and yet Cæsar was no christian. But the CLAY-WORKER has no immediate purpose of unsettling this order. It might cause disturbances in many departments of business and even in politics. Nevertheless who can fail to see how much better it would be to open new books, turn over new leaves, and begin many and divers new things

just when the sun, having gone to the length of its tether southward faces about to go to its northern limits, as a caged tiger shifts from one end of its cage to another interminably?

This is a new year, but there is nothing very new or unusual in the conditions which surround us. We heard a man, the other day, say times are hard, and so they are. But who is old enough to remember when they were not? We have it from one who claims to state it on good authority, that our great grandfather Adam, the first, was in the habit of leaning upon his moulding table, wiping the sweat from his face and saying: "Never saw such hard times." It seems that he did not like the administration. A law had been promulgated which read: "By the sweat of your face you must earn your bread," or words to that effect. It was the hard work he called hard times. He would have preferred a fat office or the position of "Walking Delegate," to see that other people worked, but did not work too hard or too many hours, and he was sure that capital was oppressing labor, and things in general were out of joint. He seriously thought of quitting the brickyard, moving to the city, and "Going into business," and then into politics—anything but observe that hard law of hard work.

There are many things in the present hard times which are common to all hard times, but there is one feature characterizing them which does not always exist. The granaries of the world, and especially of our own country, were seldom fuller. We are not suffering from famine, though a great many want bread who can not get it. The fact is, there is simply mal-adjustment of affairs. Swapping jack knives is a profitable business within proper limits, but shut up a dozen jack-knife dealers in a tight enclosure and they cannot all grow rich by swapping with one another. Somebody must make jack-knives and somebody else must make something else, for man cannot live on jack-knives alone.

A study of the situation reveals that altogether too many people are engaged in politics, and another class, altogether too large, is engaged in the mere handling of the products of the industries of the people, producing nothing themselves, but at the bottom of most of the hard times with individuals, is a reckless expenditure of money. There are

thousands of families who, if they could now have the money spent within the last year for intoxicants and tobacco, would not be clamoring for bread from the charitable organizations.

These may be crude New Year's reflections, but they may suggest some New Year's thoughts. It is clear that the CLAY-WORKER does not believe that the bottom is out. For the present, at least, there must be enforced economy where it is not voluntary. That law promulgated to the first pair just as they turned their backs on Eden, is yet unrepealed, and it is not altogether an arbitrary law. It is the law which differentiates man from the lower animals. It is binding upon all. No man has a right to live in disregard of it. No parent has a moral or social right to teach his child that he may live without work, nor that his work must be of the most profitable kind or nothing.

The CLAY-WORKER expects all its readers to do better this year than last. You have the experience of the last year to start upon. In your business use the best material, employ the best hands, get the best machinery, seek the best market, buy the best books, read the best papers, and by all means take the best trade journal, and get your neighbor to subscribe for it—the CLAY-WORKER—and 1894 will grow brighter, busier and you, dear reader, will grow happier each succeeding month.

THE CONVENTION.

There never was a time when the brick-makers of the United States could hold a convention with more profit to themselves than now. This is one of the unique periods in the business history of the country. Such times call for the best thought of the best minds—for the display of great energy and a high order of intelligence. Those who understand their business thoroughly, those who are well-grounded in the mechanical and strictly business methods will sail through comfortably and easily, and come out of this period of depression more acute business men than they went into it. The convention, that great educator of modern times, is the disseminator of knowledge pertaining to economical, skillful, advanced mechanical and business methods so necessary to weather the strain of a time like the present. The World's Fair congresses, which brought together so many of

those interested in the arts and sciences of the world, the advanced thinkers in all branches of human progress, showed the seriousness with which the convention idea is now regarded. It is a great educator in professional and business methods. No industry can make rapid advancement where those interested do not consult together and exchange experiences. There is no better place to hold a convention than the city of Chicago. There one can absorb the spirit of energy and high intelligence, which is the woof and web of that great city. The Slow Coach from Tailholt finds himself in Chicago a hustler—an advanced thinker. Having heard many new things and having quaffed from the fountain of progress, he goes home with broader views and higher aims. The convention is an educator. If you doubt it come to Chicago and be convinced.

OUR PORTRAIT GALLERY.

In honor of the city in which our convention is held, we give in this issue the portraits of a number of those interested in the brickmaking plants of that city. It is always interesting to study the personal appearance of those connected with the world's great industries. It is a natural human desire to know what a man looks like when we know of his doing some great thing. The achievements of the brickmakers of Chicago are wonderful indeed. They have a capacity of a thousand millions of brick a year. This growth has been wonderfully rapid and satisfactory. Those connected with this development must go into the commercial history of this country among the great captains of industry. A glance at the portraits of these men indicate a vigorous, sturdy type of men—men aggressive, intelligent and forceful. A type which certainly belongs to Chicago, a city phenomenal in the world's history.

AMERICAN ARCHITECTURE.

Surely it is of clay. We give at some length in this number of the CLAY-WORKER a description of the handsome dwelling of Mr. W. D. Gates, President of the American Terra Cotta and Ceramic Co., a building faced with terra cotta blocks and decorated with this material. This is altogether an American style of construction. It is well to understand that a style of architecture was never developed solely from

the character of its decoration. The Greek, the Roman, the Mediaeval and the architecture of the Renaissance all had their origin in a style of construction rather than a style of decoration. Efforts have been made to avowedly develop an American style of architecture. This is something which cannot be done in this way. It is one of the things which we cannot set about doing and effect according to programme. We could have understood, if we had stopped to think about it, many years ago, that an American style of architecture would not have been developed until we had a style of construction distinctively American. Here in a dwelling we have a radical departure from old lines, a facing of terra cotta blocks decorated in the style of the fifteenth century in France. As we have stated, however, the construction is not of that style. It is of the nineteenth century and had its origin in the state of Illinois and city of Chicago and is a character of architecture which did not reach its full development until the year of our Lord one thousand eight hundred and ninety-three. It is gratifying to clayworkers to realize that the American architecture is most largely the product of their skill. From their kilns will come the material, beautiful and indestructible, from which will be built the great commercial structures of the future, as well as the humble homes of the common people.

CONVENTION POINTERS.

As of old, the first evening of the convention occurs that great lubricant, the Powwow. It is the habit of most conventions to close their sessions with a banquet. It is the custom of the Brickmakers' Association to practically begin their sessions with a banquet. It develops a freedom, a good fellowship, a personal knowledge of one another and a freedom of speech which tells in all of the subsequent sessions. In this particular the N. B. M. A. differs from most other organizations, and wisely, too, we think.

Our good friend and correspondent, Mr. R. M. Greer, of Tuxpam, Mexico, in a recent letter, makes the following pertinent suggestion relative to the N. B. M. A. convention: "I note what has been said in recent numbers of the CLAY-WORKER regarding the improvement of the programme of the the con-

vention. I had a little copy on the subject, but have mislaid it, anyway, I suppose it would be too late now. The programmes, I think, have been all that could be desired. The discussions of the papers, etc., have been the weak point. If members generally would take the programme beforehand and select those subjects upon which they feel themselves most competent to speak and carefully prepare a few thoughts, which could be presented in a five or ten-minute speech, it would vastly improve matters."

Those who will attend the convention accompanied by ladies should at once write to the manager of the Auditorium Hotel and advise him of the accommodations desired, so that suitable rooms may be reserved.

The Auditorium Cafe, illustrated on page 43, is a delightfully pleasant place and we presume many of our readers will seek it out just to enjoy the view. It is a combination of the European cafe and the American bar. There are tables for those who wish to eat and drink leisurely and a handsome bar where refreshments are served in characteristic American fashion. The American, be it known, is alone in the habit of standing while he drinks.

The button-hole talks will no doubt be a very valuable feature of the coming convention, as they have been in all former meetings; surely they ought to, for the surroundings will be of a character to encourage confidential chats. The spacious, beautifully furnished lobbies so generously supplied with great easy chairs and cozy lounges, will prove very tempting to our button-holders.

The ladies attending will be charmed by the luxurious furnishings in the reception rooms and parlors of the Auditorium, and the committee on entertainment, lead by the gallant D. V. Purington, will see to it that they are well entertained; so, gentlemen, come and bring your wives, daughters and sweethearts with you.

GLIMPSES OF THE AUDITORIUM.

On preceding pages we present a number of views of the great Auditorium Hotel, Chicago, where the members of the N. B. M. A. and their friends will tarry while attending the coming annual convention. From the massive main entrance, through the richly decorated lobby, on up to the magnificent

dining room on the topmost floor, this immense structure is a series of artistic surprises that can only be fully appreciated by personal inspection. If you want to know what the Auditorium really is, come to the convention.

A GOOD MOVE.

We are pleased to learn that, on Feb. 1st, the Standard Dry Kiln Co., of Louisville Ky., will move their general offices to Indianapolis. They have contemplated this move for a long time, feeling that it was necessary for them to locate at a more convenient point from which to reach the brickmakers of the Central and Northern states. After investigating thoroughly the points of vantage offered by Chicago, Cincinnati and other cities, they are convinced that, as a distributing center, our city is unequalled, and have therefore decided to make this their general headquarters. Their factory and branch office will still be maintained at Louisville, as that is an excellent point from which to reach the southern lumber trade, with which they are closely connected. We extend to the Standard Dryer Co. a genuine Hoosier welcome and can assure them that they will have no occasion to regret coming among us, for this city's central location and splendid railroad facilities, to say nothing of natural gas, makes it one of the most available sites on this continent for the location of manufacturing, industrial and commercial enterprises of all kinds. There is plenty of room and a hearty welcome for all who will come to the Hoosier capital.

SATISFIED WITH 1893.

R. B. Morrison & Co., the well-known kiln builders of Rome, Ga., write us under date of January 1st, as follows:

"Though '93 was the 'Panic year,' and the dullest brickmakers have experienced, perhaps in twenty years, we have made sales and put in kilns in six States, namely: Pennsylvania, Maryland, Georgia, Alabama, Louisiana and Texas. Our trade has been much better in '93 than in '92. We attribute these results to, first, the uniform success and satisfactory results to our patrons; second, to our persistent advertising in the CLAY-WORKER, which brings us more inquiries than does all our other advertising combined. There is no other medium through which we can reach

brick manufacturers that will compare for a moment, with it. Our prospects for a good trade in '94 are very good, indeed."

EDITORIAL NOTES and CLIPPINGS.

Wilkins Frick, Hubbard, O., is experimenting burning brick by electricity

The Ridgway Press Brick Co. have commenced work on their new plant at Eagle Valley, Pa.

A subscriber from Denver, Colo., writes that there is a good opening in that city for a paving brick plant.

Messrs. Michael & Hillis, of Litchfield, Ill., will establish a brick plant at Nokomis, Ill., in the spring.

The name of the Rankin Brick Co., Bloomington, Ill., has been changed to Bloomington Brick and Tile Co.

The building of C. B. Lovatt & Bros brickyard, Bissell, Pa., were totally destroyed by fire. Loss \$6,000.

The H. B. Yingling Brick Co., of Allentown, Pa., has been granted a charter. Capital stock \$30,000.

Improved machinery, well constructed, at direct manufacturer's prices of Jonathan Creager's Sons, Cincinnati, O.

The Burford Brothers' Pottery Co., East Liverpool, Ohio, has been incorporated with a capital stock of \$75,000.

B. F. Clark has purchased the Linebarger Tile and Brick Factory, at Clinton, Ill., and will operate it next spring.

The Corey Brick Co., Lehigh, Pa., have put in a new brick press, thereby increasing their facilities for next season's work.

Steps are being taken to rebuild the brick plant of the T. B. Townsend & Co., Zanesville, Ohio, which was recently burned.

F. H. Meier, Byron, Mich., writes that he has sold his business and would like a good point to start a small brick and tile plant.

Messrs. Griffa & Axelson, Independence, Ore., are pushing the work on the buildings for their new tile factory. They expect to commence manufacturing tile in a short time.

If you are interested to know what is embraced in the new \$1,000 outfit, write and we will tell you all about it. Jonathan Creager's Sons, Cincinnati, Ohio.

Mr. Frank Jarboe, Brainerd, Mich., contemplates establishing a brick plant in the spring, and would like to receive catalogues of brick machinery, etc.

Shank & Son, South Bend, Ind., have purchased land at Galien, Mich., for the purpose of starting a brickyard in the near future.

H. M. Kreighbaum, South Bend, Ind., are putting in new tile machinery. The outfit will be furnished by the Anderson (Ind.) Foundry and Machine Works.

The Ill. Valley Clay Co., has been incorporated at Chicago, Ill., with a capital stock of \$50,000. Incorporators, A. T. Griffin, W. W. Ramsey and E. H. Pitkin.

We are indebted to the Bonnot Co., Canton, Ohio, for a cute little booklet, illustrating their Revolving Screen. If you want to know more about either the booklet or screen, write them for one.

John J. Jova, a well-known brick manufacturer of New York, died at his home in Danskammer Point, N. Y., on the 20th ult. He had been engaged in the brick business at that place for the past eight years.

The North Canal Brick Co., Linden, Ohio, is the name of a new company that will manufacture brick at Lake Linden, Mich., the coming season. Oscar Eliassen, Ed. Warra and D. Ojala are interested.

The Trenton (N. J.) Fire Clay and Porcelain Co., have filed articles of incorporation. They have a capital stock of \$20,000. Oliver O., Robert K. and W. J. J. Bowmans and Geo. W. McPherson are interested.

Fitch Creek Brick and Tile Co., La Fayette, Ill., has been incorporated with \$25,000 capital stock. Jesse S. Atherton, Francis A. Jones, Nelson Grant, Allen H. Stout and George W. Gibbs are interested.

With their new \$1,000 outfit the Messrs. Jonathan Creager's Sons claim to turn out a perfect product in all clays practical to so work, and they are willing to doff their hats to any who can outdo them in making stiff-tempered and sand moulded brick.

Patrick & Wm. Synan will erect a pottery at Pottersville, Mass. The principal articles manufactured will be earthen ware, such as flower pots, jugs, jars, etc. They are both practical potters and the enterprise bids fair to be a success.

OFF WITH THE OLD AND ON WITH THE NEW.

NEW YEAR '94 comes danc'ing
Up the planet, wildly prancing,
Gaily laughing, loudly sing'ing,
Setting all the groves a-ringing;
While on rusty pinions winging,
The Old Year,—how seamed his face is!
Tumbles down the starry spaces;—
To the dungeons of the dead.
1893 has fled.

His career few hearts could gladden,
For he was a precious bad 'un.
Everything you've known to happen,
In the line of blood and rapine,
Pestilence and conflagration,
Murder and assassination,
Every outrage in creation,
Every crime beneath the sun
1893 has done.

But the New Year shall inherit,
Spite of all, a joyous spirit,
And its mines shall yield us treasure.
And its hours shall give us pleasure
Rare and sweet in brimming measure.
So the New Year comes a-danc'ing
Up the planet, gaily prancing,
Fairest store of everything
1894 shall bring. —Selected.

FISHERS OF MEN.

A GIRL beside the water sits,
The noonday sun is warmly beaming;
Her nose and neck are turkey red,
Her eyes with radiant hope is gleaming;
She watches close the bobbing cork
Advanced upon the tiny billows—
A jerk, a swish and high above
She lands a sucker in the willows.
That's fishing.

A fair maid trips the tennis court,
A dozen eyes admire her going;
Her black and yellow blazer burns
A hole right through the sunset's glowing,
She drives the ball across the net,
And into hearts consumed with wishing
She drives a dart from Cupid's bow—
She'll land a sucker, too; she's fishing.
That's fishing.

The politician on his rounds
Tackles both workingman and granger;
He tries to make them think that he
Alone can save the land from danger.
He chucks the baby on the chin,
He says your wife looks really youthful,
And, though you know you're fifty-five,
You look just twenty, if he's truthful.
That's fishing.

My little wife beside me stands,
And steals a dimpled arm around me;
A kiss upon my lips—that's a bait—
Some information to astound me.
Her bonnet is quite out of style,
Her summer wrap quite past the using—
That lovely one—so cheap—at Brown's
Is just the one she would be choosing.
That's fishing.

So, whether the game be fish or men,
The bait be kisses, worms or blushes—
The place at home, by sunny pool,
Or tennis ground at evening's hushes—
'Tis the old game the serpent played
With Mother Eve in Eden's bowers,
And Adam's sons and daughters all
Will love the sport to time's last hours.
That's fishing.
—Cincinnati Commercial Gazette.

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BOOKS FOR BRICKMAKERS.

"BRICKMAKER'S MANUAL,"

Morrison and Reep, \$3.00

"BRICKMAKING AND BURNING,"

J. W. Crary, Sr., \$2.50

"TABLE OF ANALYSES OF CLAYS,"

Alfred Crossley, \$1.00

"DURABILITY OF BRICK PAVEMENTS,"

Prof. I. O. Baker, \$.25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address T. A. Randall & Co., Indianapolis, Ind.

ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and Belleville, Ill.

ESTABLISHED 1859.

Red Pressed and Ornamental Brick of unsurpassed quality—a specialty and can be furnished in any desired quantity. Builders who desire the finest pressed brick at reasonable prices, are requested to write for illustrated catalogue and price list.

Rock-faced and Roman brick, red and brown, granite, mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

ANTHONY ITTNER, Telephone Building, ST. LOUIS, MO.

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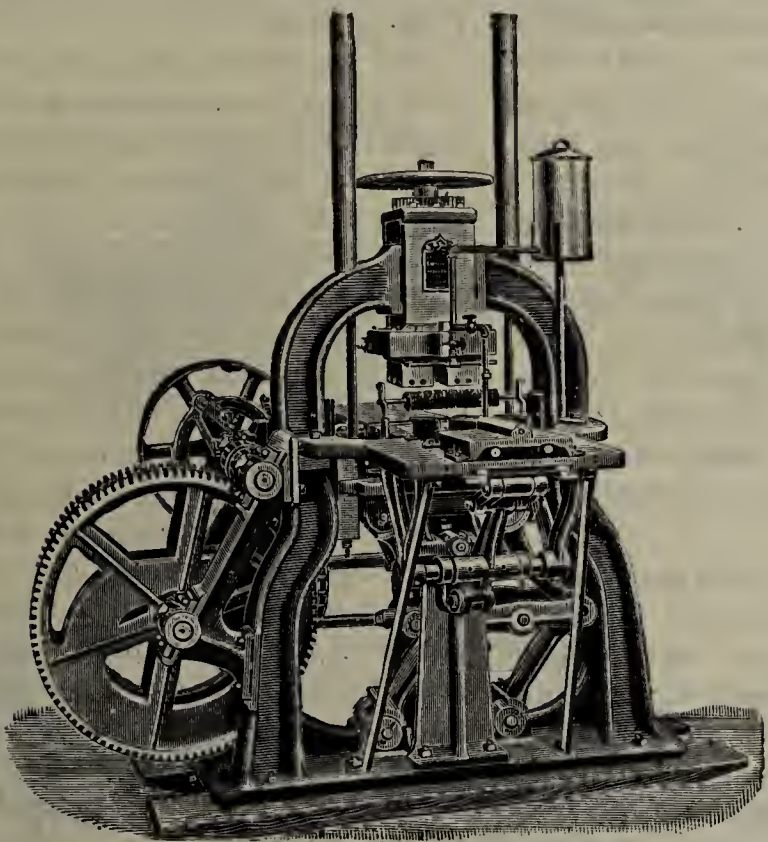
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STEVENSON & CO.
WELLSVILLE, O. U.S.A.

MANUFACTURERS OF COMPLETE MACHINERY.

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES, STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES, DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS & ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS. SHAFING, BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS, MANUFACTURED & CARRIED IN STOCK WITH ALL MILL & FACTORY SUPPLIES.



∴ The **Columbian Special** ∴
RE-PRESS.

Presses May Come

...AND...

Presses May Go,

...BUT...

The ...
Columbian



GOES
ON
FOREVER.

By the Way, :

BRICKMAKERS,

ARE YOU AWARE that we have not been sleeping during these hard times? Well we haven't. We have been hustling around, planning, inventing and building day and night and now have ready for the market a complete new line of Brick Machinery and are ready to meet the demands of the brick yards of to-day. No "Before the war" brick machines or "anti-diluvian" Pug Mills but everything strictly up to January 1st, 1894.

Our new catalogue now ready will tell you all. Send for it.

C. W. RAYMOND & CO., = Dayton, Ohio.

The North Star Stoneware Co., Red Wing, Minn., will, in connection with their other products, manufacture fire brick and sewer pipe the coming season.

Superior in principle and operation to all horizontal machines is the "Creager" Improved Combination of Brick Machine and Pug attached.

H. O. Whitney, General Agent for the Andrus Double Pressure Brick Presses, Keokuk, Ia., writes that he has sold a satisfactory number of their heavy presses and that all things considered, feels well satisfied with their 1893 business.

The Holloway Paving Brick Co., near North Industry, Ohio, has been incorporated for the purpose of manufacturing shale paving brick, sewer and building blocks and bricks. The incorporators are, George Rex, Aaron Numan, R. H. Spiro, Harry R. Rex and Leon Stern. Capital stock \$75,000.

Mr. O. K. Moffett, Wayside, Kansas, writes that he is going to Oklahoma in the spring with the intention of establishing a brick plant. He will probably attend the coming Convention at Chicago for the purpose of interviewing machinery manufacturers relative to the most improved appliances, cost of same, etc.

The Jeffrey Manufacturing Co., of Columbus, Ohio, write that they have ready for distribution a complete catalogue, showing full-size illustrations of every chain link made by them. It also includes a complete price list of their specialties and will be of value to all users of material in their line. Copy will be sent upon request.

John Porter, the pioneer fire and paving brick manufacturer, will use at his new plant at Wellsville, Ohio, a No. 15 Penfield Auger Brick Machine, Penfield Pug Mill, and 5 Penfield Power Re-presses. He is also putting in a Penfield 4-Mold Dry Press Brick Machine. All the machinery has been shipped and Mr. Porter is getting everything in shape for an early start in 1894.

With the new Creager combination, the pug attachment, can be set at either angle desired. No bevel gears.

The Mason City (Ia.) Brick and Tile Co., write that on the 26th ult, they broke ground for the erection of a new plant, and that, as they have torn down their old plant, and their stock is being diminished, they have got to "hustle," in order to be ready for their spring

trade. Their new plant will have a daily capacity of 35,000. They will put in Nolan & Madden machinery and a Sharer Dryer. They have clay which makes a very fine, smooth brick or tile.

Roeske Bros., Michigan City, Ind., in renewing their subscription, say they are "very much pleased with the CLAY-WORKER and find it a great instructor in its line, and could not get along without it," and add that if times improve they will build an addition to their yard, putting in machinery for manufacturing vitrified paving brick, as they have had their clay tested and found that it is adapted to the manufacture of paving brick.

The walls of the CLAY-WORKER sanctum are profusely decorated just now with many calendars of various sizes, shapes and colors, for which we thank the kindly donors, one and all. The list includes: John Francy's Sons & Co., Toronto, Ohio, manufacturers of sewer pipe and terra cotta goods of all kinds; the Weber La Bahn Brick Co., Chicago; Platt Pressed and Fire Brick Co., Des Moines, Iowa, manufacturers of ornamental, Paving and Fire Brick; the McLagon Foundry Co., New Haven, Conn., manufacturers of brick machinery; F. W. Silkman, 231 Pearl St., New York, dealer in Clays, Chemicals, Minerals, etc., and E. M. Pike, Chenoa, Ill., of New Discovery Kiln fame.

Less than six feet to top of pug mill in the New "Creager" combination. Protect and advance your interests by learning all you can about it.

Less than eight feet to top of Disintegrator in that "Creager" \$1,000 outfit. No sprocket chains or geared connections.

The Ross-Keller Brick Machine Co., of St. Louis, has contracted with the St. Louis Iron and Machine Works to build twenty of their 6-Mold Machines, the largest order ever placed in the United States for similar machines. The St. Louis Iron and Machine Works is one of the finest equipped concerns of the kind in America, and has had thirty years experience in building this kind of machinery. Their immense business has been built up by doing the very finest class of work, and the work they are doing on these machines well sustains their reputation. The Ross-Keller people say, "We are preparing to furnish the trade the coming season, the finest machine on the market, and are not spending our time and money boasting of medals, awards, etc.; obtained without competition."

If you anticipate a change this season, that complete outfit for \$1,000, offered by Jonathan Creager's Sons should be investigated.

The Mack Manufacturing Co., of New Cumberland, are contemplating the manufacture of brick from shale rock in addition to fire brick. On their property they have abundant, shale rock which is easily accessible, and with the facilities they have, they can manufacture the same very economically. They are giving it a thorough test and it will undoubtedly be a success.

PROGRESS OIL BURNER.

Device for Burning Hydro-Carbon Oils

Applicable to all conditions where heat is used for burning clay, and to all manufactories where steam is used.

Any degree of heat desired.

Economy in steam and oils.

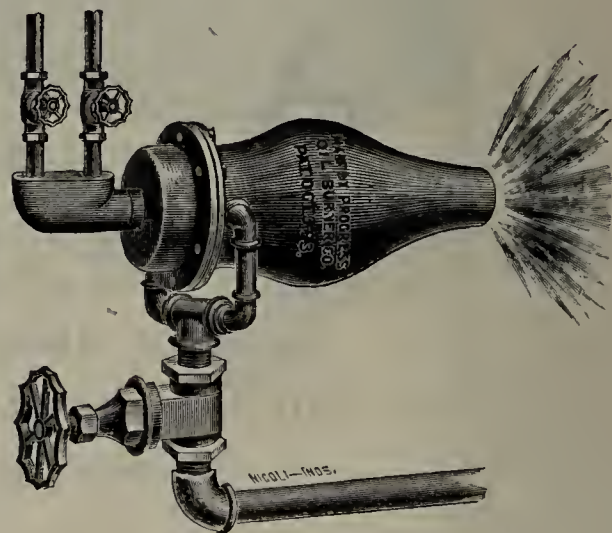
Full thermal value of the fuel obtained.

PROGRESS OIL BURNER Co.

OFFICES:

18 & 20 W. Georgia St., INDIANAPOLIS, IND.

161 La Salle St., Room 76, CHICAGO, ILL.

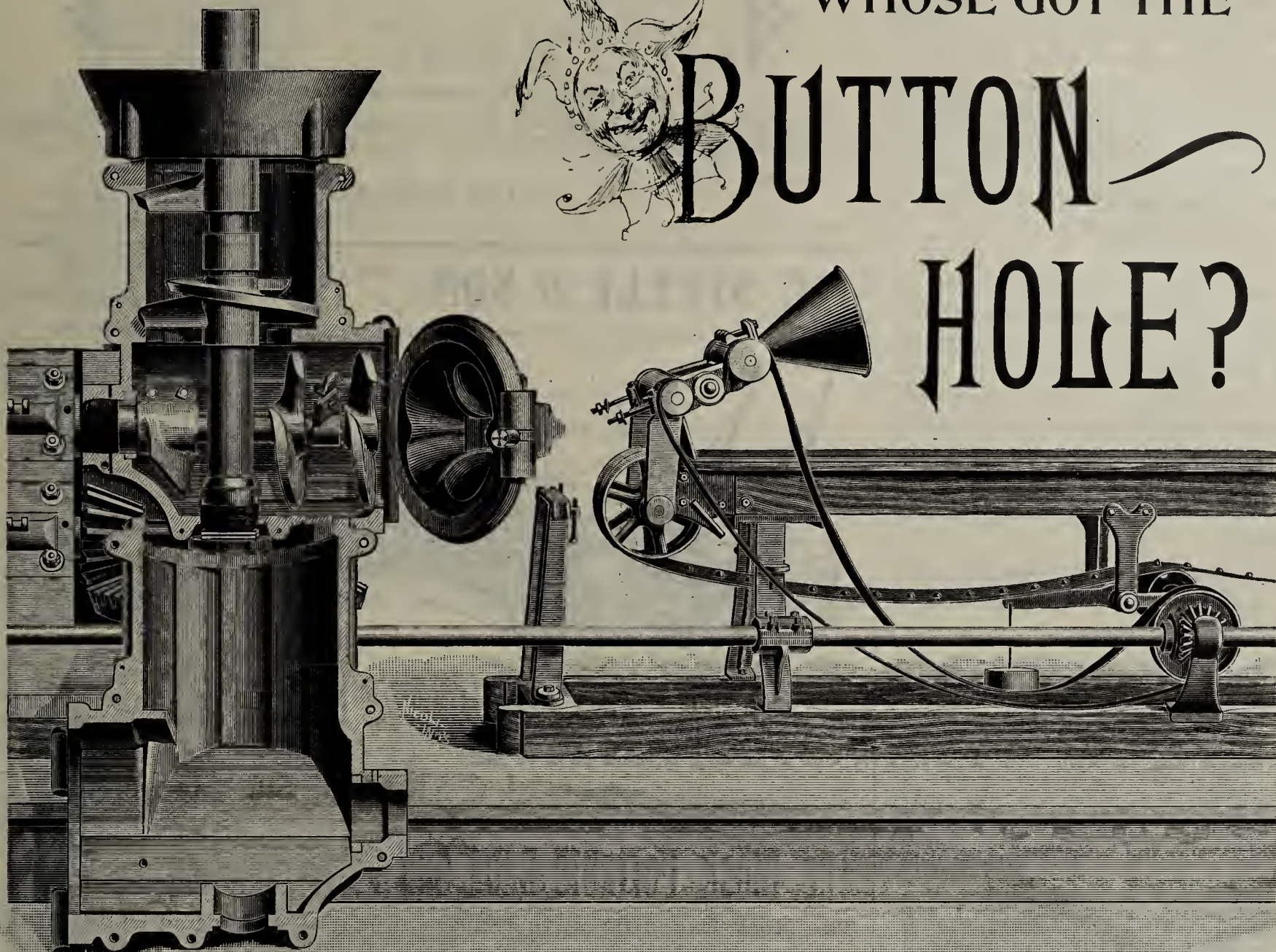


NOTE:—We own a seven-eighths interest in Patent No. 505,931 assigned to John S. Thurman, and are prepared to furnish Burner direct in any quantity.

BUTTON HOLE, BUTTON HOLE,

WHOSE GOT THE

 **BUTTON**
HOLE?



BRICKMAKERS AND MEMBERS OF THE N. B. M. A.

We will be glad to have an opportunity to "button hole" you, either by mail or while attending the "Chicago Convention," regarding the above cut, which illustrates a sectional view of the "Wonder" Brick Machines and Sander.

Yours respectfully,

 THE WALLACE MANUFACTURING COMPANY,

TERRA COTTA COMPANIES CONSOLIDATE.

January 1st the Boston Terra Cotta Co., ceased to exist. The New York Architectural Terra Cotta Co. has absorbed the former concern and also the Philadelphia manufactory, formerly known as the Stephens, Armstrong & Conkling Co. These three great concerns, under one management, ought to be able to supply the Eastern market and relieve the Western manufacturers the necessity of shipping burned clay from Chicago, and other points, as they have done in the past.

The Jeffrey Manufacturing Co., of Columbus, Ohio, report that the demand for their line of manufacture keeps up, and that they are running their plant full. Their Steel Conveyor has opened up a new field, so that with their already large line of conveying specialties, they are looking for a continued, as well as an increased demand, for their manufacture.

The Cleveland, (Ohio) Vitriified Press Brick Co. will enlarge and improve their plant before next season.

The "Creager" new \$1,000 complete outfit is the wonder of 1894 in its particular field. Jonathan Creager's Sons, Cincinnati, O., for information.

WANTED—Capital to work a valuable bank of clay within three-fourth of a mile of center Marion, Indiana. Clay will make excellent sewer brick and street pavers. Natural Gas for fuel. 11 c S. HAGGERTY, Box 212, Marion, Ind.



ALBANY SLIP CLAY.

We have a large bank of a superior quality of SLIP CLAY. Price very low by barrel or carload. Best of reference as to quality. Address

JACKSON BROS., Albany, N. Y.
N. Y. State Drain Tile and Pipe Works



FIRE BRICK.

Below are analyses of the **PLATT BRICK & FIRE PROOFING CO.'S** Fire Clay Deposits.

	No. 1.	No. 2.
Water of Constitution.....	2.32	9.69
Silica.....	86.63	55.11
Alumina.....	10.92	26.71
Oxide-iron.....	.10	4.29
Sulphureous-acid.....	...	4.16
Totals.....	99.97	99.96

Analyses by W. S. Robinson, Chemist, Omaha, Neb.

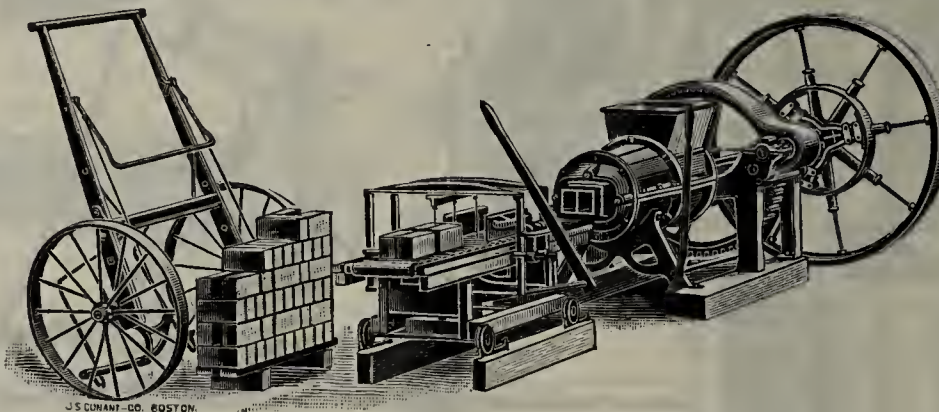
Brick are manufactured carefully on the best of machinery. Large capacity. Prompt shipment. Prepared fire-clay. Fine Pressed Brick. Paving Brick.

Address

PLATT PRESSED & FIRE BRICK CO.,
706 Youngerman Block, Des Moines, Iowa.

J. C. STEELE & SON, SOUTHERN MANUFACTURERSOF BRICK MACHINES

The Only Manufacturers of Steele's Celebrated BRICK TRUCK for Portable Hack.



Kiln Castings,
Pug Mills,
Winding Drums,
Clay Cars,
Switch and Frogs,
Friction Pullies,
Etc., Etc.

THIS cut represents our "One X" Machine, which makes 10,000 to 15,000 per day. But we have a large Double Geared Machine for side or end cut brick which makes 15,000 to 20,000 per day. Write for Catalogue and Prices, and mention the CLAY-WORKER.

J. C. STEELE & SON, Statesville, N. C.

The Mock Portable Rack and Pallet System FOR HANDLING BRICKS.

The Most Expeditious, the Safest and Easiest Method of Handling Soft Clay Brick from Machine to Kiln.

IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.

By this method the brick are not touched by hand till tossed to the setter, so that they go into the kiln in much better condition than is possible by the old time methods.

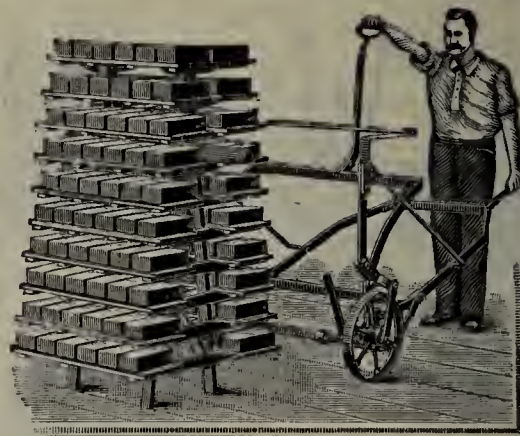
WHAT USERS SAY OF THE MOCK SYSTEM.

Mr. J. C. Adams, Indianapolis, President of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for two seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."

We are prepared to furnish complete plans and specifications for the erection of brick works of any desired capacity and solicit correspondence from those desiring further information relative to our system of handling brick.

MOCK BROS.,
MUNCIE, IND.

Mention the Clay-Worker.

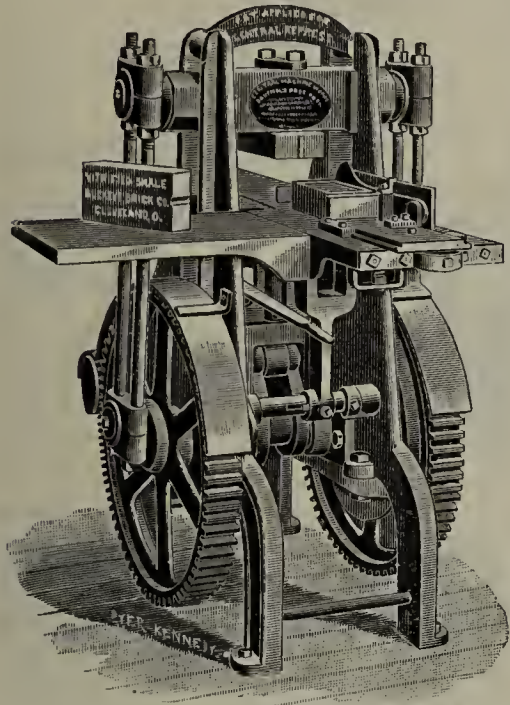


CENTRAL MACHINE WORKS,

226-236 Abbey St., CLEVELAND, OHIO.

—MANUFACTURERS OF—

The CENTRAL Power Repress.



It is the most complete ever offered to Brickmakers.

The capacity is from 12,000 to 15,000 brick per day.

It does the same work as others of two and three times the weight.



ALSO MANUFACTURERS OF

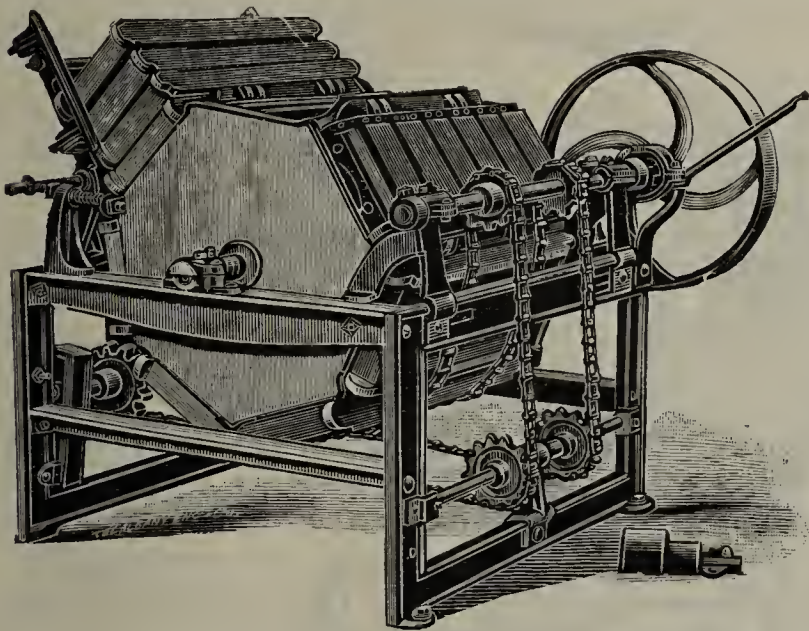
Brick Machinery of all Kinds.

Write for Discriptions.

Buck's New Champion Brick Mold Sanding Machine.

J. A. Buck, the Inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton to letters patent for said machine.

The "New Champion" is a great improvement over the old "Champion," doing away with Belts and Gearing and being much more simple. It is the cheapest, best and most durable sanding machine made, in brief it is warranted to give satisfaction.



WHAT THE "NEW CHAMPION" IS DOING.

Mr. J. A. Buck:

DEAR SIR:—The five-mould sanding machines purchased of you last spring have given us entire satisfaction. No expense for repairs, or loss of time, as the machines have always been ready to work.

Yours respectfully,

HAVERSTRAW, N. Y., Oct. 26th, 1893.

DENTON FOWLER & SON.

Write For Prices

J. A. BUCK, 76 Oneida St., COHOES, N. Y., or CRESCENT, Saratoga Co., N. Y.

MENTION THE CLAY WORKER

When writing to advertisers

MENTION THE CLAY WORKER.

FOR SALE, WANTED, ETC.

Advertising rates in this column 25 cents a line, or 4 cent a word, each. insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

WANTED. One dry pan, one soft mud brick machine, 10,000 brick pallets. Give prices, conditions, etc. Address,

J. A. & W. F. ANDERSON,
1-1-50p. Valencia, Pa.

WANTED. Situation as Superintendent, understands making and burning of fire brick, paving brick, sewer pipe, fire proofing, gas retorts and all kinds of fire clay goods. Can erect plant. Reference as to ability, etc. Address
1-1-c A. B. care Clay-Worker.

NEW AND SECOND-HAND MACHINERY FOR Sale. One complete brick outfit (new) semi-dry process, located in Minnesota. Also several second-hand machines for brick and tile at our factory, but not our make. All for sale cheap.

MICHIGAN BRICK & TILE MACHINE CO.,
1-3-d- Morenci, Lewanee Co., Mich.

A THOROUGH Brickmaker who has recently invented a down draft continuous kiln on a new plan, for burning all kind of clay goods, especially dry press, sewer and street paving, at a greatly reduced cost of burning, wishes to correspond with parties who have or will build a brick making plant and join advertiser in patent kiln and brick business. Principles only.

Address HARRY M.
1. 1. c. care Clay-Worker.

FOR SALE. One Quaker horse power brick machine, nearly new, 9,000 pallets; better pallets cannot be made, six lath and five cross pieces to each pallet, racks for same, 32 kiln doors, 150 feet 4-inch gas pipe, burners for same, two off-bearing trucks, wheel barrows. Will help to set up and start yard and guarantee success from start.

Enquire M. CARL,
1-1-c- Fremont, Ohio.

WANTED. A thoroughly reliable and competent man as Superintendent. Must be experienced and fully able to take entire charge of yard. Stiff mud machine, 20,000 daily capacity. Half interest given to desirable man, acting as Superintendent, and taking financial interest in yard to extent of paying labor and running expenses at start. Yard 20 miles from New York. Sale of two million brick a year at \$8.00 guaranteed. Demand local. Address,
1-1-d. JERSEY, care Clay-Worker.

DO YOU WANT—A first-class, practical superintendent; one that understands the dry press, street paving, and soft mud processes, and one who understands all of the different machinery, kilns and driers used in the manufacture of the above branches; one that can test your clays practically through all the necessary machinery, having made arrangements with one of the largest first-class dry clay brick works, a first-class large and most successful street paving plant in the United States and a fine mud machine yard to test all clays practically. Why experiment when you can make sure of your clay before buying machinery and building works? By testing your clay practically you can have your works a success from the start, thus saving money and time. If your works have been badly built and you have not made any money, have it put in shape by a practical brickmaker, and make better brick and more money for your stockholders. If you want a man who has been successful in these branches and can give the best of reference as to ability, etc., etc., Address
1-1-d. M. HARDY, Care Clay-Worker.

SECOND-HAND MACHINERY. We offer the following second-hand machinery cheap for cash:

One Leader Brick and Tile Machine, in good order.
One Ideal Brick and Tile Machine, in good order.
One Brewer Crusher, fair order.
One Tile Elevator.
Three Clay Elevators.
One Platform Elevator, good as new.
One Pug Mill, good as new.
One Cunningham Automatic Cutting Table, in good order.
One Wallace Brick and Tile Machine.
One Ohio Brick and Tile Machine.
One Acme Brick and Tile Machine.
One Centennial Brick and Tile Machine.
One Hoosier Soft Mud Brick Machine.
One 15 h. p. horizontal stationary engine, good as new.
One 30 h. p. double vertical stationary engine, in excellent condition.

1-1-t-f. H. J. VOLAIR,
Decatur, Illinois.

FOR SALE. Horse power brick machine, in good condition. Address
FRED H. BROCKETT,
1-5-c- North Haven, Conn.

FOR SALE. The entire plant of the Garden City Terra Cotta Co., at Ottawa, Ills., including claylands, buildings, kilns, machinery and fixtures. For particulars, apply to the Secretary,
1-1-d- 723, 'The Temple,' Chicago.

WHY DON'T YOU BUY IT? Buy what? The Tile Factory at Gibson City, Ill. No other factory here. Good demand for tile at good prices. Will be sold on easy terms. Make me an offer. Write for particulars. Address,
T. D. SPALDING, Agt.
1-3-d- Gibson City, Ill.

FOR SALE. Brickyard outfit, consisting of a 30 horse power engine, power brick machine (300,000 daily capacity), crusher, elevator, trucks, pallets, racks, etc. Also gas pipe with drop attachments for 50 arches. Removal from location of yard, reason for selling. Address,
C. H. BALDWIN,
1-3-c- La Fayette, Ind.

PARTIES who want to go into the roofing tile business can get advice about patterns, machines, cars dryers, kilns, etc., at the address of
ROOFING TILE,
1-6-c- care Clay-Worker.

WANTED. Position as manager of brickyard, by a practical brickmaker and burner. Can also construct kilns for either soft mud or dry press bricks. Or can fill first-class burner's place. Address
Box 1,
1-1-c- care Clay-Worker.

FOR SALE. Raymond's Hand Brick Press, only been used to repress 10,000 brick. Guaranteed, in good order. Square and octagon dies. Cost \$150.00. Will sell for \$80.00 cash. Address
J. W. EVERAL,
1-1-d- Westerville, O.

TO LET ON ROYALTY. A complete steam brick works. Capacity ten (10) million. The right man can make big money. Will require about \$5,000. For full particulars, Address
"FINE CLAY," P. O. Box 995,
1-1-d- Baltimore, Md.

\$20,000. A responsible party, who will invest this sum can secure one-half interest and position as Treasurer of a steam brick and tile plant, costing over \$60,000, with every condition favorable to do a large and profitable business. Full information by addressing
TREASURER,
1-1-d- Care Clay-Worker.

WANTED. Potters Pug Mill—vertical 18 to 20-inch diameter. Must be cheap and in good condition. Address,
INDIANAPOLIS TERRA COTTA CO.,
1-1-t-c- Brightwood, Ind.

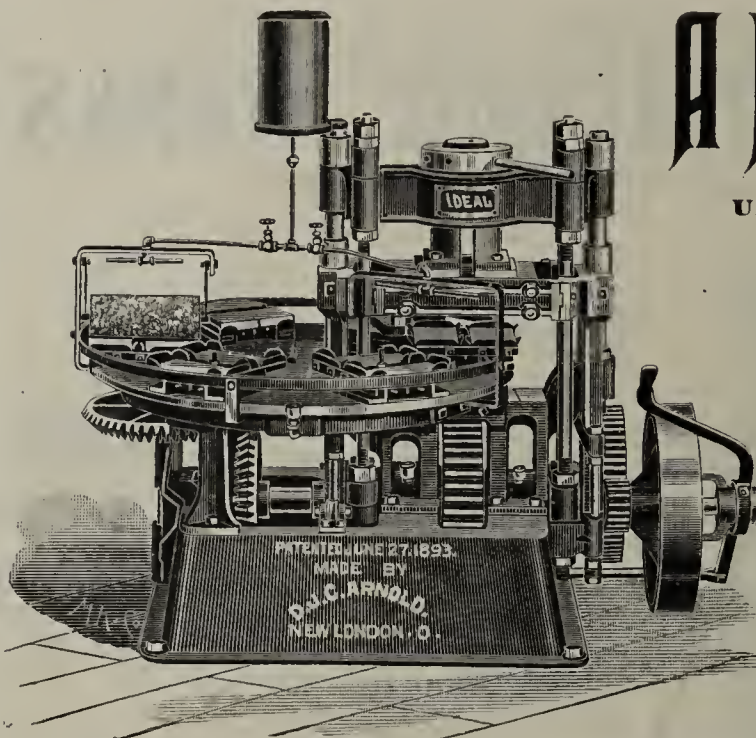
WANTED. To buy second-hand pallets for a soft mud machine. Give number and style of make with price F. O. B. Address
WM. KALEY,
1-1-c- Arapahoe, Neb.

WANTED. Position as Superintendent and Foreman of brickyard, 23 years practical experience, also builder of same. Reference first-class. Address, Box 34, Tappan, N. Y.
1-1-c-

WANTED. To buy or lease a good clay works, to make the famous Lawrence Clay Post, which has been in use over six years. The first post placed in the ground has had thousands of horses hitched to it, leaving it in perfect condition. How is that for strength? It can be sold as cheap as wood. Received the first prize at the World's Columbian Exposition. What has enterprising towns to offer as inducements to locate? Address
WILLIS H. LAWRENCE,
1-1-c- Milton, Pa.

BRICKS. Plain and ornamental of all colors, encaustic and plain flooring tiles, roofing tiles, vitrified paving, glazed and enameled bricks and tiles, etc., etc. Advertiser, operating his own works, wishes to turn spare time to profitable account, by showing how to mix clays and make any of the above mentioned bricks and tiles. Address
"GRANITE,"
1-1-k- care "Clay-Worker."

WANTED. A good practical man, who understands the red brick business, with capital, as a partner in a good paying business, located along the main line of Pennsylvania Railroad. Ready sale for product. A good investment which will realize a handsome profit for the right party. For further particulars address
L. BLACKSHIRE,
1-2-d- 171 Sheridan Ave., Johnstown, Pa.



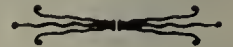
A NEW RE-PRESS

UP TO DATE. ~~~

ORIGINAL IN DESIGN.

Simple, Compact,
Convenient to
Operate.

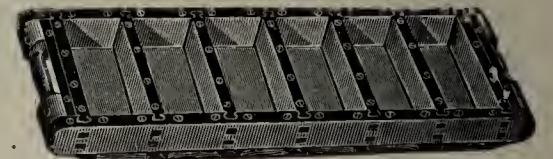
New features not found
in any other.
Find out all about it before
you buy a repress.



3 Brick Hand Mold.



6 Brick Hand Mold.



6 Brick Machine Mold.

BRICK MOULDS.

All kinds and shapes made to order. A large stock of Hand and Machine moulds of standard sizes on hand to fill orders immediately. Anything not in stock made promptly. Standard of quality, the very highest to be found anywhere. New ideas this year. Satisfaction guaranteed. Some odd sizes **cheap.** Send for list and prices, stating about sizes desired.

IRON BRICK BARROWS.

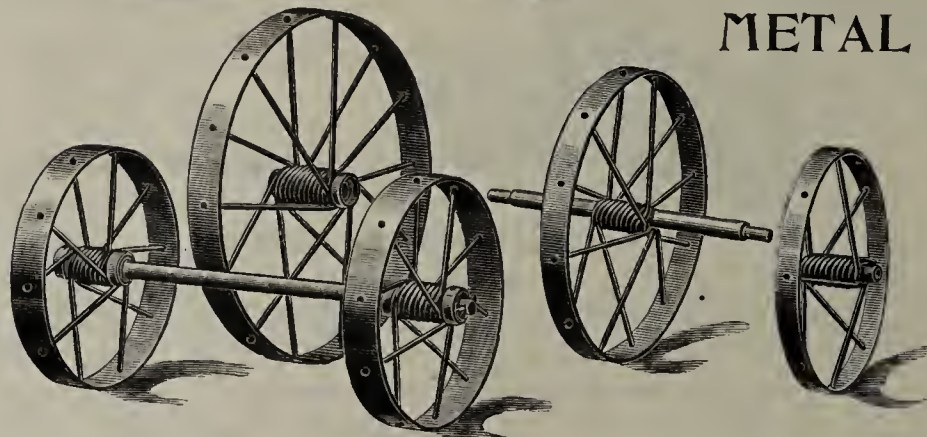


Not affected by
the weather.

About the same
weight of wooden
barrows, and cost
but little more.



METAL WHEELS.



Specially adapted to
use on
Brick & Tile Yards.



STRONG

...and...

DURABLE.

A Full Line of Brick and Tile Yard Supplies.



ADDRESS. D. J. C. Arnold,

Send for Catalogue and Prices.

New London, Ohio.

Victor Testimony.

Every agent admits, that with the exception of the bicycle he sells

Victor Bicycles are Best.

Such straws show conclusively the way the wind blows.

OVERMAN WHEEL CO.,

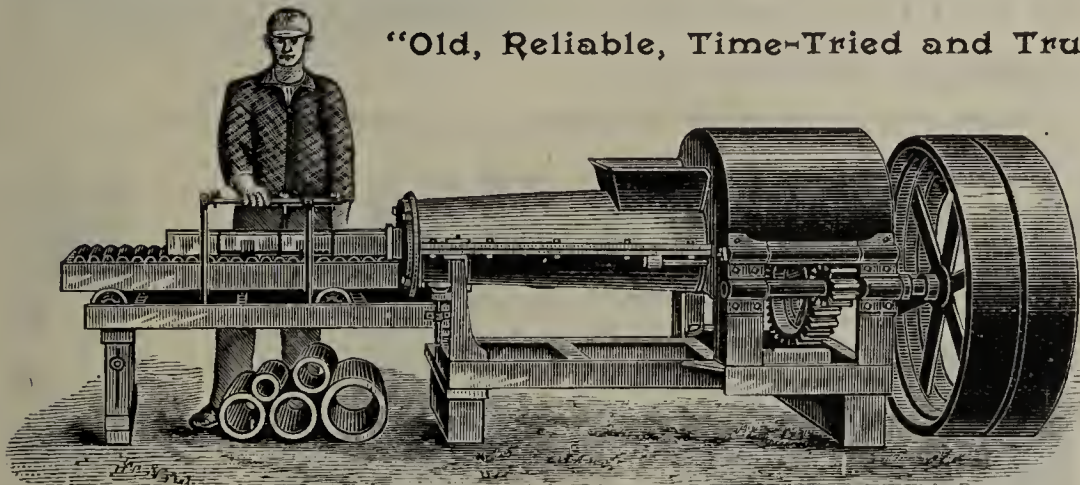
BOSTON,
WASHINGTON,

DENVER,
SAN FRANCISCO.



KELLS & SON'S IMPROVED BRICK AND TILE MACHINES.

"Old, Reliable, Time-Tried and True."



P. H. Kells, the Original Inventor of the Auger Machine.

This machine works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. Patented June 22nd, 1880; and February 12, 1884. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

We have had Twenty-seven Years' Experience in the Manufacture of Brick and Tile Machines.

We have made an improvement on our No. 1 Machine by which we can make tile from 3 inches up to 12 inches and on our No. 2 Machine we can make tile from 2½ up to 10 inches.

For Illustrated Circulars, Prices, Etc., address

KELLS & SONS, Adrian, Mich.

H. C. BAIRD & SON,

PARKHILL, ONTARIO,

Sole Manufacturers for the Dominion of Canada of the above machines, also makers of the NEW QUAKER BRICK MACHINE.

FOR SALE. Six Tempering Wheels, steam geared, latest improved, almost new. Will sell cheap. Address, **PETER FELL,** Trenton, N. J. 12 3 L.

WANTED. Position as foreman of fire brick, paving brick or sewer pipe plant. Has worked his way from water boy. Don't drink. Best of references. Address, **H. LINCOLN,** Midvale, Tuscarawas Co., Ohio. 12 3 3p.

WANTED SITUATION. As superintendent of brickyard, by a man who thoroughly understands the business. Best of references. Address, **R. L. SLAUSON,** Galesburg, Ill. 12 3c.

CONTINUOUS KILN MAN wants a situation as burner or foreman. Five years' experience with press brick, stiff clay, and soft clay brick. Good references. No guess work. "FUELLERO," care "Clay-Worker." 12 2p tf

WANTED. Partner or partners to manufacture clay and coal conveyors—in demand. Stock already made, \$3,000. Correspondence solicited and catalogue sent on application. **L. BOUDREAU,** 170 East Spruce St., Manchester, N. H. 12 3 d.

FOR SALE. One Henry Martin Steam Power Brick Machine, nearly new and in complete working order; also one Henry Martin Horse Power Brick Machine in good order. Address, **AYERS BROS.,** Toms River, N. J. 12 3 L.

FOR SALE. One No. 4 Adrian Brick and Tile Machine with extra heavy Pug Mill, and smooth roll Crusher, with two sets of Dies and extra set of Augers. Suitable for common or paying brick, also tile. Good as new, only been run 4 months. Address, **A. FRIES & SONS,** Brookville, Ind. 12 2 c.

WANTED. A position by a practical brick-maker and burner as foreman or burner. Reference given. Address, **"C"** Care "Clay-Worker." 12 1 k

FOR SALE CHEAP.—A Chief, soft mud brick machine. It is as good as new, having been used but little and is a good machine. Reasons for selling—going out of business. For full particulars address, **OLD MANN,** Care Clay-Worker. 6. tf. d.

FOR SALE.—Controlling interest in tile factory at Melvin, Ill. Entire interest in tile factory now operated by us at Bloomington, Ill. Also, one 40 horse-power engine, good as new. One Brewer & Co. tile machine, good as new. **EDGAR M. HEAFER,** Bloomington, Ill. 1 tf. d.

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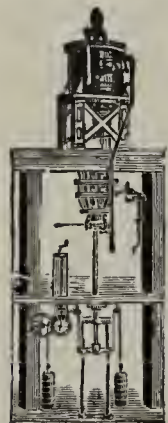
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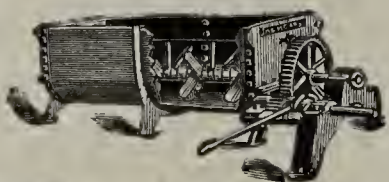
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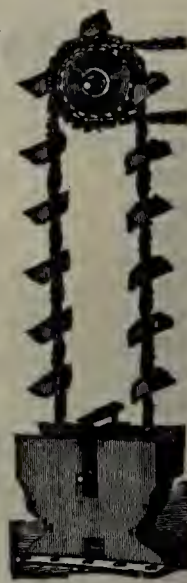
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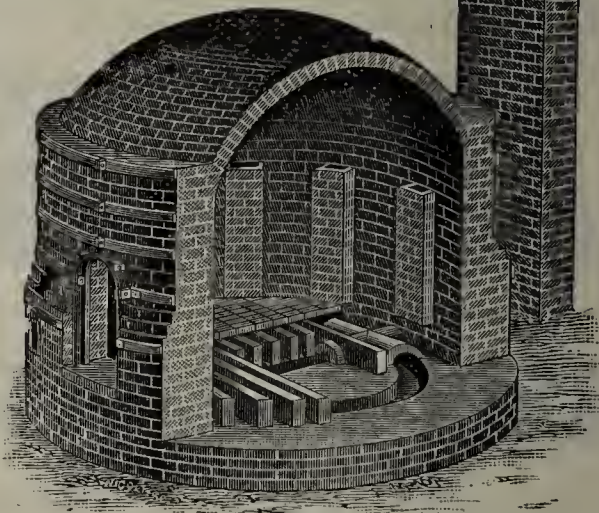
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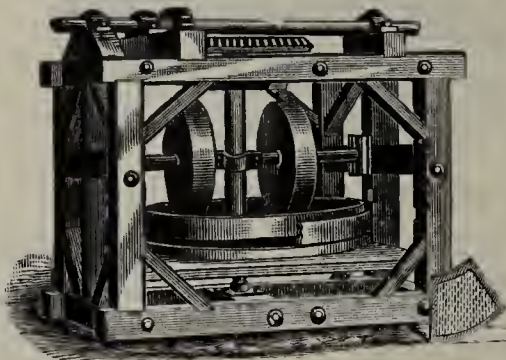
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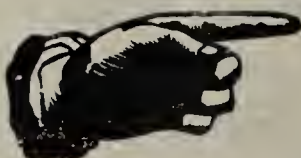
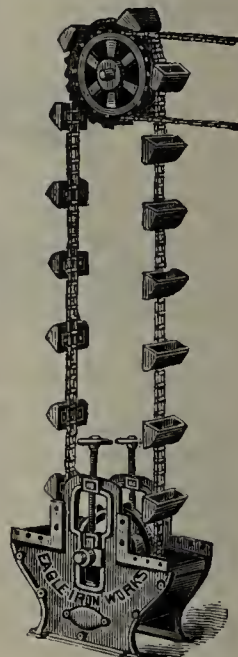
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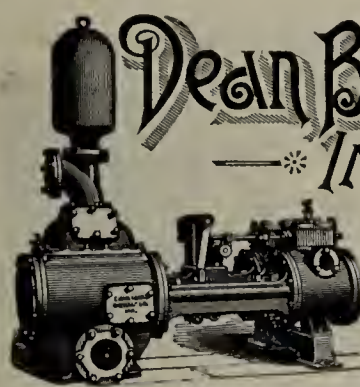
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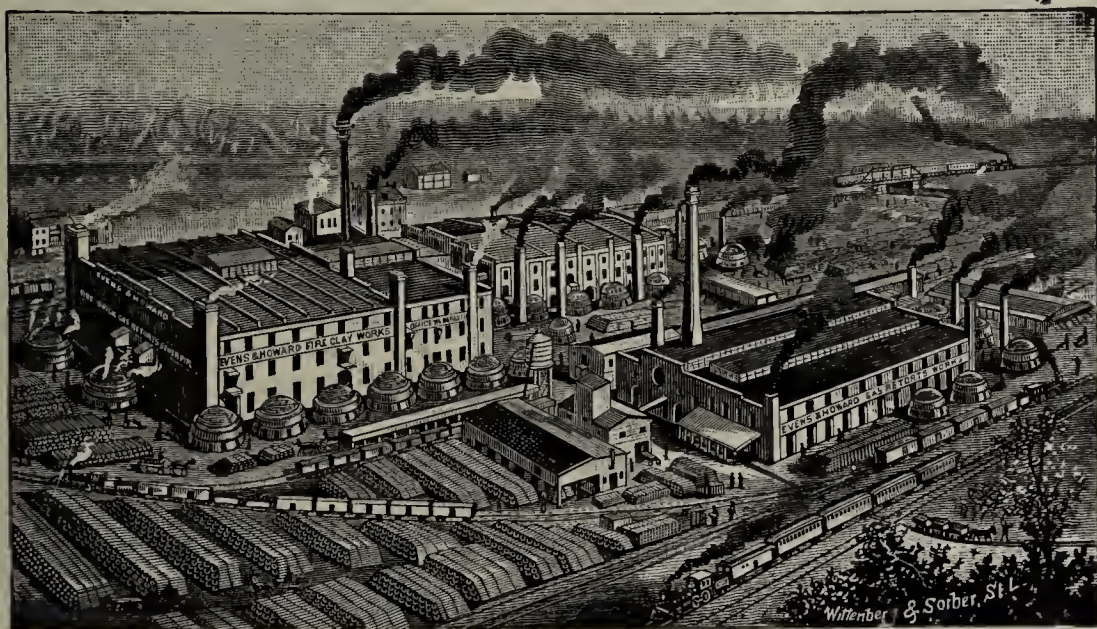
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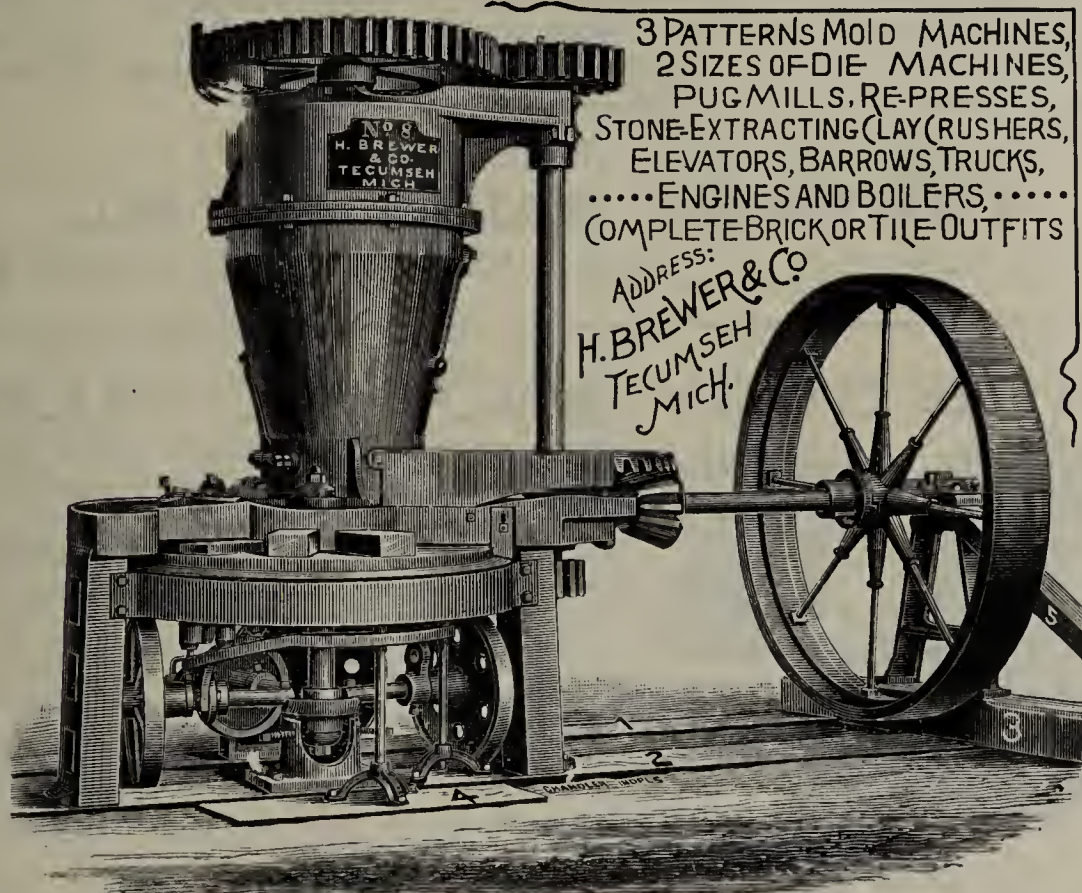
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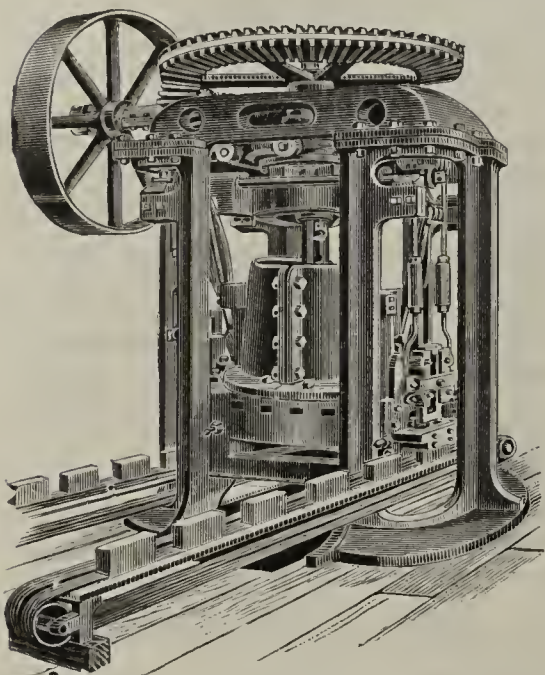
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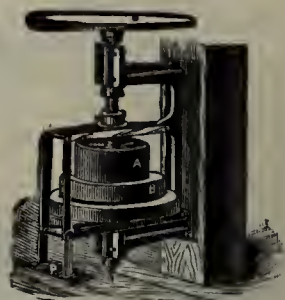
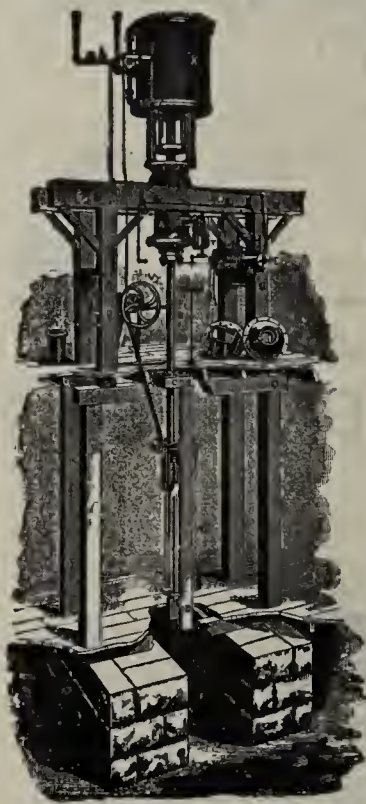
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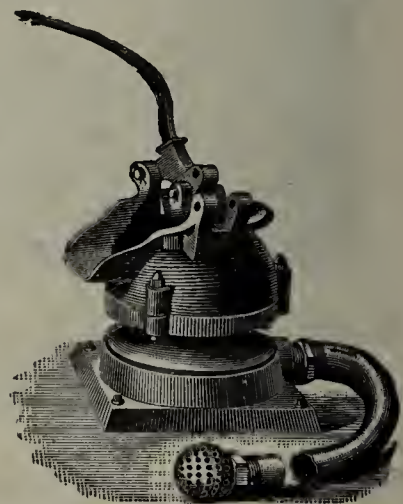
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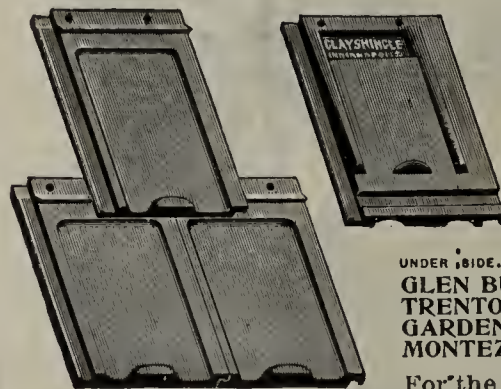
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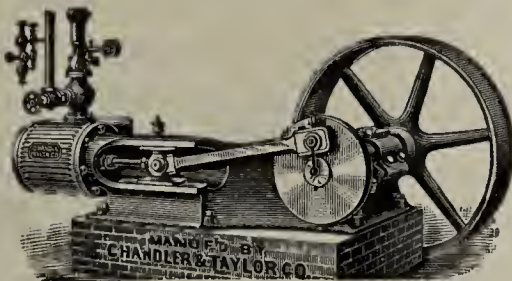
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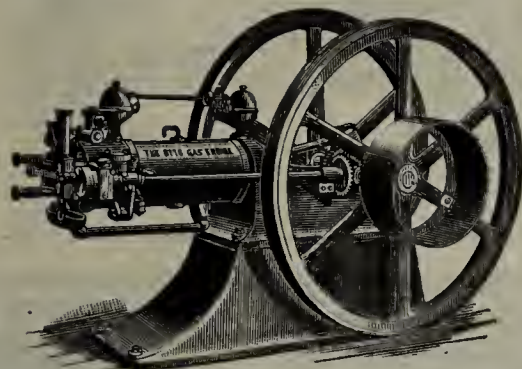
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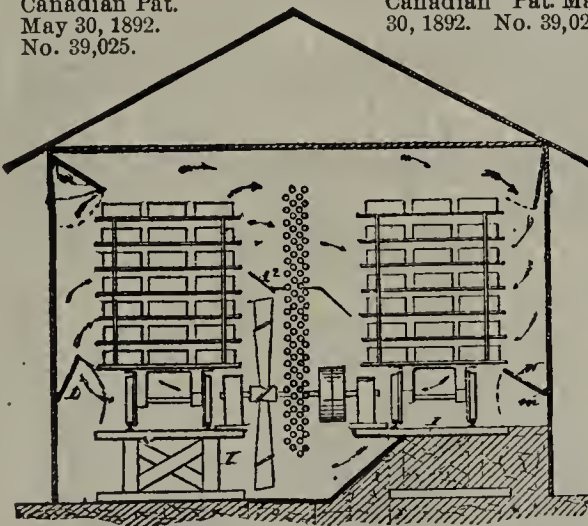
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U. S. Patent August 16, 1881. No. 245,742.

U. S. Patent March 31, 1891. No. 449,170.

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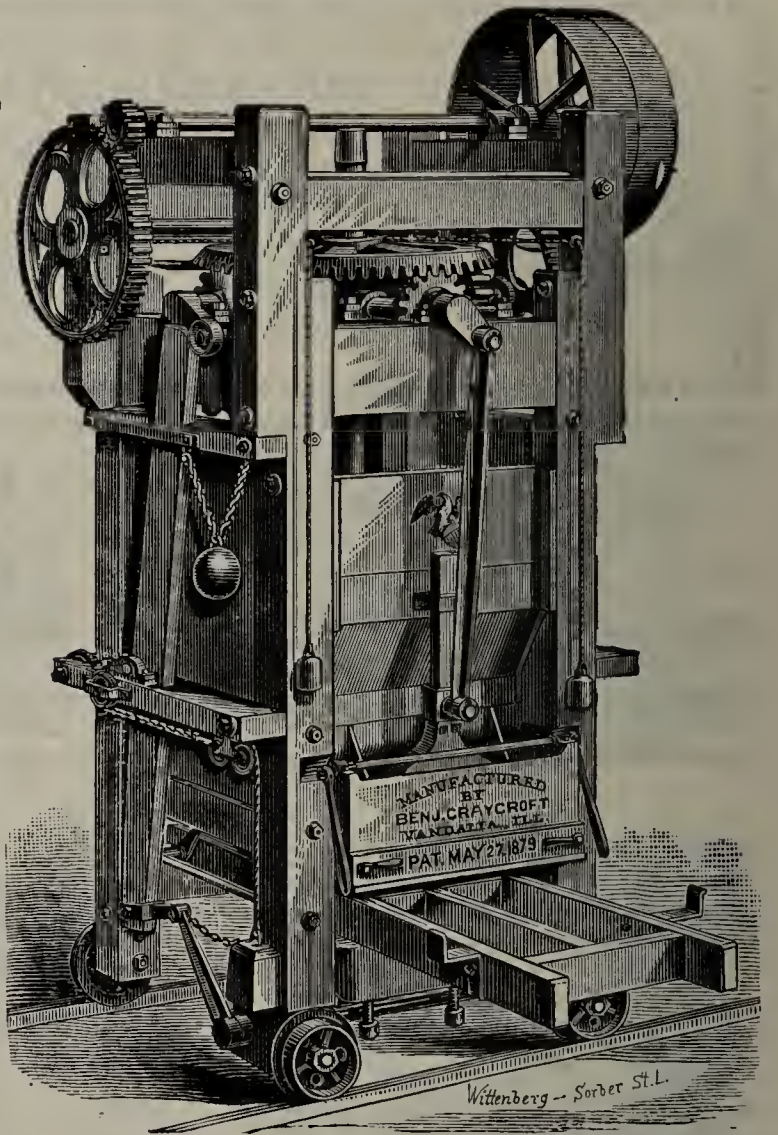
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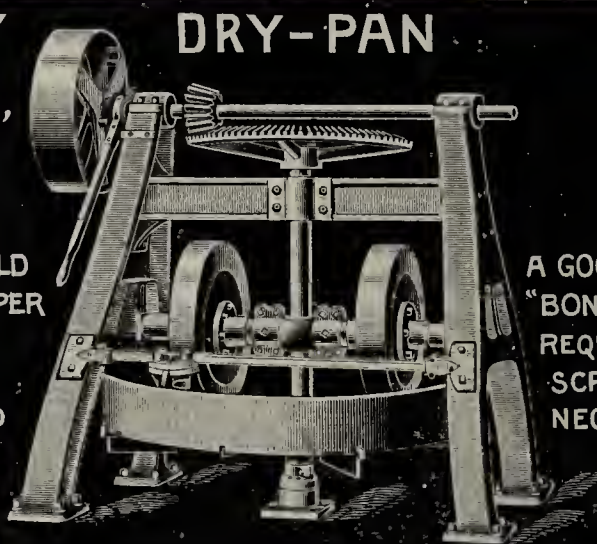
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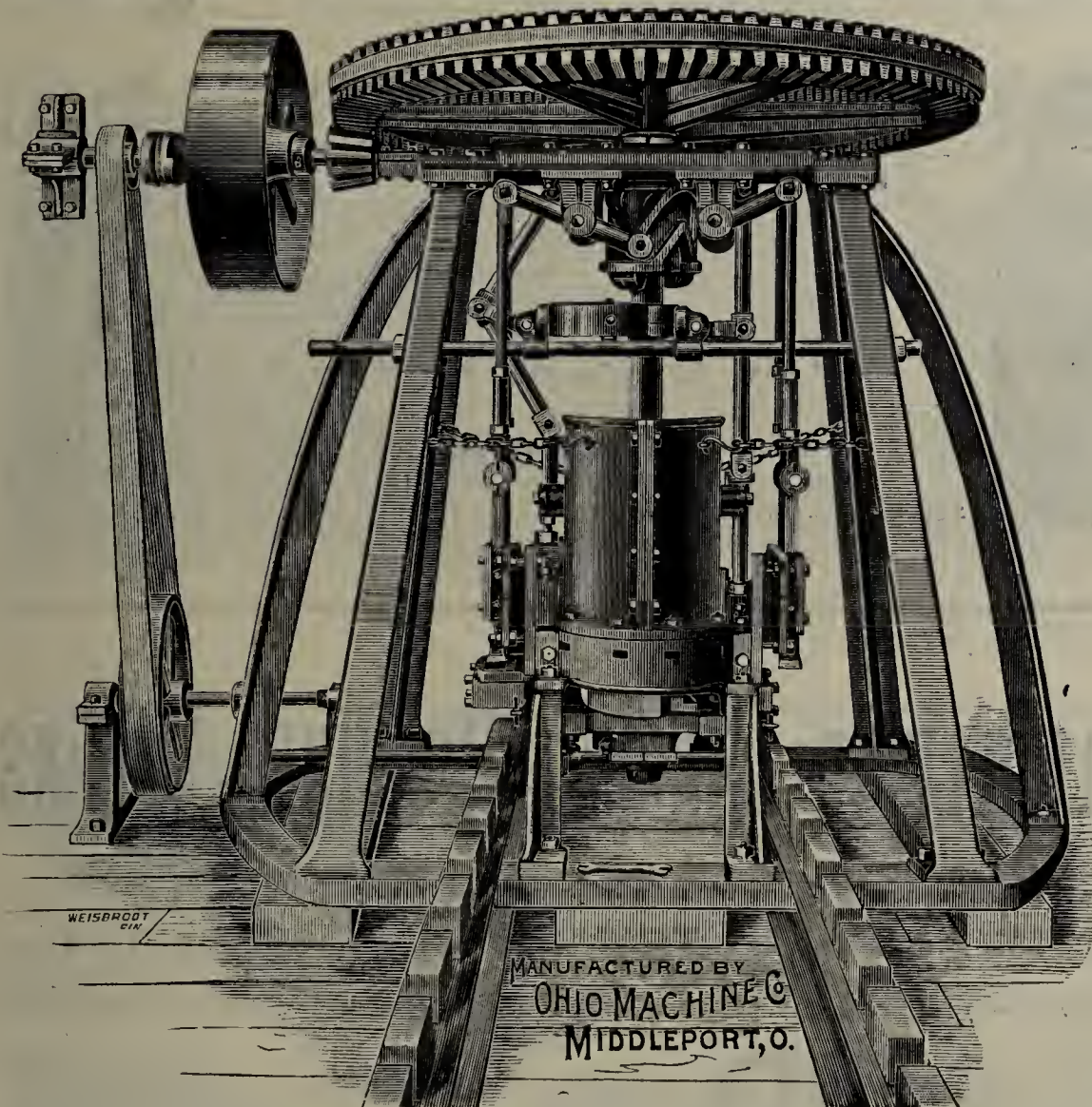
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AND ALL POINTS IN

WEST AND NORTHWEST.

The only line running Solid Pullman Perfected Safety Vestibuled Trains.

The only line running Dining Cars between Indianapolis and Chicago.

Magnificent Pullman Sleeping and Parlor Cars
For rates, maps, time tables, etc., apply to

I. D. BALDWIN, D. P. A.,

No. 26 S. Illinois St., Indianapolis, Ind

FRANK J. REED, G. P. A., Chicago.



THE
PULLMAN CAR
LINE
Between
INDIANAPOLIS
and
CINCINNATI.

The Favorite and Best Line

With DINING CAR between

CHICAGO and CINCINNATI.

ST. LOUIS and CINCINNATI

Best Line to Cincinnati, Dayton, Lima
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SPRINGFIELD, QUINCY, KEO-
KUK and CINCINNATI.

Pullman Sleepers on Night Trains and Palace
Parlor Cars on day train

Direct Connections without Transfer

IN **CINCINNATI** FOR

Points in Kentucky, Tennessee, Alabama
Florida and the South, Washington, Phila
delphia New York and Points East.

Ask for tickets and see that they read via
C.H. & D. On sale at all stations.

H. J. RHEIN, General Agent.

Indianapolis.

W. G. GREENE,

Gen'l Manager.

D. G. EDWARDS,

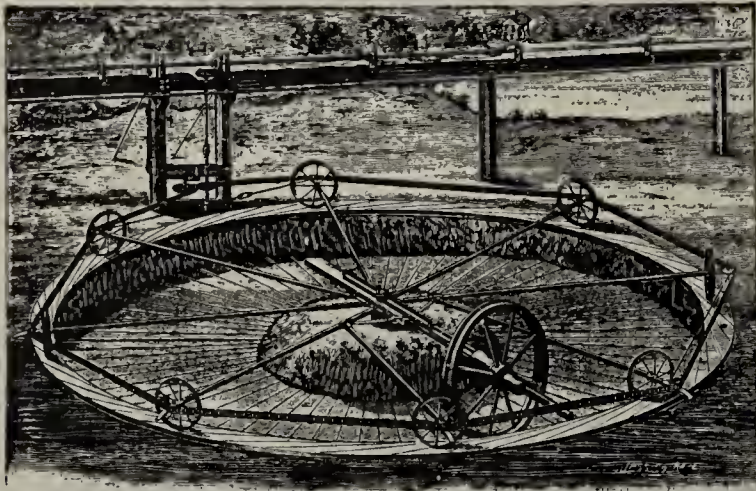
Gen. Pass. Agt.

Cincinnati, Ohio.

150 DOUBLE DECK BRICK DRYER CARS FOR SALE, CHEAP.

•➔• Ready For Shipment. •➔•

THE BALL-BEARING CAR WHEEL & MFG. CO.,
Successors to CLEVELAND WHEELBARROW & MFG. CO., 961-981 Hamilton Street, Cleveland, Ohio.

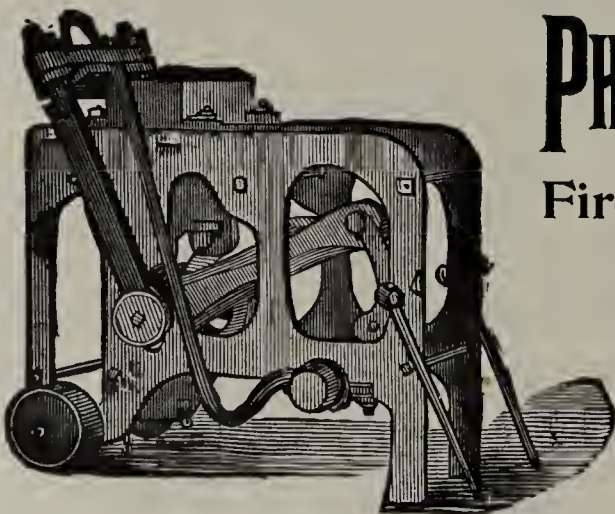


DORNFELD'S PATENT
CLAY TEMPERING
MACHINE,

Manufactured by

The E. Kunert M'f'g Co.,
Watertown, Wis.

Send for Catalogue and Prices.



RED BRICK PRESS.

GEORGE CARNELL,

Nos. 1,819, 1,821 and 1,823 Germantown
Avenue and Fifth Street,

PHILADELPHIA, - - - PENN.

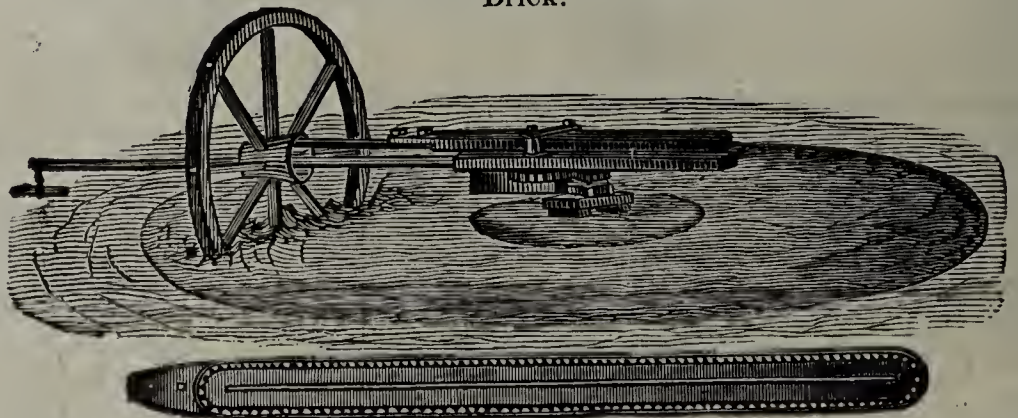
Send for Circular and Price-List.

PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

Frey's Re-press

Delivers and takes Brick on edge.

Less working parts than any other Re-press.

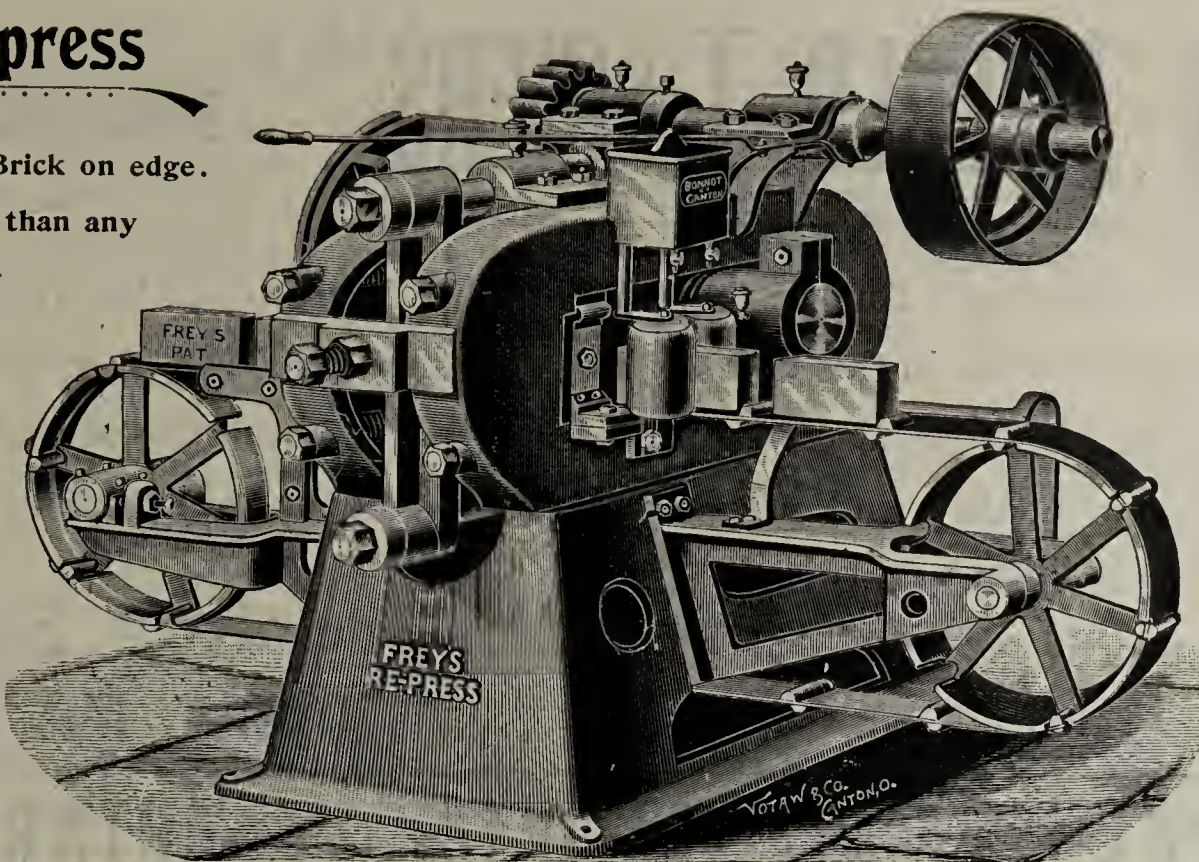
Takes Brick same size of die.

No working parts under the die for dirt to wear.

Send for Circular giving 12 Reasons Why this Re-press is the best, address

Single and Double Die Machines with either Continuous or Reciprocating Feeds as desired.

The latest improvement wipes the pressure plates clean at each operation and oils them.



F. E. FREY & SON,
MECHANICAL
ENGINEERS.....

And Designers of

**Clayworking
Machinery**

WILL.....

Take contracts for new Brick or Tile Factories.

Examine Clays and furnish plans for outfits.

Over Thirty Years' Experience.....

F. E. Frey & Son,

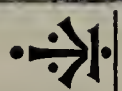
WILLOUGHBY, - OHIO.

The BOSTON BRICK ASHLAR.

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

ROCK FACE.

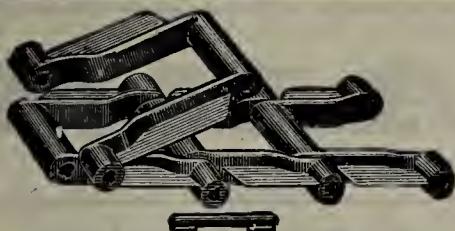
TOOLED FACE.



FISKE, HOMES & CO., Boston.

NORTHWESTERN TERRA COTTA CO., Chicago.

LICENCEES.



Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



Mey Patent Clay Elevator.

F. H. C. MEY CHAIN BELTING
ENGINEERING WORKS,

APPROVED APPLIANCES FOR

Elevating, Conveying & Transmission of Power

64 to 68 Columbia St., BUFFALO, N. Y.

at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

**Make Many More
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED
PRICE LIST.



BRICK MOLD LINERS.

Do YOU know that....

BRANCH-CROOKES SAW CO.,

St. Louis, Mo.,

Are making the hardest and toughest Brick Mold Liners for all the various Dry Press Brick Machines now in use in this country? Well they are. Now we understand there is a pool on these Liners. We are not in it. Try a few sets of our liners and be convinced both as to quality and price. We beg to refer to the Thomas Pressed Brick Co., of Brussels, Calhoun Co., Ill.

Branch-Crookes Saw Co.,
St. Louis, Mo.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES,
Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.
[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



BRICK

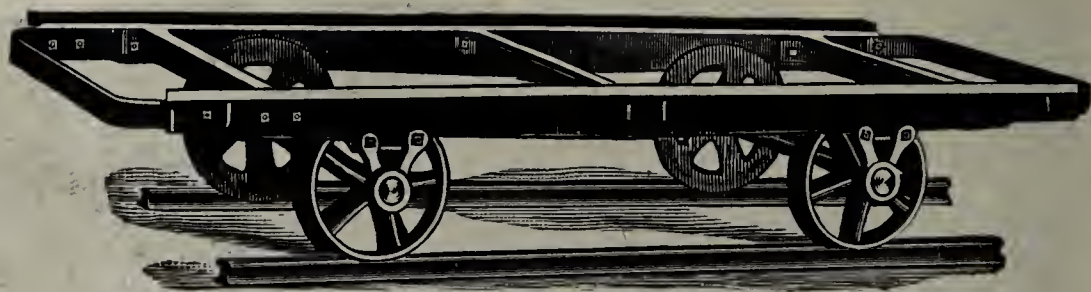
48 Styles.

Also
Turn Tables,
Transfers
Kiln Doors,
Grate Bars,
T Rails and
Iron Pipe.



ARS

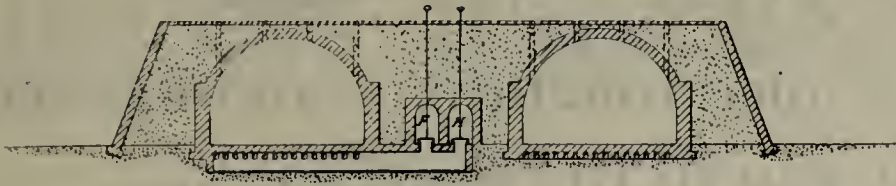
Send For Price List.



STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG. CO.,
Cleveland, O.

YOUNGREN'S IMPROVED CONTINUOUS KILN.



Marks a Great Advance in the Art of Continuous Burning

Accuracy of results reduced to a certainty.
Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.
Under ordinary circumstances the kiln pays for itself in six months.
Do not decide on kilns before making a thorough investigation.
Choose a kiln that is fully guaranteed as to results.
Read what some of the users say about Youngren's Continuous Kiln and be convinced.

PETERSEN BRICK COMPANY,

MANUFACTURERS OF PRESSED, ORNAMENTAL AND COMMON BRICK.

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR:—In reply to your inquiry as to the working of our Continuous Kiln we take great pleasure in saying that the same is a success in every respect. As you will know our people were somewhat doubtful as to ability of your kiln to burn first quality of pressed and ornamental brick, but we have now demonstrated to their satisfaction, that the same can turn out from 35 to 40 per cent of the finest quality of press and ornamental brick the color of which is even superior to those we formerly burnt in the E—downdraft kiln. As to common brick will say that every brick comes out hard and of good color. Wishing you success, we remain,

Yours truly

SAN JOSE, Cal., Aug. 25, 1893.

PETERSEN BRICK CO.,

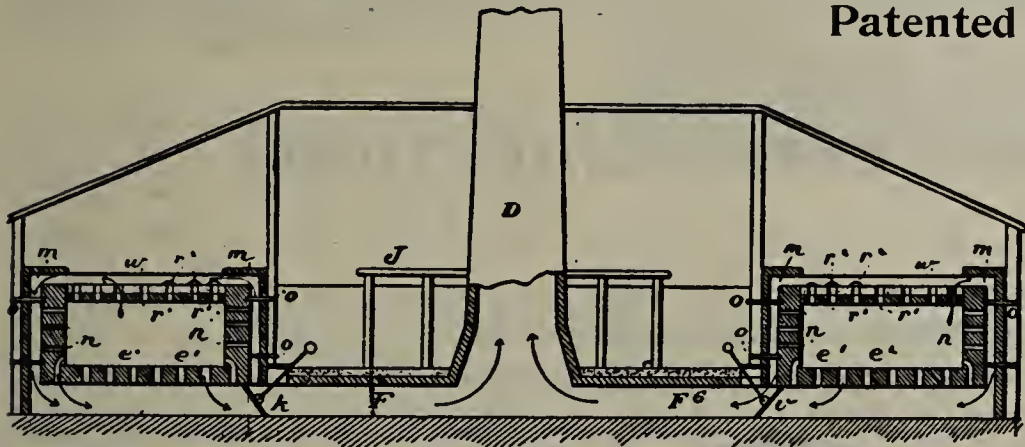
Per H. M. STAMMER, Superintendent.

For particulars address

P. L. YOUNGREN, Oakland, Cal.

The KAUL Continuous Brick Kiln.

Patented March 23, 1892.



THIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

CARL F. KAUL, Madison, Neb.

Mention the Clay-Worker.]

A LONG FELT WANT SUPPLIED.

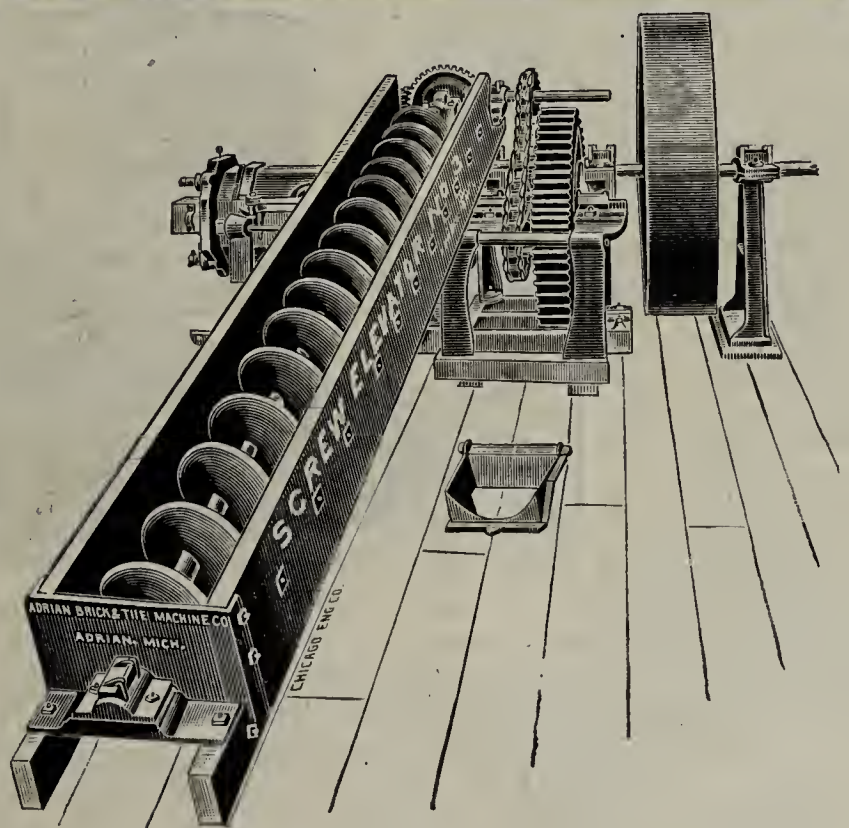
A SCREW ELEVATOR FOR ELEVATING CLAY.

The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clay-worker should have.

For Clayworking Machinery and Builders' Elevators, address the

Adrian Brick & Tile Machine Co.,

ADRIAN, - - MICHIGAN.



IT IS USELESS TO REPINE

Good brick made by good machinery and backed by good management will put you in the front rank.....



Experiments are better handled by the rich suckers who profit by a practical training, but the Brickmaker who desires to keep the balance on the right side of his ledger wants machinery of an established reputation, and to obtain information of such machinery with prices and full particulars, address the manufacturers.

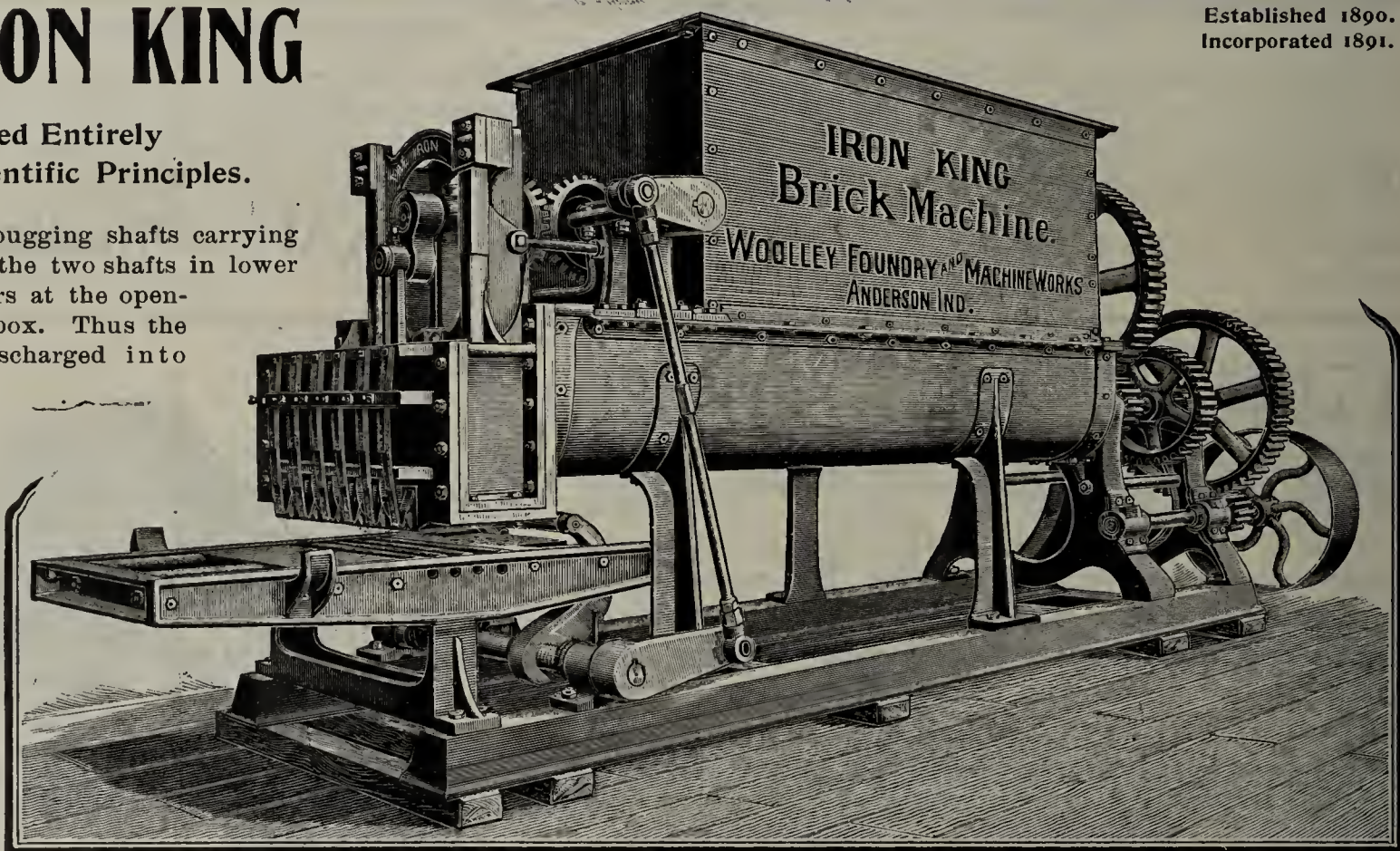
Jonathan Creagers' Sons, Cincinnati, O.

IMPROVEMENTS IN BRICK MACHINES....IMPROVEMENTS IN DISINTEGRATORS....IMPROVEMENT IN THE ARRANGEMENT OF COMPLETE EQUIPMENT....PRICES INTERESTING.

The IRON KING

Is Constructed Entirely
On Scientific Principles.

It has three pugging shafts carrying steel knives. On the two shafts in lower chamber are augers at the opening of the press box. Thus the clay is evenly discharged into the press box, insuring an even pressure on each brick. Parties who are familiar with what is commonly known as soft clay machines, will readily understand the advantages that we gain, by dispensing with the old wiper or mud wing, and substituting the more modern and



Established 1890.
Incorporated 1891.

positive device known as the auger. This machine has more pugging capacity, is stronger and has more iron and steel in it, and will make stiffer brick than any machine using a sanded mold. This machine will bear investigation. Write for full description and testimonials, or come to our works and see the machine in stock, we can show it in practical operation in works near us. In conclusion, if you buy a machine without investigating the Iron King, you are the loser. Address,

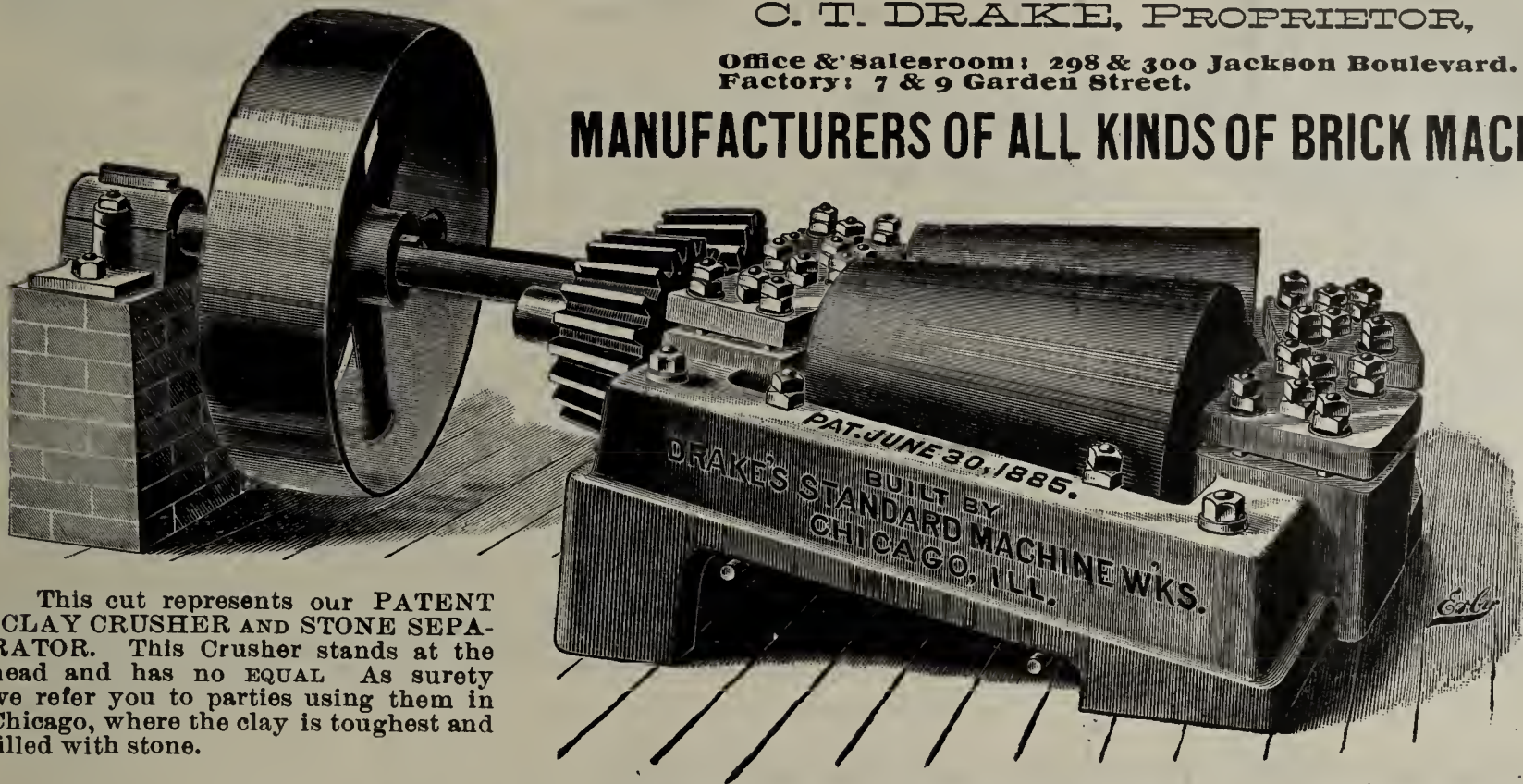
WOOLLEY FOUNDRY & MACHINE WORKS, Anderson, Ind.

DRAKE'S STANDARD MACHINE WORKS,

C. T. DRAKE, PROPRIETOR,

Office & Salesroom: 298 & 300 Jackson Boulevard.
Factory: 7 & 9 Garden Street.

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY



This cut represents our PATENT CLAY CRUSHER AND STONE SEPARATOR. This Crusher stands at the head and has no EQUAL. As surety we refer you to parties using them in Chicago, where the clay is toughest and filled with stone.

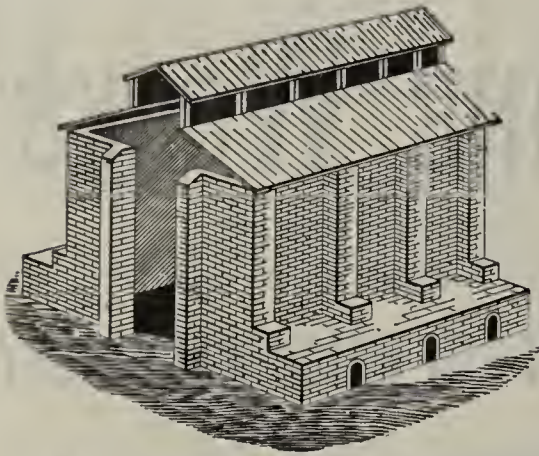
Alsip Brick Co. is running 11 crushers; Hayt & Alsip Co. is running 6 crushers; Purington-Kimbell Brick Co. is running 8 crushers; May, Purington & Bonner B. Co. is running 4 crushers; J. B. Legnard is running 2 crushers; Weckler Brick Co. is running 1 crusher; Adam J. Weckler is running 1 crusher; Weckler Prussing Brick Co. is running 1 crusher; Chicago Brick Co. is running 2 crushers; Union Brick Co. is running 2 crushers; M. Myers is running 2 crushers; Wahl Bros. are running 4 crushers; Pullman Brick Co. is running 2 crushers; Fred Zapel is running 1 crusher; Myers & Toll are running 2 crushers; Harms & Schlake Brick Co. is running 1 crusher; L. Wehrheim & Son are running 1 crusher; Alexander Burke is running 1 crusher; John Sexton is running 1 crusher; John Busse, Jr., & Co. is running 1 crusher; John Busse is running 1 crusher; George Lill is running 2 crushers; Legnard & Madden are running 2 crushers; Turner Brick Co. is running 1 crusher; Mayer & Toll are running 2 Crushers; Purington Brick Co. is running 2 crushers; Kuester & Thurrow are running 1 crusher; Reimer, Labahn & Kuester are running 1 crusher; Dumesniel Bros. Co., Louisville, Ky., are running 1 crusher; Mason City Brick & Tile Co., Mason City, Ia., is running 1 crusher; Eagle Clay Works, Streator, Ill., is running 1 crusher.

NOTICE:—Any parties manufacturing or using Clay Crushers with INCLINED SHAFT, other than those manufactured by us, are infringing on our patent and will be prosecuted.

J.H. & D. LAKE, CO.
MASSILLON, O.
U.S.A.
MFR'S. OF
PLAIN OR SPLIT
PULLEYS,
SHAFTING,
HANGERS, Etc.
ALSO
COUNTER SHAFTS
COMPLETE.

FRICITION CLUTCH PULLEYS;
CUT-OFF COUPLINGS, PLAIN OR SPLIT;
FORMERLY OF HORNELLVILLE, N.Y.

CAUTION ENG. CO.

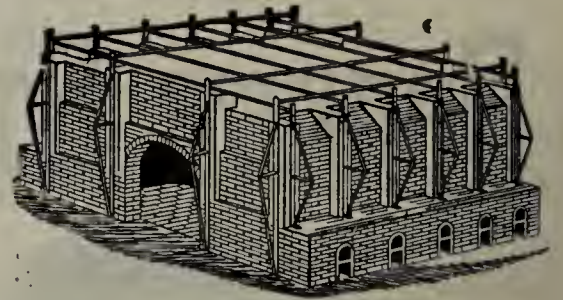


LOUIS H. REPPPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.

Having had years of practical experience in the management and actual burning of all kinds of kilns. I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.



The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

VITRIFIED PAVING BRICK.

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR.
NEVADA, Mo., July 17, 1892.

H. REPPPELL, Esq., Kansas City, Mo.,
DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eve out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to morrow.
Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK CO., Office, 5,218 St. Louis Ave.
ST. LOUIS, Mo., October 18, 1892.

MR. LOUIS H. REPPPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which wears now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.
Yours very truly,

COTE BRILLIANT PRESSED BRICK CO.,
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

LOUIS H. REPPPELL,
1,913 Indiana Ave. KANSAS CITY, MO.

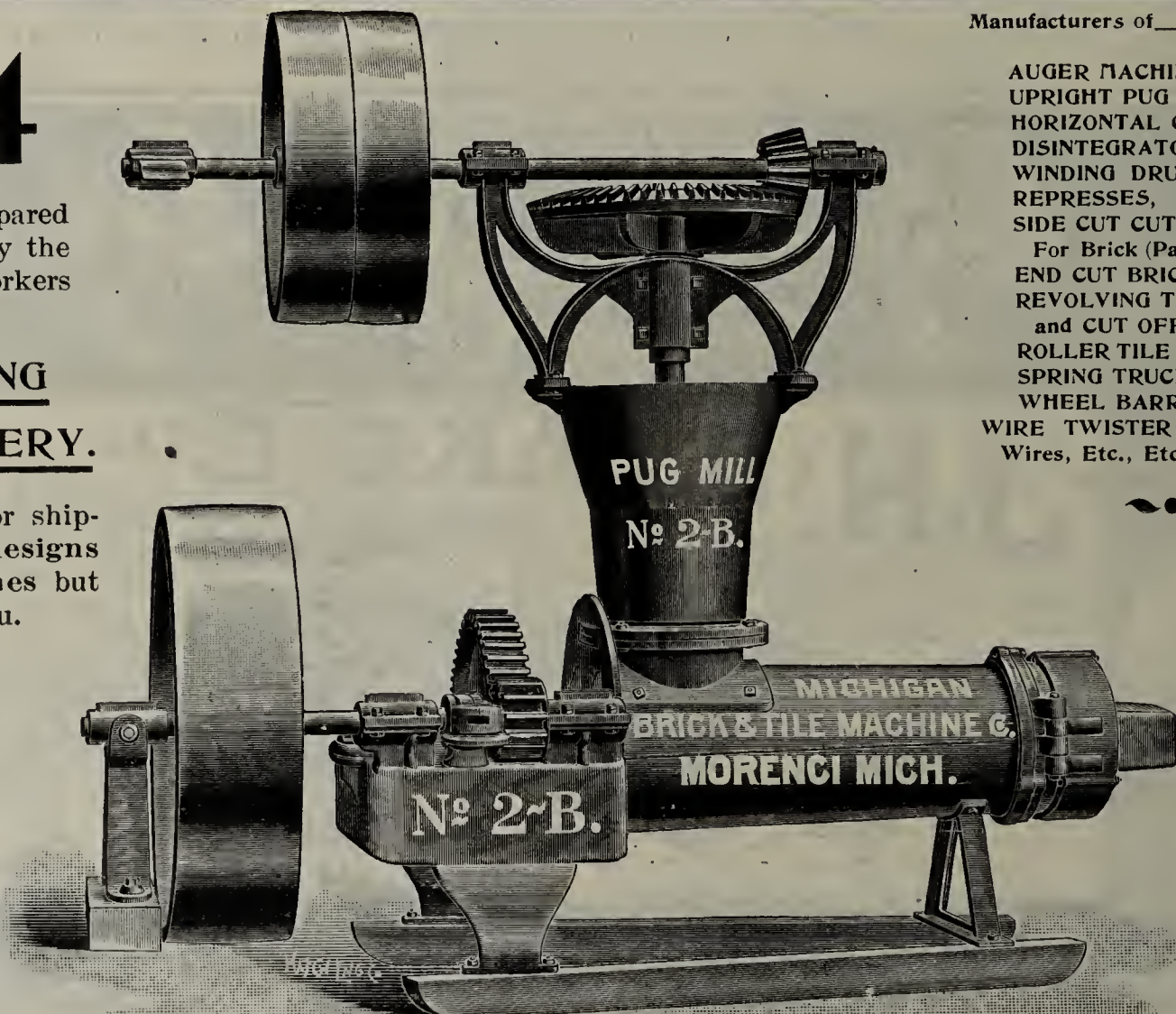
1894

Finds us better prepared than ever to supply the wants of clay workers with a full line of

CLAYWORKING MACHINERY.

We Have ready for shipment two new designs in Auger Machines but no cuts to show you.

Send to us for Photographs and description. Also Catalogue of Clayworking Machinery.



Manufacturers of

AUGER MACHINES,
UPRIGHT PUG MILLS,
HORIZONTAL CONVEYORS,
DISINTEGRATORS,
WINDING DRUMS,
REPRESSSES,
SIDE CUT CUTTING TABLES
For Brick (Patent Curved Cut)
END CUT BRICK TABLES,
REVOLVING TILE CARRIERS
and CUT OFF,
ROLLER TILE CUTTING TABLE
SPRING TRUCKS,
WHEEL BARROWS,
WIRE TWISTER to loop Cut off
Wires, Etc., Etc., Etc.

MICHIGAN BRICK & TILE MACHINE CO.,

MORENCI, MICHIGAN.

THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

St. Louis, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

ANTHONY ITTNER.

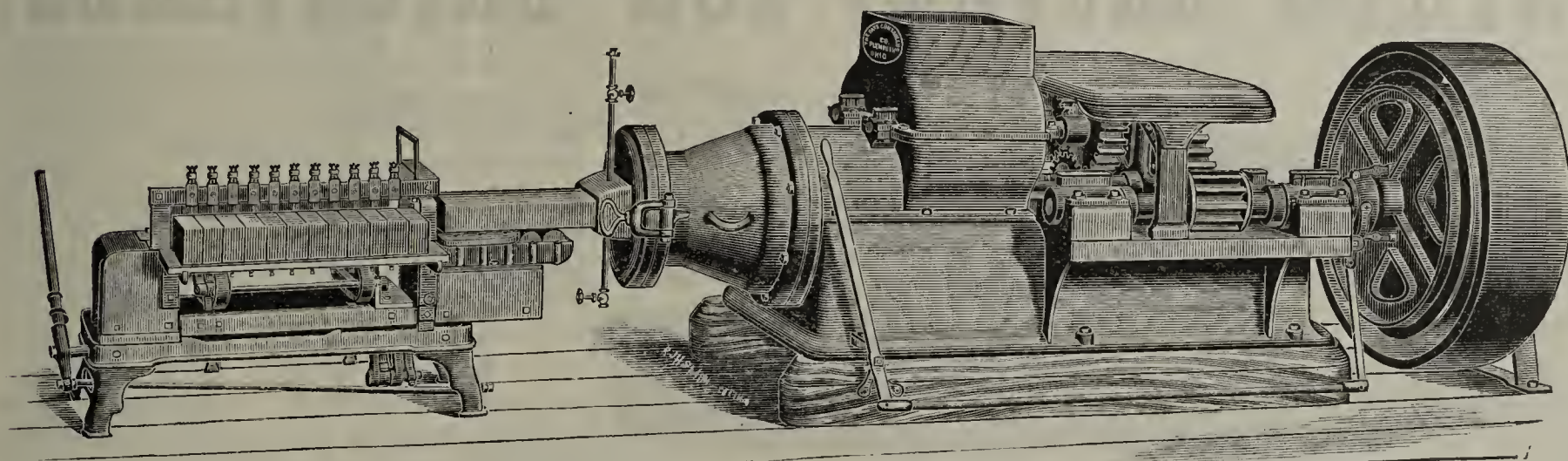
For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.

The "Plymouth." DURABLE,
....STRONG.



Brick Machines, Pug Mills, and all brick and tile yard supplies.

Write for catalogue and prices.

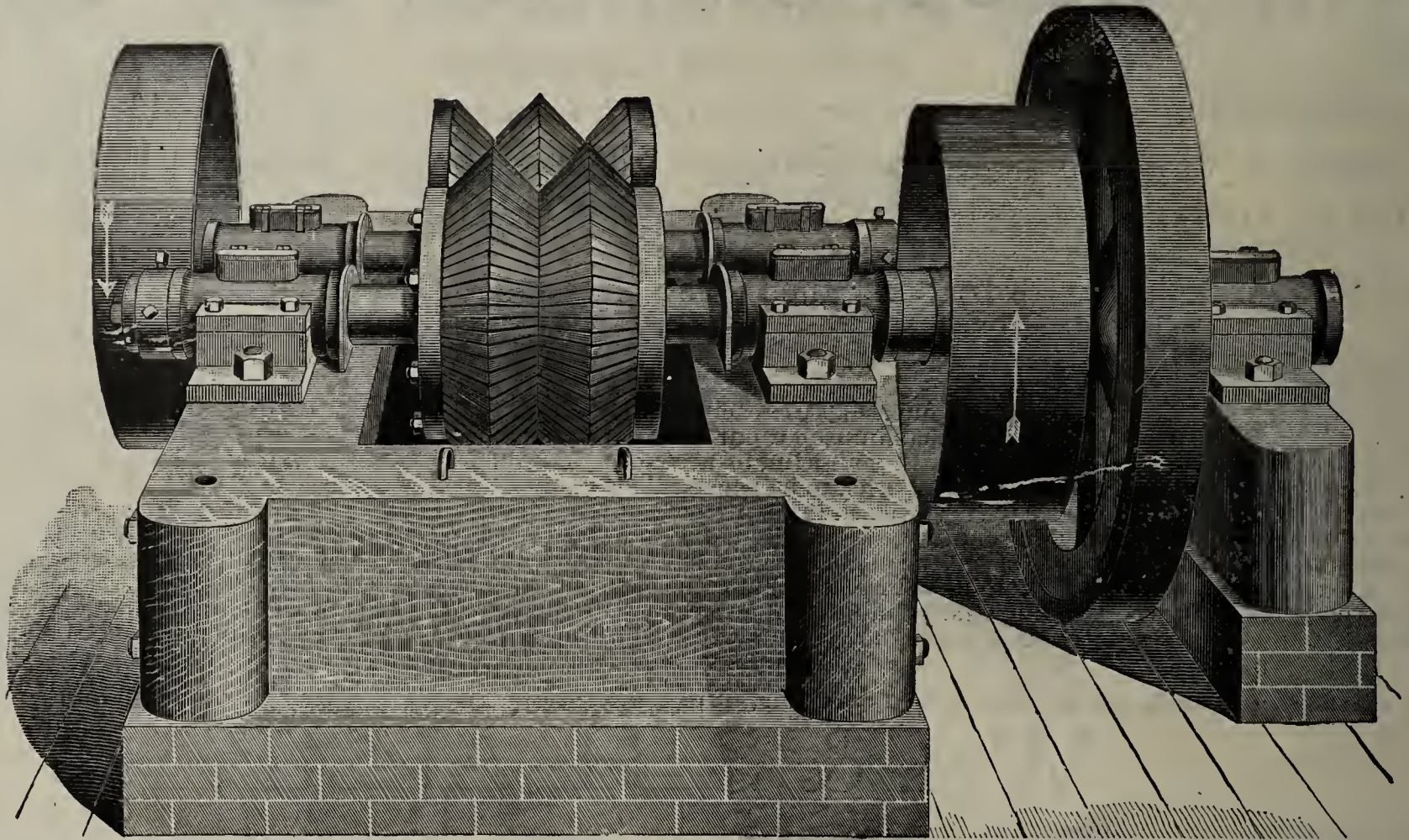
THE FATE-GUNSAULLUS CO.,

RICHLAND COUNTY,

PLYMOUTH, OHIO

NEWELL IMPROVED CLAY PULVERIZER

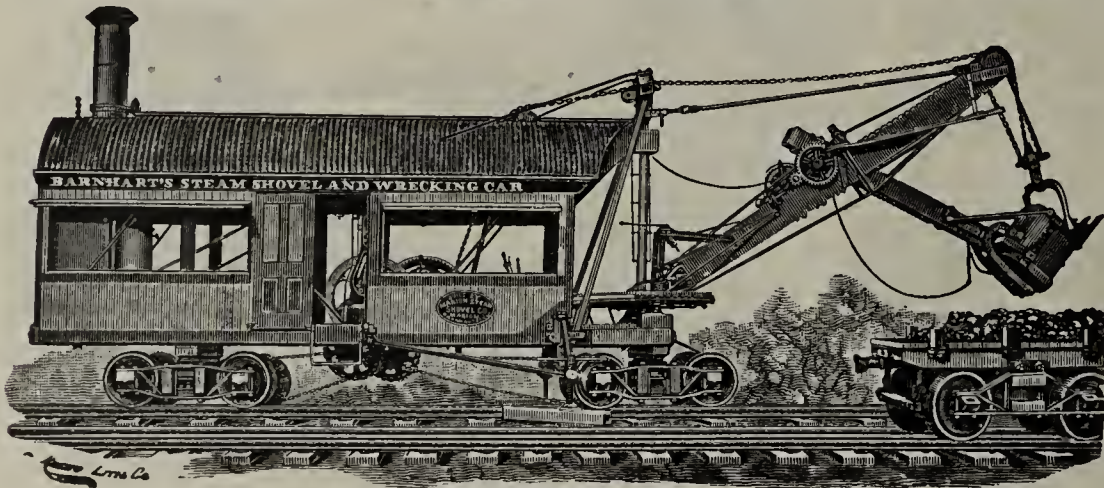
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremyer Building, 26 Cortland and 21 Dey Streets, New York, U.S.A.

STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

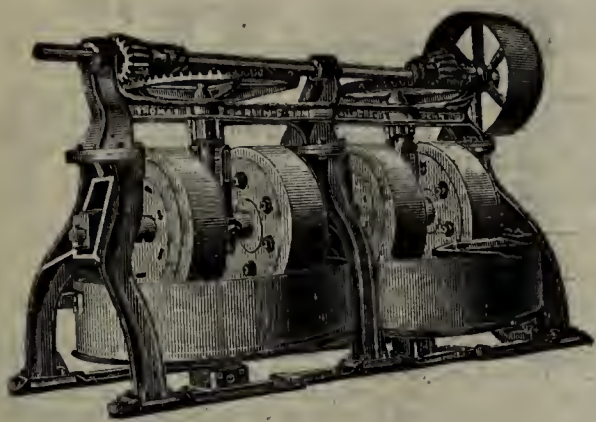
yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

The Marion Steam Shovel Co.,
603 West Center Street,
MARION, OHIO.

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick



STYLE C—¾ YD



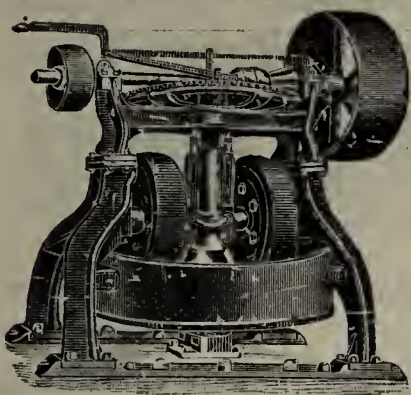
OUR SPECIALTY.

GRINDING AND MIXING PANS

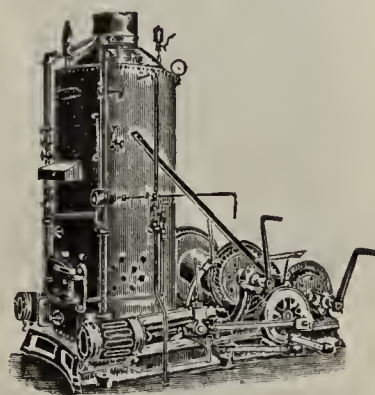
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,
 ENGINES AND BOILERS, HOISTING ENGINES,
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,
 ALLEGHENY, PA.



One 9 foot Dry Pan.
 One 6 foot Dry Pan.

} IN STOCK:

{ One 8 foot Wet Pan.
 Eight 3 foot gauge Dump Cars.

MANUFACTURERS OF
IMPROVEDCLAY WORKING
MACHINERY

OF EVERY DESCRIPTION

TAPLIN RICE & CO.

CLAY MILLS,
 STEAM SEWER PIPE PRESS,
 DRY & WET PANS, DIES, CLAY BLOCKERS,
 POTTERS' WHEELS AND
 MACHINERY OF ALL KINDS.

AKRON, OHIO, U.S.A.

PROMPT ATTENTION
 & DISPATCH GIVEN
 TO ORDERS

SEND FOR
 CATALOGUE
 A



"Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our clats of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,
WM. H. ASHWELL.

MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

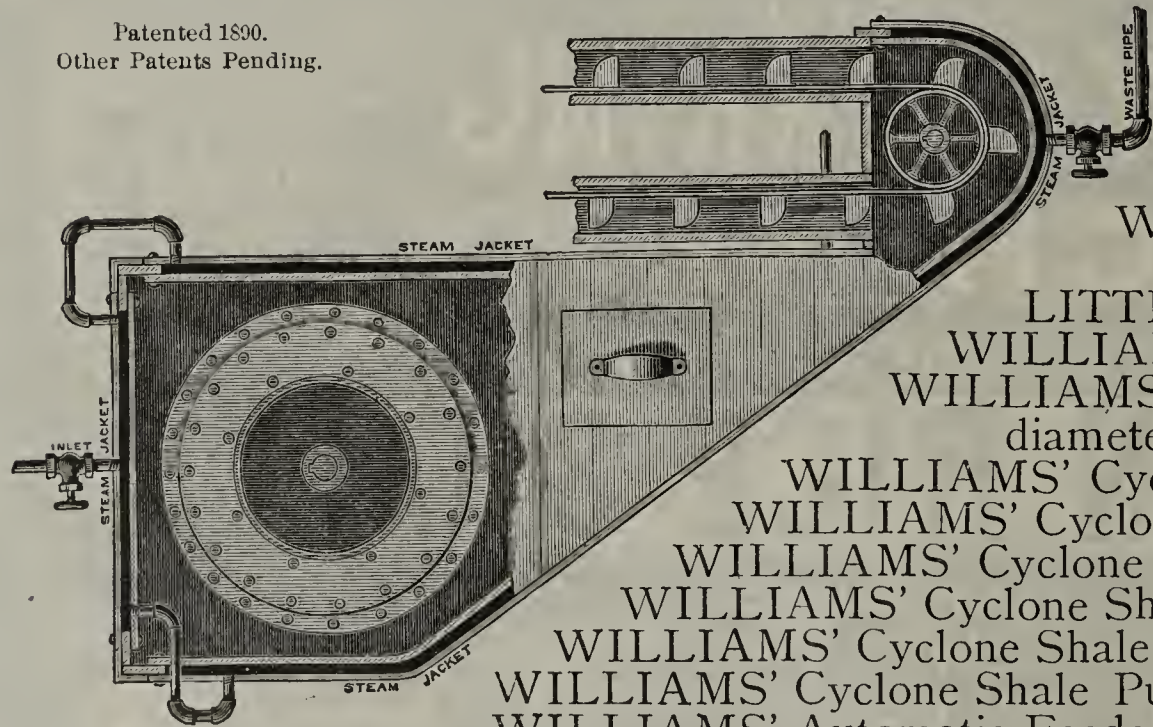
**Thompson's Water-Proof Belt Dressing for
Leather, Rubber and Canvas Belting.**

No user of Belting can afford to be without it.



WILLIAMS' CLAYWORKING MACHINERY.

Patented 1890.
Other Patents Pending.



WILLIAMS' Clay Elevators.
WILLIAMS' Triple Roll Clay
Crushers.

WILLIAMS' Brick Trucks,
Three sizes.

WILLIAMS' Revolving Clay
Screen.

LITTLE'S Steam Jacket for Pulverizers

WILLIAMS' Clutch Pulleys and Couplings.

WILLIAMS' Cyclone Clay Pulverizer 30 in.
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.

WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.

WILLIAMS' & LITTLE'S Patent Steam Clay Screen.

WILLIAMS' Pony Pulverizer for Testing Clay and Shale.

WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Clay Cultivators.

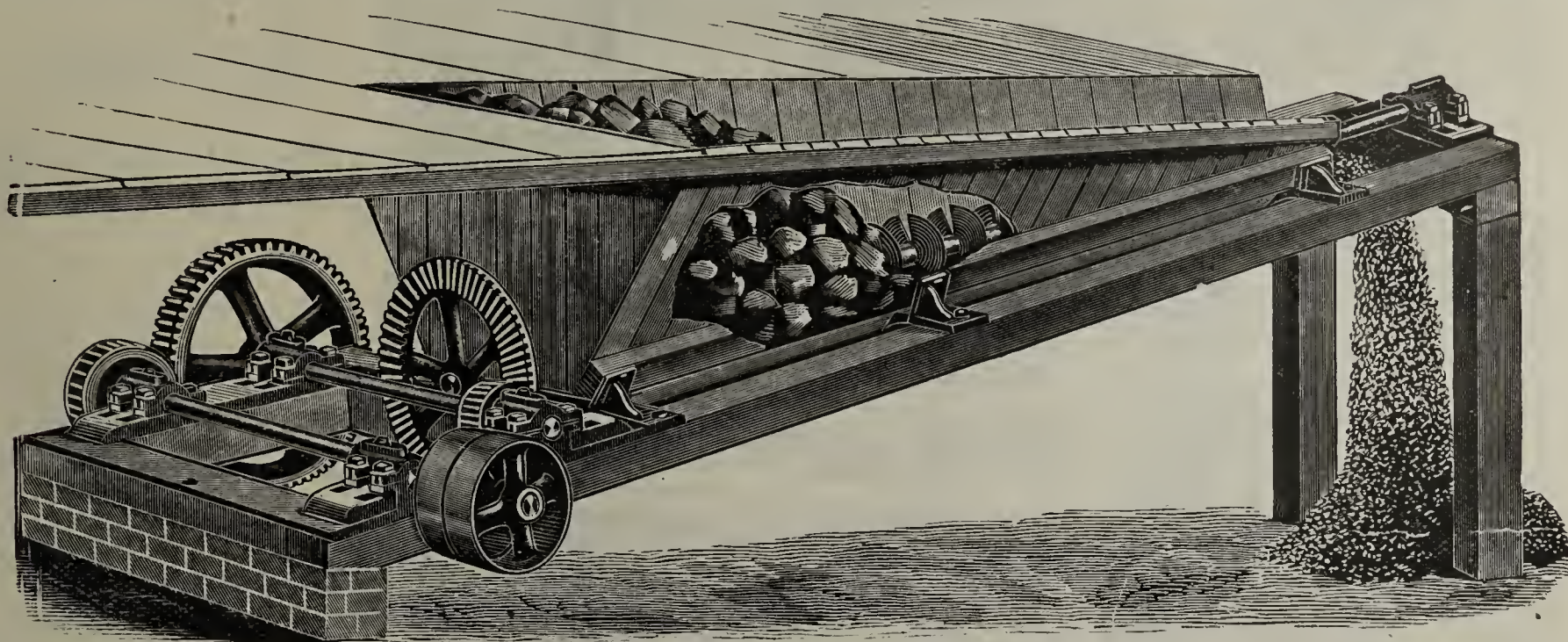
WILLIAMS' Clay Bunchers.

WILLIAMS' Brick Barrows.

WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO.,** 2705 and 2707 N. Broadway. **ST. LOUIS, MO.**

EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brick makers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
 2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
 3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
 4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
 5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
 6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.
- This machine is sold entirely upon its merits.

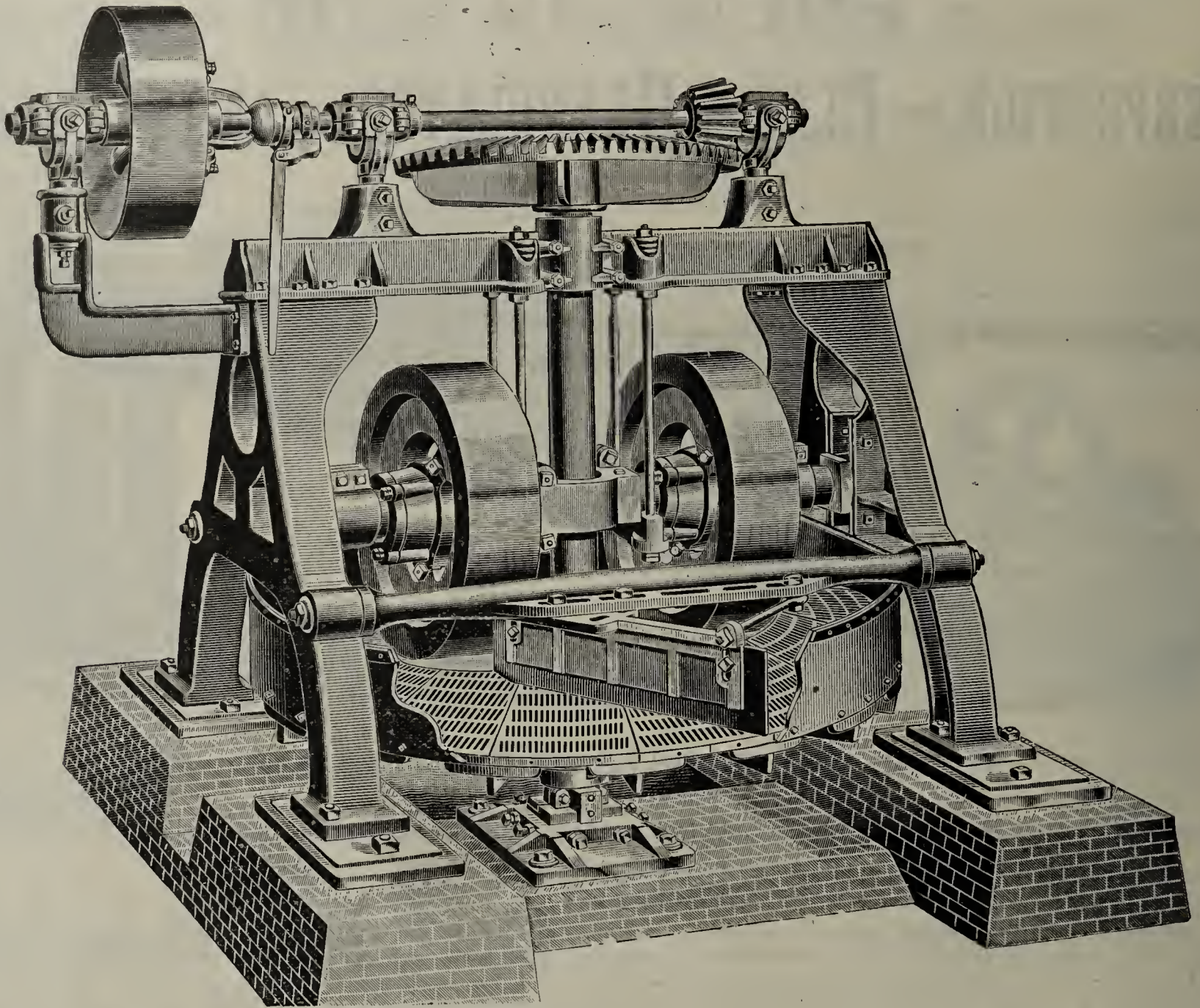
—REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

John Torrent,

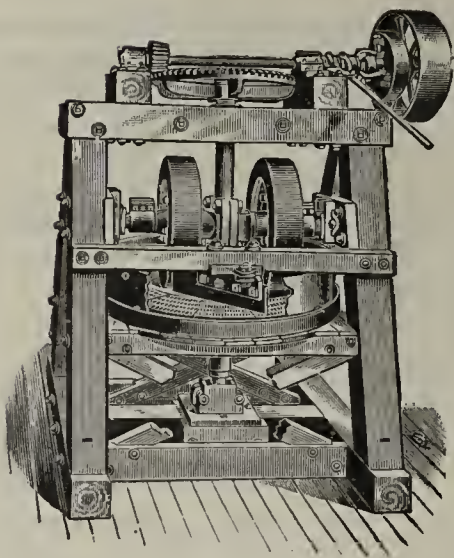
MUSKEGON, MICH.

Mention Clay-Worker.



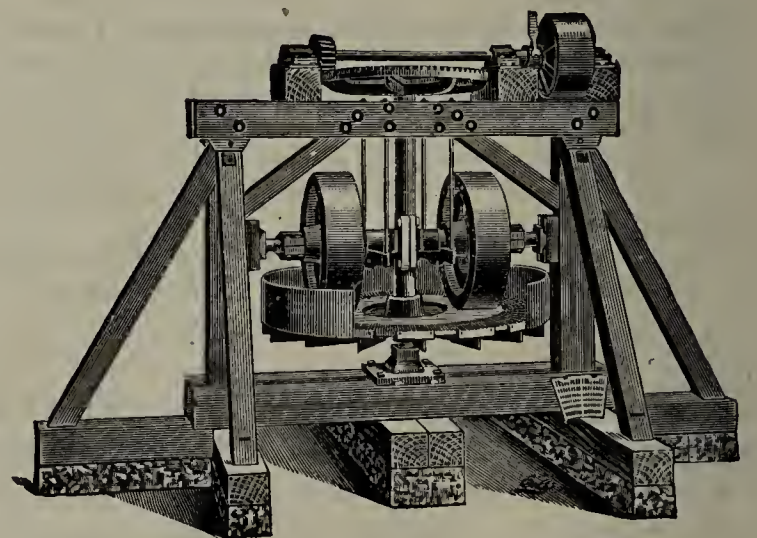
OUR SPECIALTY IS

DRY PANS.



IRON FRAMES,
WOOD FRAMES.

~~~~~  
All Sizes and Price  
to suit  
Any Size Plant.  
~~~~~



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

FROST ENGINE CO., Galesburg, Ill.,
U. S. A.



Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP..

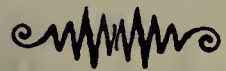
Pittsburgh, Pa.

Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and
Fire Brick Clay,
Limestone, Lime,
Sand, Phosphates,
Bones and other
refractory materials.



Wet Pans,

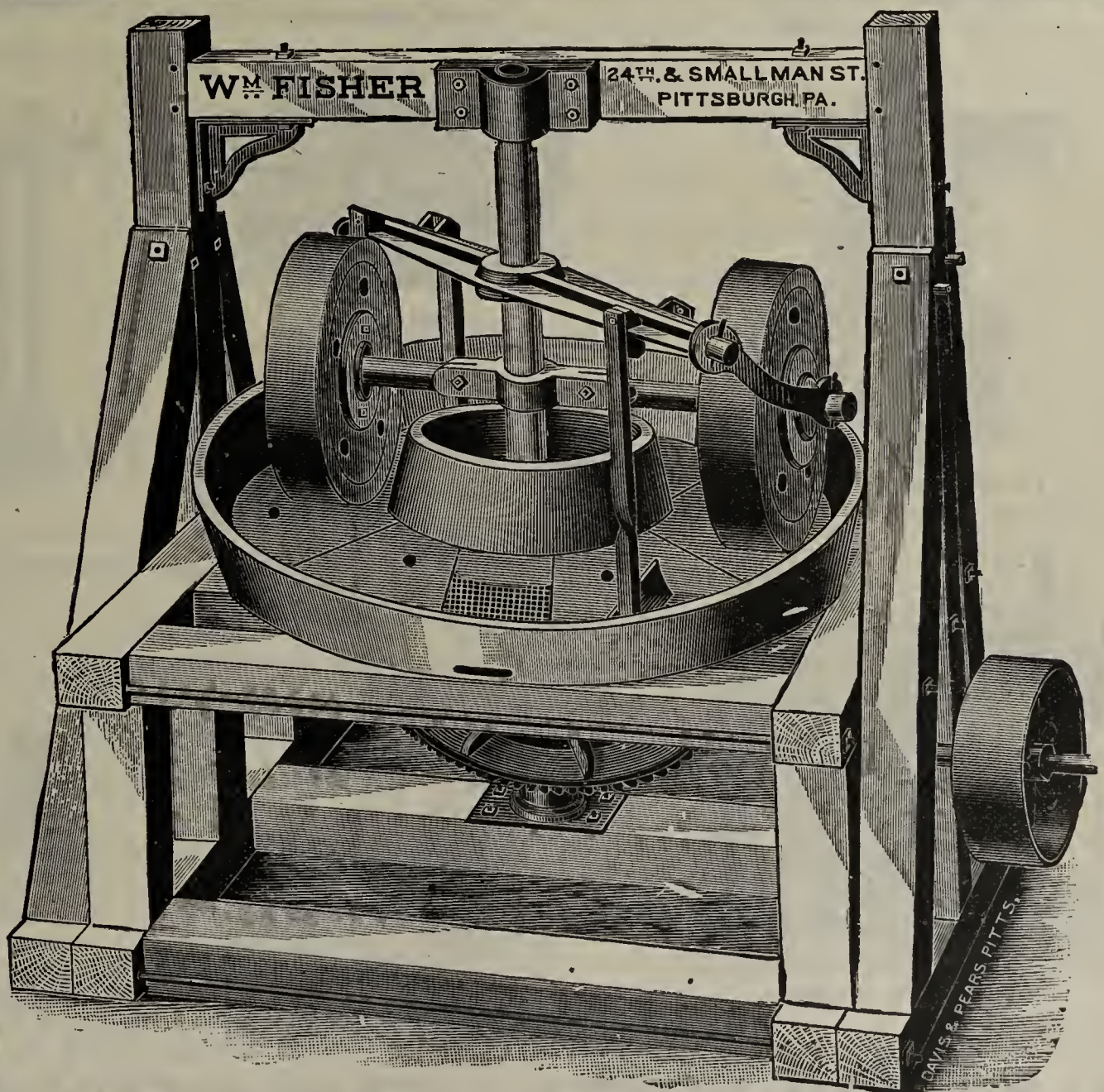
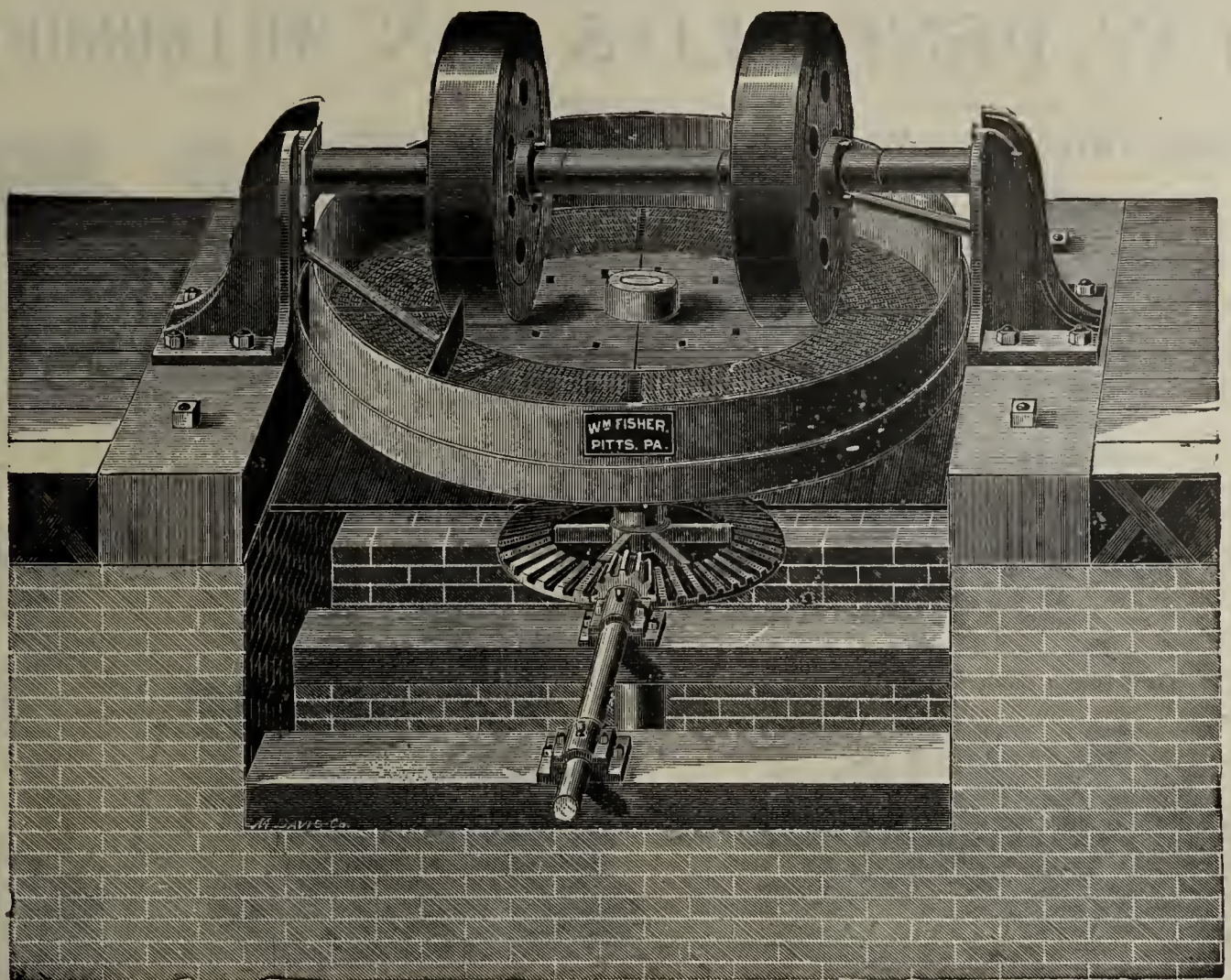
STATIONARY and REVOLVING,

FOR

Brick Works,
Steel Works,
Glass Houses,
Rolling Mills
and Paint Works.



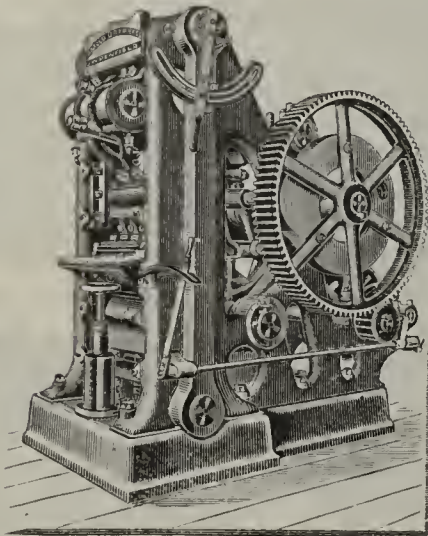
PUG MILLS,
BLAKE CRUSHERS,
BRICK PRESSES.



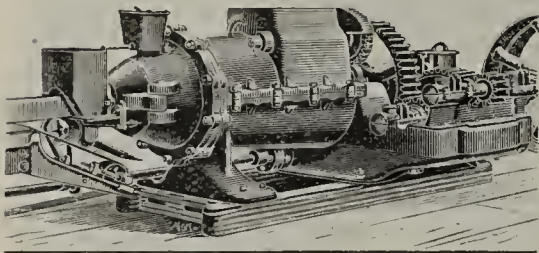
☞ When writing for prices, state kind of material and capacity required.

J. W. PENFIELD & SON, WILLOUGHBY, OHIO, U. S. A.

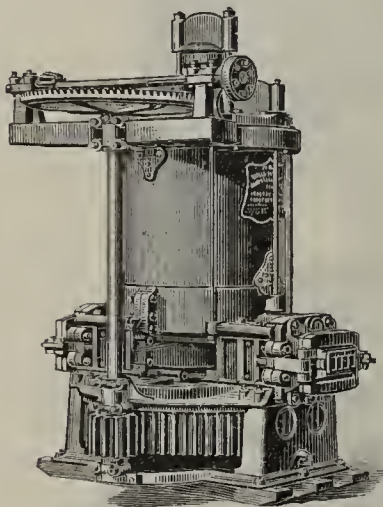
Some Things We Make :



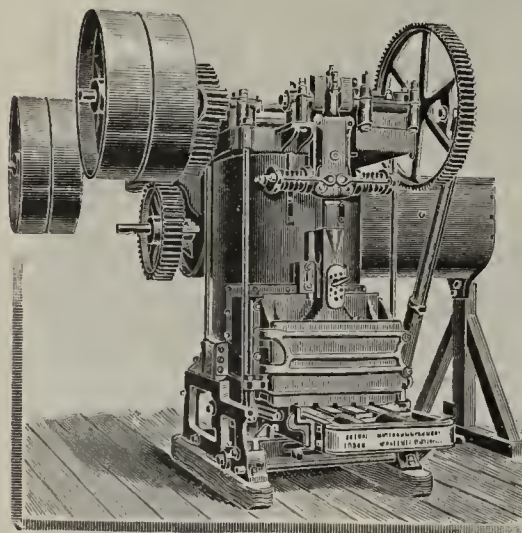
Dry Press Brick Machines.



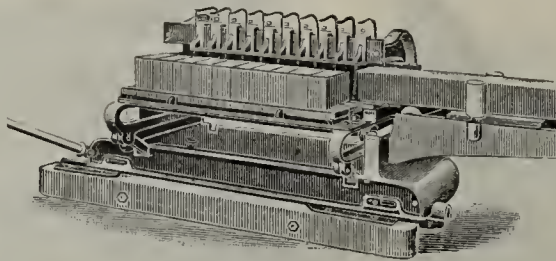
Auger Brick Machines;
Auger Tile Machines.



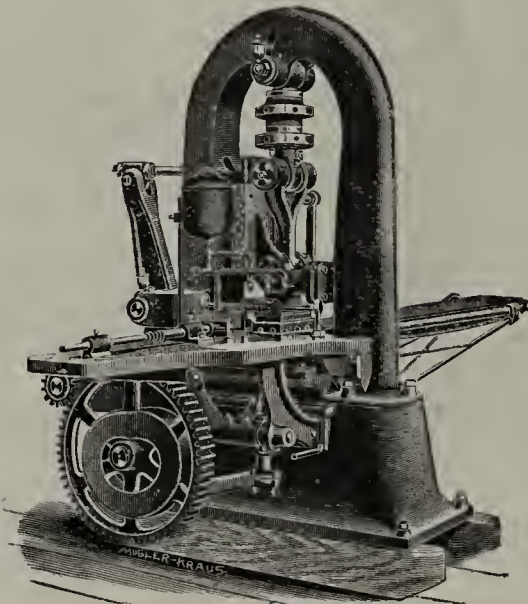
Plunger Brick Machines,
Also suited for making Tile, Fireproofing, Etc.



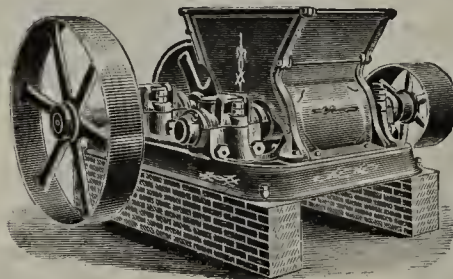
Stock Brick Machines,
For Sand-Mold Brick.



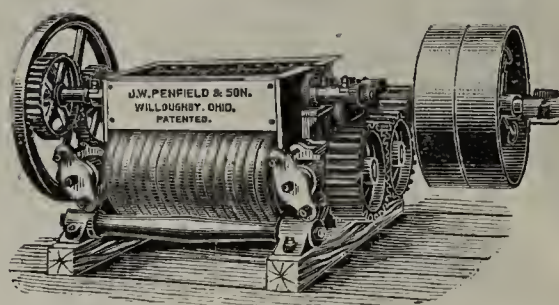
Board Delivery Brick Cutters.



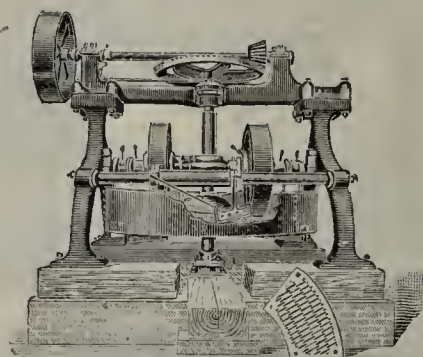
Brick Represses.



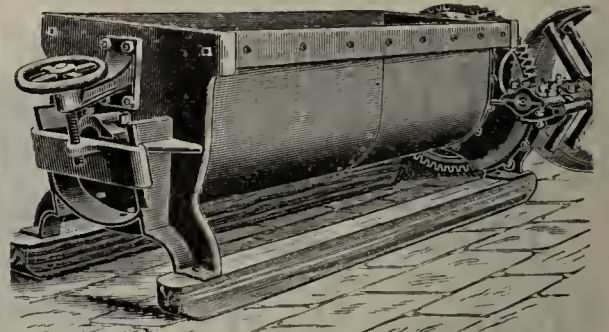
Disintegrators,
Singly or combined with Crushers or Pug Mills.



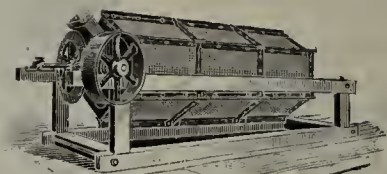
Clay Crushers; Stone Separators.



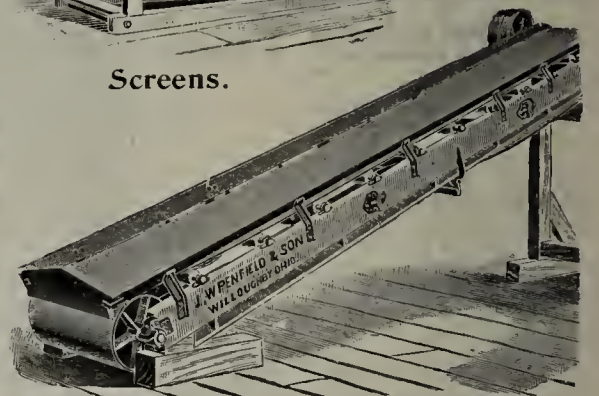
Dry Pans; Wet Pans.



Pug Mills; Granulators.



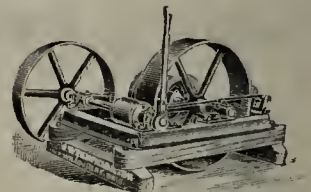
Screens.



Clay Elevators; Conveyors.

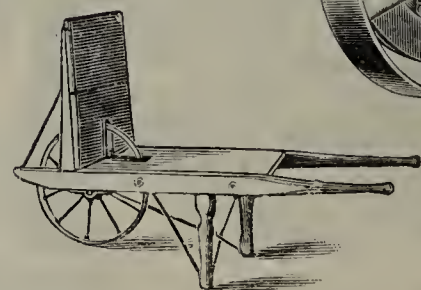


Clay Cars.



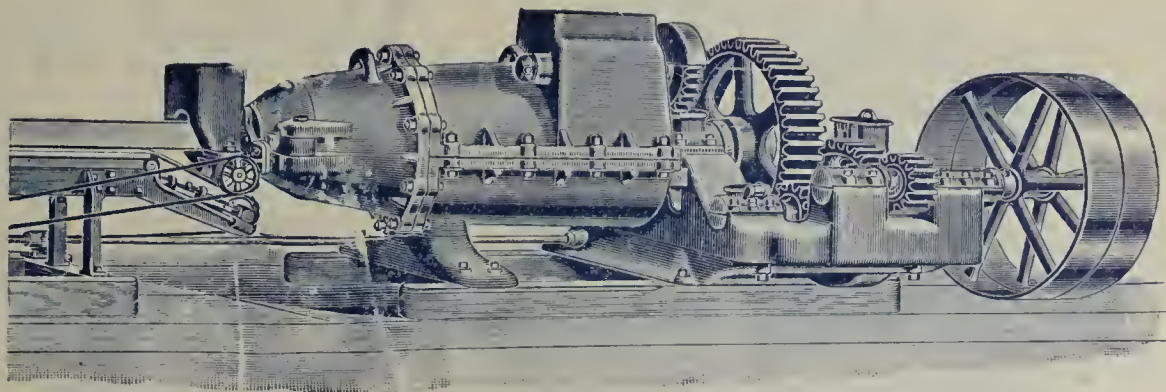
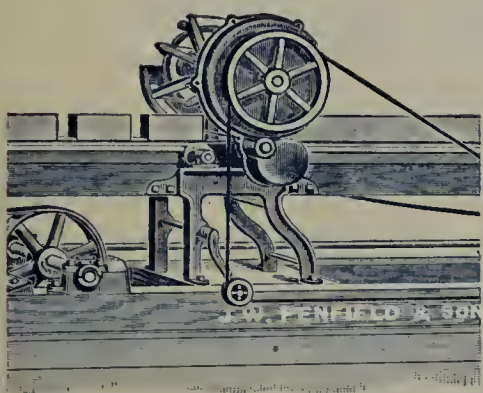
Winding Drums.

Barrows; Kiln Castings, Clutch Pulleys,
Sewer Pipe Presses,
Etc.



Send for Catalogue.

J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A.



PENFIELD AUGER BRICK MACHINE, AUTOMATIC CUTTER, ETC

In 1894

YOU are hoping for prosperity and happiness. To make it prosperous and thereby enhance your happiness, perhaps you should put in some new Brick or Clay working Machinery; something that will improve the quality of your ware, or lessen cost of production, or impart more reliability to your plant. That's what a great many leading manufacturers are doing—perhaps you too are convinced of the wisdom of such a course. There's one thing more you should decide, however, and that is that you will buy only **first-class** machinery.

Be Sure You are Right.

In time of close competition, an injudicious selection of machinery may prove disastrous. In 1894, be sure you get the best. That's the only kind of machinery you can afford to use. That's the kind of machinery we sell. Make assurance doubly sure by giving us your order,

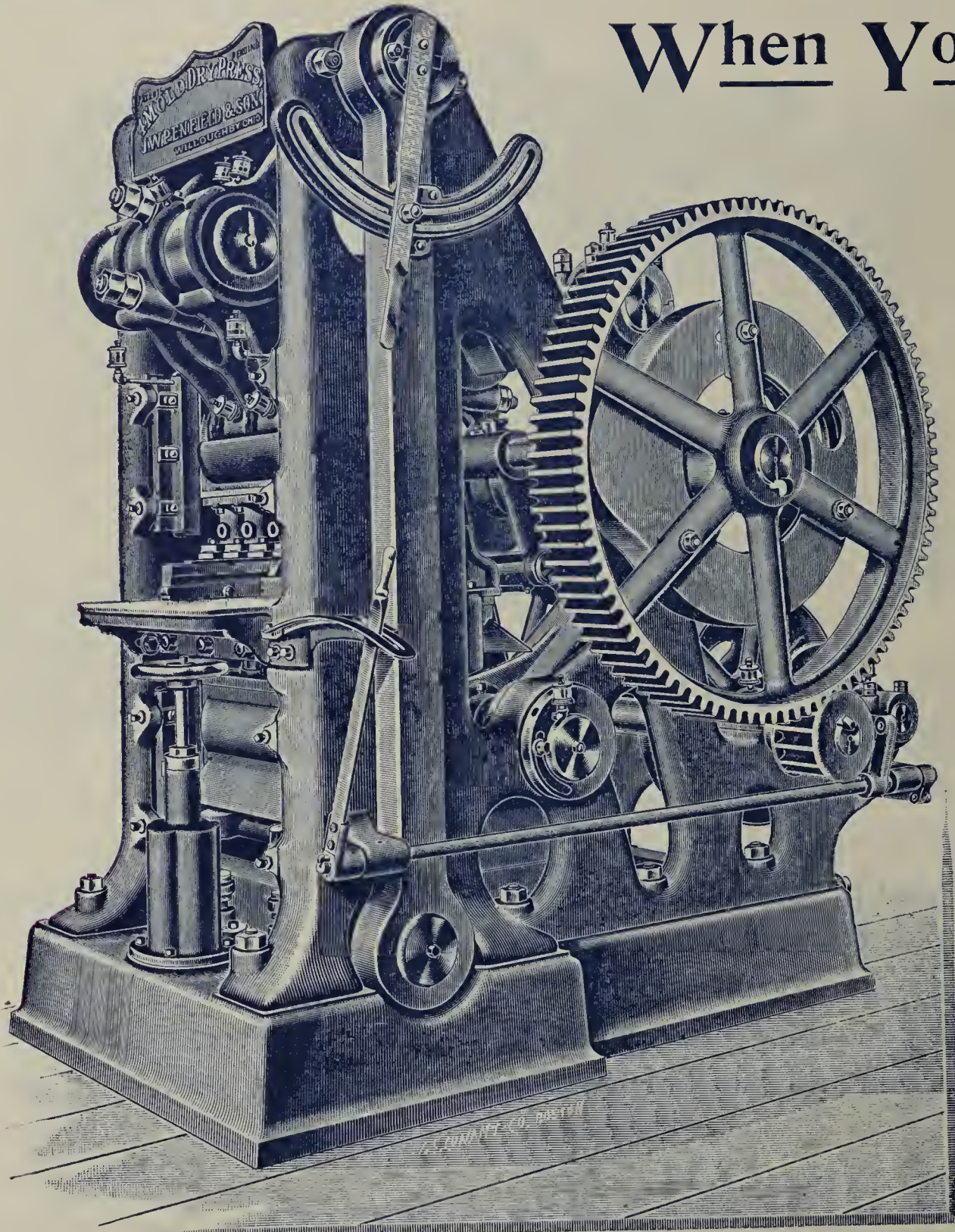
— THEN GO AHEAD.

J. W. PENFIELD & SON,

Brick, Sewer Pipe and Clay Working Machinery Manufacturers,

WILLOUGHBY, OHIO, U. S. A.

When You Know



THE PENFIELD 4-MOLD DRY PRESS BRICK MACHINE.

What it weighs and how it is built, you can readily see **why** Penfield Dry Press Brick Machine is the strongest and exerts the greatest pressure on the brick. A Penfield 4-Mold Press weighs nearly 32,000 lbs., being by far the heaviest 4-Mold machine made.

Then, too, it holds the pressure on each brick much longer than any other machine does, and nearly twice as long as some.

IT'S NO SECRET

Why the Penfield Dry Press Brick Machine makes the strongest, heaviest and densest brick. It's a simple result of the inevitable law of cause and effect.

If you would have a brick machine surpassing in convenience, durability and efficiency, and in beauty of product, you can secure it by buying the Penfield Dry Press Machine. Send for details.

J. W. PENFIELD & SON, WILLOUGHBY, OHIO, U. S. A.

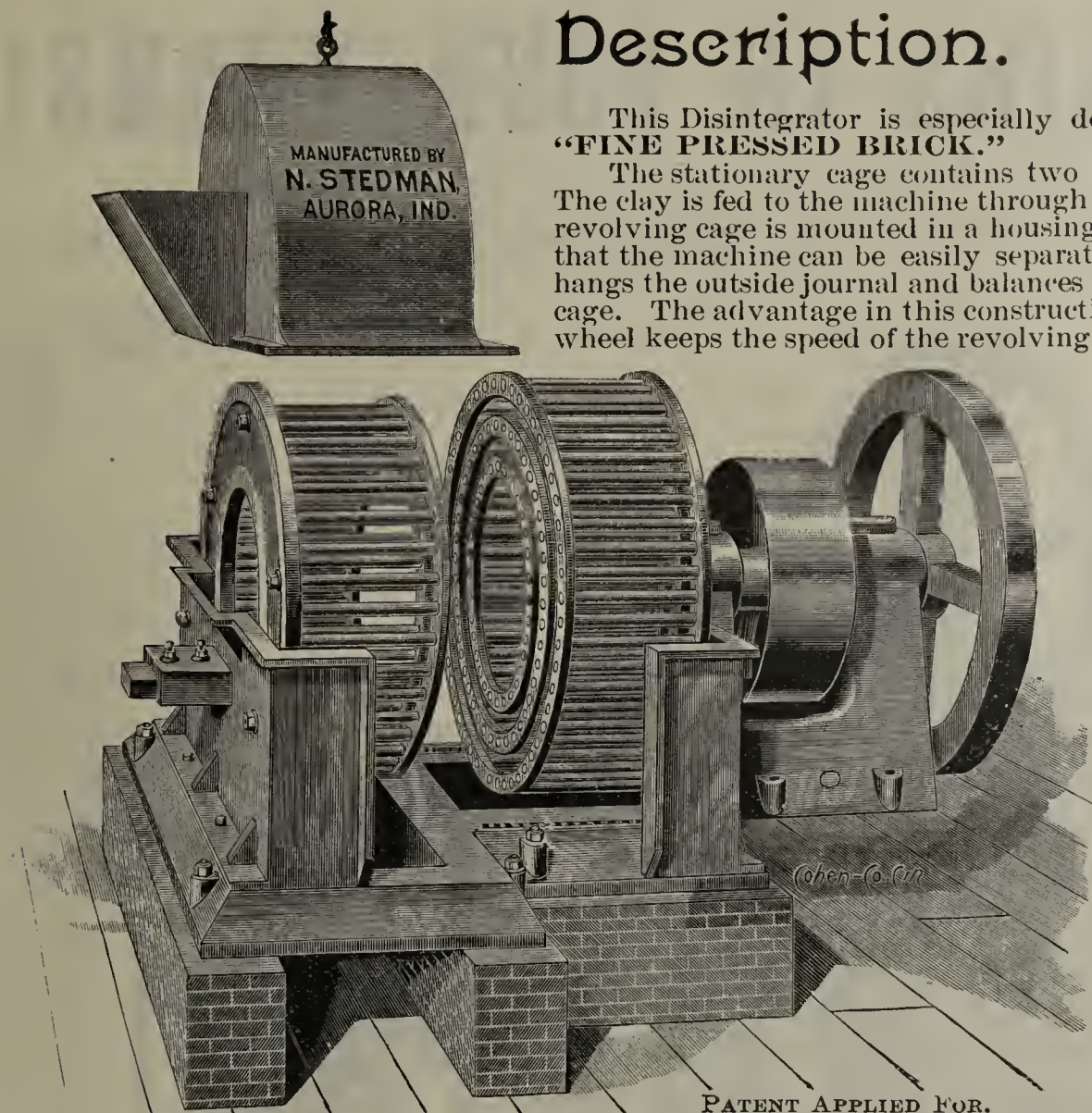
Brick, Sewer Pipe and Clay Working Machinery.

Description.

This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

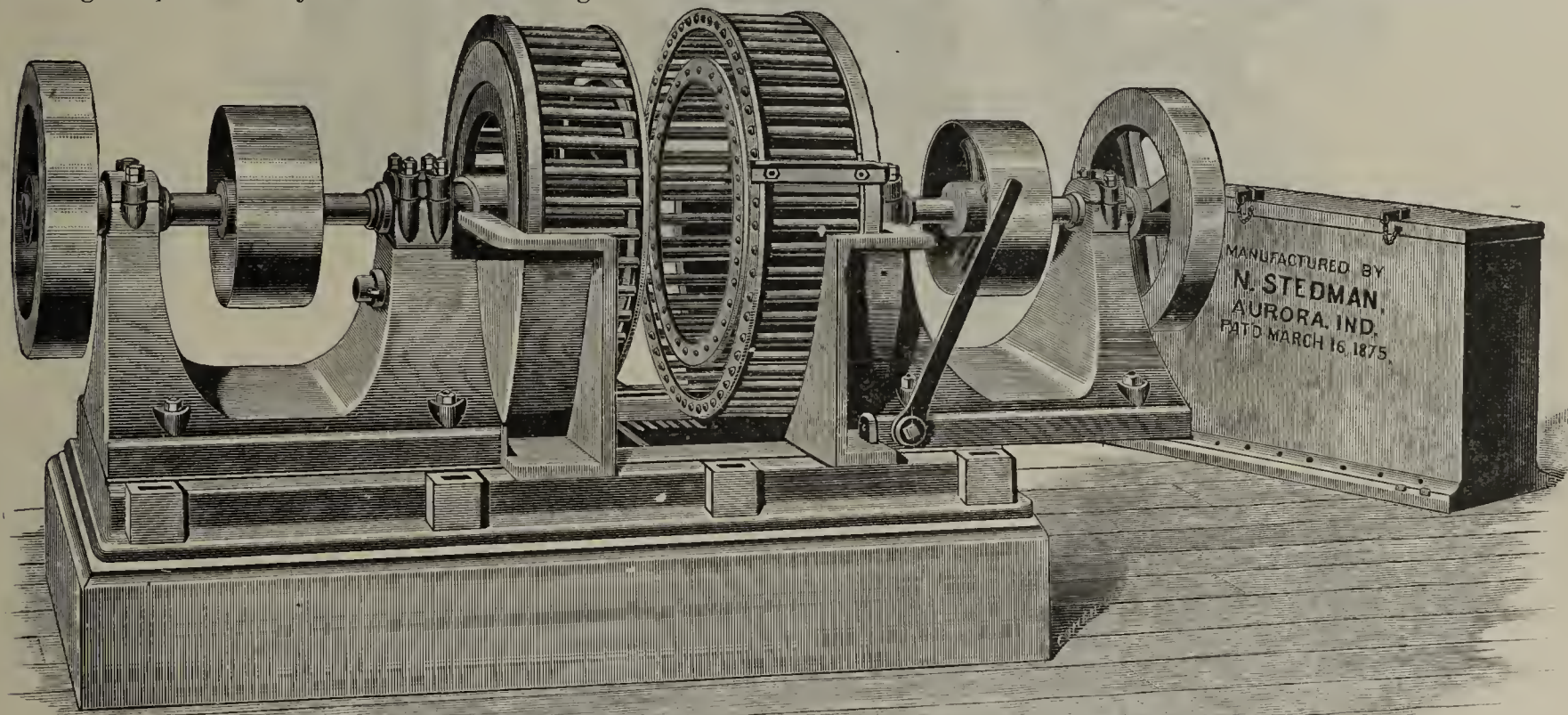
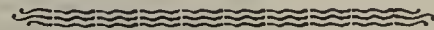
The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



PATENT APPLIED FOR.

NOTICE.—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.

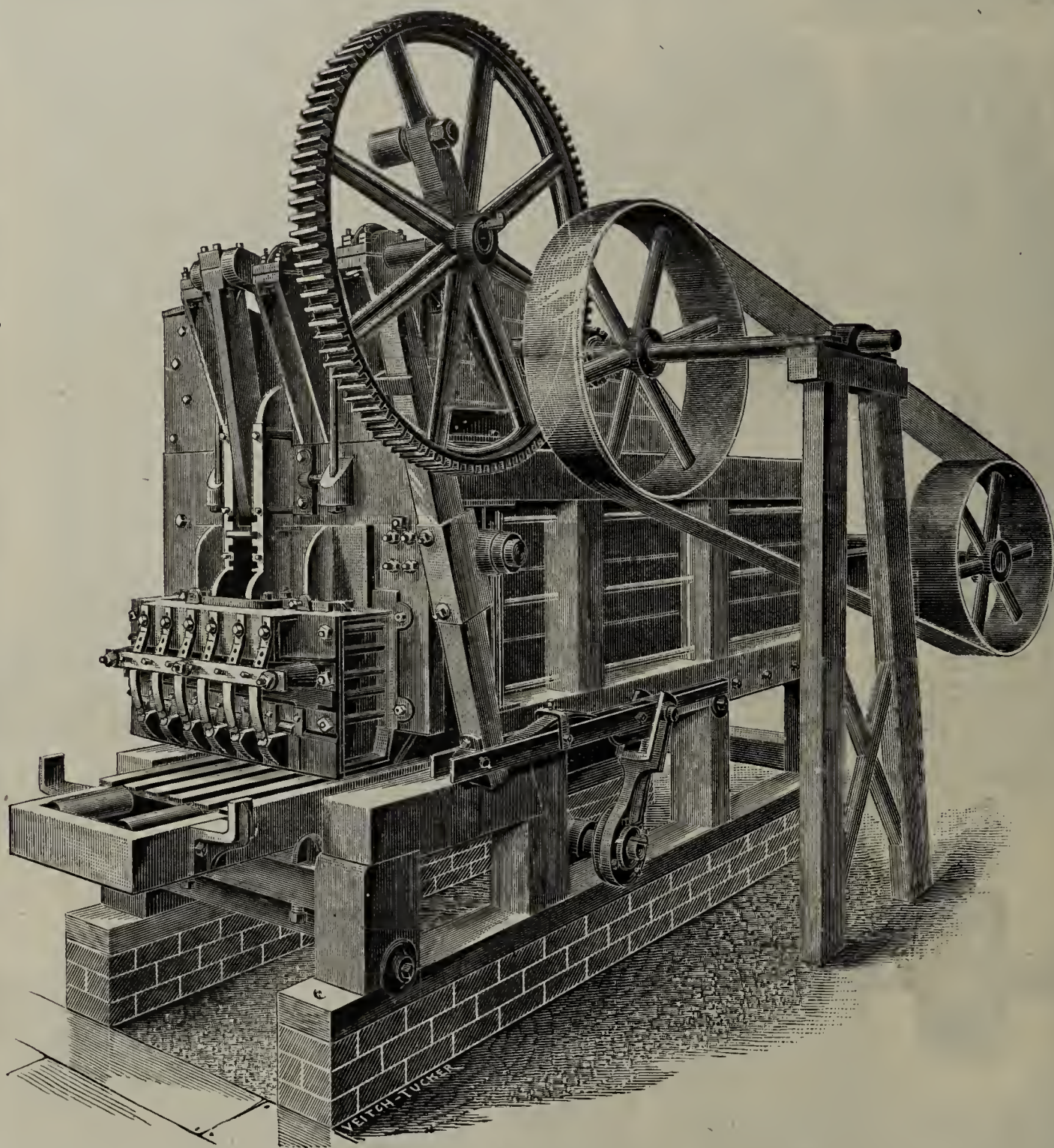
Mention the CLAY-WORKER

FIRST REPAIRS IN FOUR YEARS!

Not a Day Lost Time. Four to Six Millions Made each Year.

Weight 15,500 Pounds.

—== THEY WILL BUY ANOTHER.



WESTFIELD, MASS., Dec. 8, 1893.

THE McLAGON FOUNDRY CO.,

GENTLEMEN:—In accordance with our custom we now write you at the end of the season to inform you how your "New Haven" Machine has worked.

We were obliged to make a few repairs (the first in four years) at the beginning of the year. These put the machine in fine trim and we have not lost a single day during the entire time. We have made from 45,000 to 52,000 brick each day and the season's output is larger than ever before. We are so well pleased with the machine that we shall erect another next season. We shall see you in regard to the Machine after January 1st.

Yours truly,

WESTFIELD BRICK CO.

WHAT DO YOU THINK OF SUCH EVIDENCE?

THE McLAGON FOUNDRY CO., = New Haven, Conn.

RECEIVER'S SALE.

BARGAINS IN CLAY MACHINERY.

OWING to disagreement of the partners, I have been appointed Receiver of the well-known firm of

NOLAN, MADDEN & CO.,

In order to get a settlement at once, and that the business may be continued without interruption, I will offer for sale at a great reduction in price the following

Machinery Now on Hand which must be Sold at Once:

Six No. 1 Steam Power Soft Clay Brick Machines.

Five No. 2 Horse Power Soft Clay Brick Machines.

Ten No. 6-B Stiff Clay Auger Machines for Brick and Tile.

Ten No. 5-B Stiff Clay Auger Machines for Brick and Tile.

The above machines are from new patterns and are heavier and stronger than any machines formerly made by this firm.

Twenty No. 5 Brick and Tile Machines with endless belt cut-off tables and complete set of tile dies.

Six No. 6 Brick and Tile Machines with endless belt cut-off tables and complete sets of tile dies.

Ten No. 7 Brick and Tile Machines for light power—tile dies from 3 to 10 inches.

Ten No. 10 Upright Tile Machines for tile from 10 to 20 inches.

Fifteen Disintegrators.

Fifteen Clay Crushers.

Eight Soft Clay Pug Mills.

A large assortment of side-cut brick tables, end-cut brick tables, endless belt tile tables, side and end-cut lubricating brick dies of any size, and solid brick dies—side or end-cut—any and all of which will be **SOLD AT UNHEARD-OF PRICES.**

In addition to the above new and improved machinery, we have a large line of second-hand Brick and Tile Machinery that will be sold **VERY CHEAP.** This business will be continued, and the manufacture of their unsurpassed clayworking machinery carried on as usual.

If you want anything in that line, or supplies, write us at once for prices, as the business will go on, and patrons will be furnished repairs and supplies as heretofore.

JNO. F. SCANLAN, Receiver,

For **NOLAN, MADDEN & CO.,**

RUSHVILLE, IND.

Actual Use Decides the Durability of a Machine.

MARTIN'S LETTER "A"

IS PRONOUNCED BY....



Practical
Brickmakers

TO BE ~~~~~

THE STRONGEST,
MOST PERFECT
~~~~~ AND BEST  
Brick Machine in Use.

Are you looking for a machine that will work your clay? Before buying, do not fail to investigate the merits of the **MARTIN**.

There are over 3,000 of our Machines now in practical operation.

We will cheerfully furnish any information in reference to the manufacture of brick that may be desired.

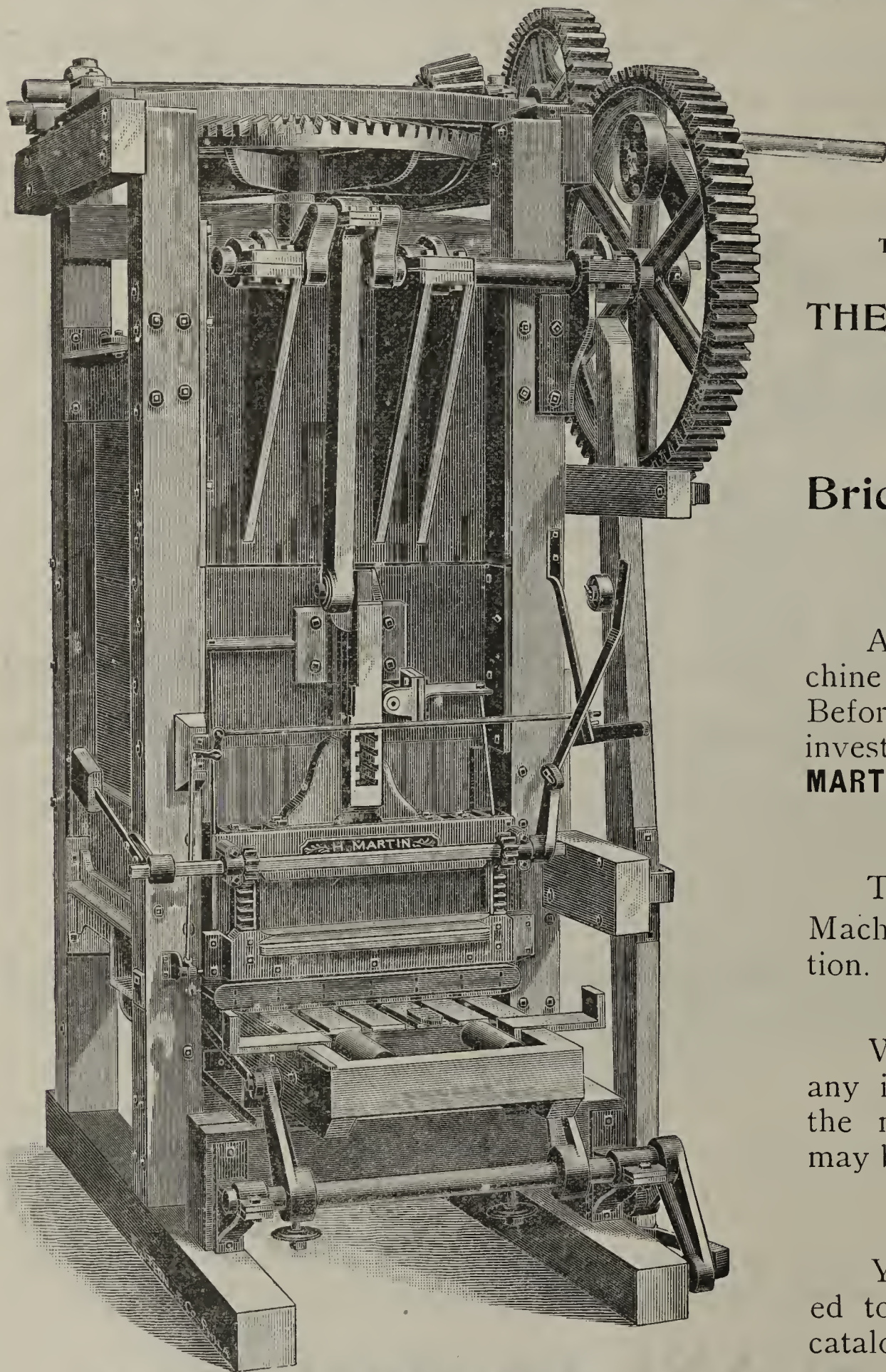
You are respectfully requested to write for our new 1894 catalogue

## THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

~~~~~ INCORPORATED ~~~~~

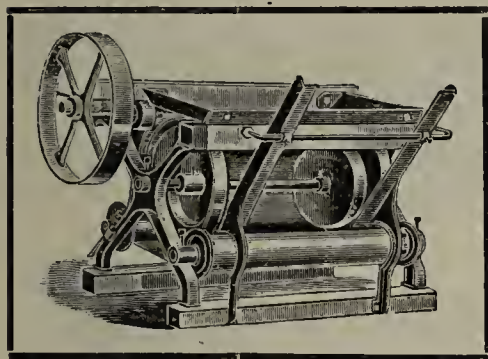
OFFICE: No. 36 E. James St.
WORKS: Cor. James and Christian Sts. }

LANCASTER, PA., U. S. A.

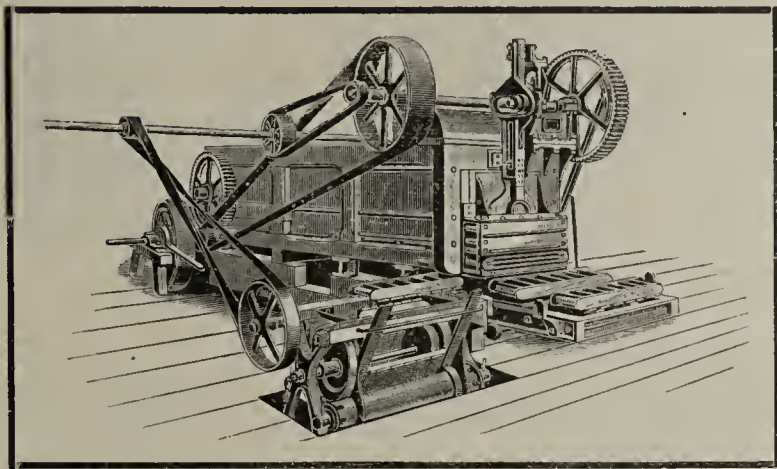


These are the Three Machines which

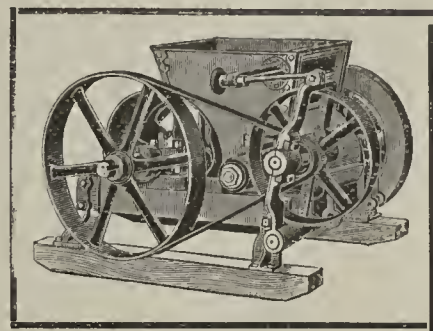
C. & A. POTTS & CO.,



MOULD SANDER.



HORIZONTAL STOCK BRICK MACHINE.



DISINTEGRATOR.

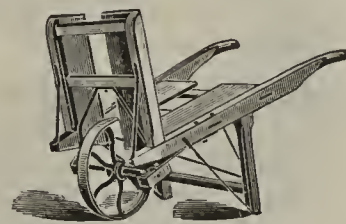
WILL ship on trial. GUARANTEEING them to work any clay direct from the bank, and make better brick, than can be made by any machine now on the market. These are the standard machines of America. Write, asking the nearest point to you where they can be seen in operation.

We also manufacture a full line of clayworking machinery including,



Brick Moulds.

Five sizes of Pug Mills, five sizes of Disintegrators, Clay Cars, Winding Drums, Elevators, Trucks, Barrows, Pulleys, Belting and Shafting.



As we manufacture all goods in our works we can guarantee them to be well made of good material, and save you all commissions.

See ad. on page 16.

~~~~~

## C. & A. POTTS & CO.,

**INDIANAPOLIS,      INDIANA.**



Fresh Evidence Monthly of the Highest Quality.

# WHAT A LOAD

Is lifted from a brickmaker's mind when he gets a "Monarch" at work, and finds it "simply perfect," after years of unsatisfactory work with other machines. You can appreciate the feelings of the Wisconsin Red Pressed Brick Co. from the following statement.

Get one and be relieved of that anxiety you continually have regarding the one you have.

THE WELLINGTON MACHINE CO.,  
WELLINGTON, OHIO:

MENOMINIE, WIS., July 15, 1893.

GENTLEMEN:—In regard to the "Monarch" brick machine, I can but simply repeat what I have said a score of times to friends and visitors at the yard, "that we have the best outfit for common brick I ever saw."

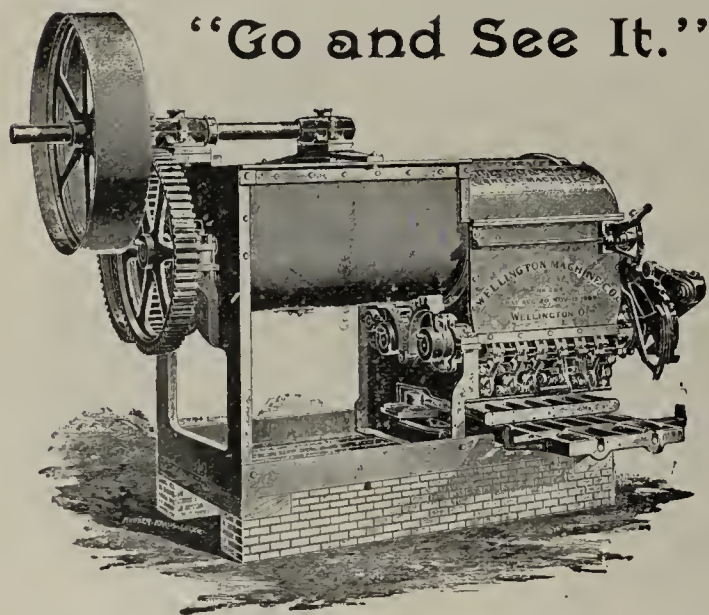
Our clay is very hard to work, and we have used machines with the old-style perpendicular press, also the horizontal press, and neither were satisfactory to us. But we find the pressing device in the "Monarch" simply perfect; no leakage possible, and easily regulated. It will press the clay and fill the corners perfectly with the clay as stiff as is possible to get them out of the moulds.

I have the "Monarch" speeded at the rate of 50,000 brick per day of 10 hours, and could make 60,000 per day without any additional strain on the machine. It is very light running, and the wear on the gearing is very slight. I could give many more good points about the pug mill, mould press and the safety devices, but I think it unnecessary, as anyone who reads the description of these will readily see their good points.

I desire to say that our business relations with the Wellington Machine Co. for six years have been of the most agreeable character.

Yours very truly,

S. L. ALEXANDER, Supt.



"Go and See It."

## DON'T FORGET THESE FACTS.

That we worked five years developing the new principles in this machine, perfecting and simplifying every detail before we put it on the market.

That it is scientifically and mechanically constructed from the ground up, aiming not merely at goodness, but at perfection.

That it has 14 feet of pug mill (double), changing direction of movement of clay three times, cutting it all up.

That the presses are entirely in the mud. (This is the greatest point ever produced in a brick machine). Enabling moulding the stiffest possible material. Wear, leakage and friction are absolutely eliminated. This means much. Reflect on its importance.

That it is extremely simple: (Only four gears and none bevel.)

Immensely strong, (all iron and steel. Weighs 11,250 pounds.)

That long, easy moving, scientific leverages make its draft so light.

Investigate it now as it will last a lifetime, and is the "perfect machine" you have longed for so long. Only investigate is all we ask. GO AND SEE for yourself; the small cost of the trip, will be the best investment you ever made.

The Wellington Machine Co.,

Wellington, Ohio.

See the October CLAY-WORKER for list of 43 Happy Users.





# THE "QUAKER"

Family of Machines, are the Most Used of Any Single Make of Machine.

## The "New Model Quaker" Horse-Power Machine.

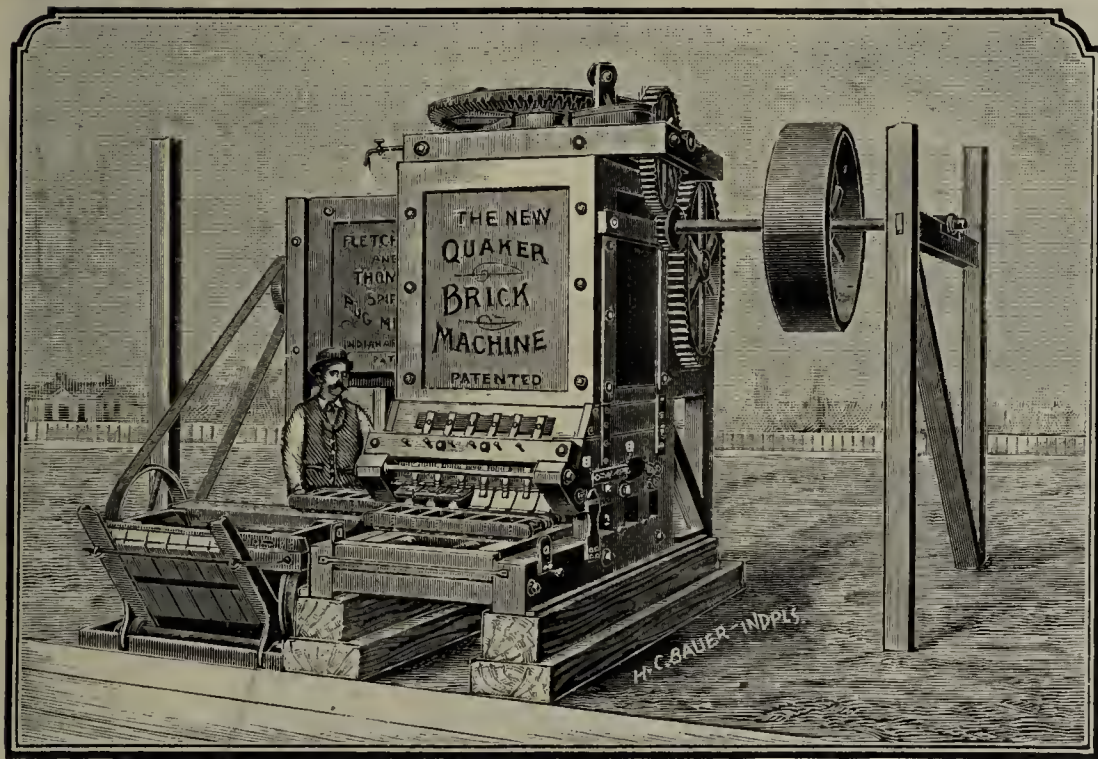
Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



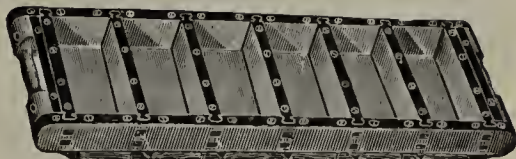
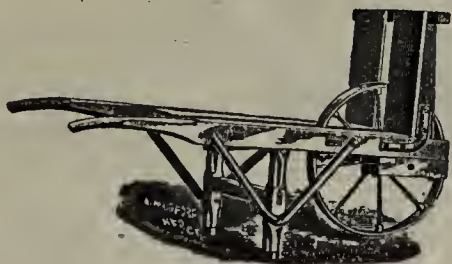
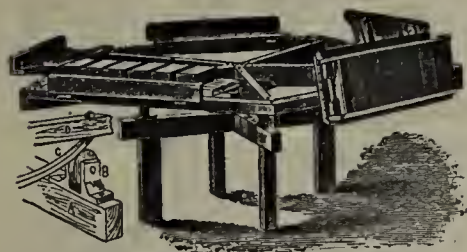
## Steam-Power Machines—Two Sizes

The "Regular" is the Horse-power Machine with necessary gearing for steam-power added.

The "Extra Heavy" is a much heavier, specially built machine, and has for years stood at the head of all upright, wooden framed machines.



THE combination of our "Extra Heavy Steam Power Machine" with a "Horizontal Pug Mill" makes an outfit that will take clay from the bank, and make as many brick per day as any gang can take care of. Has made 50,000 per day.



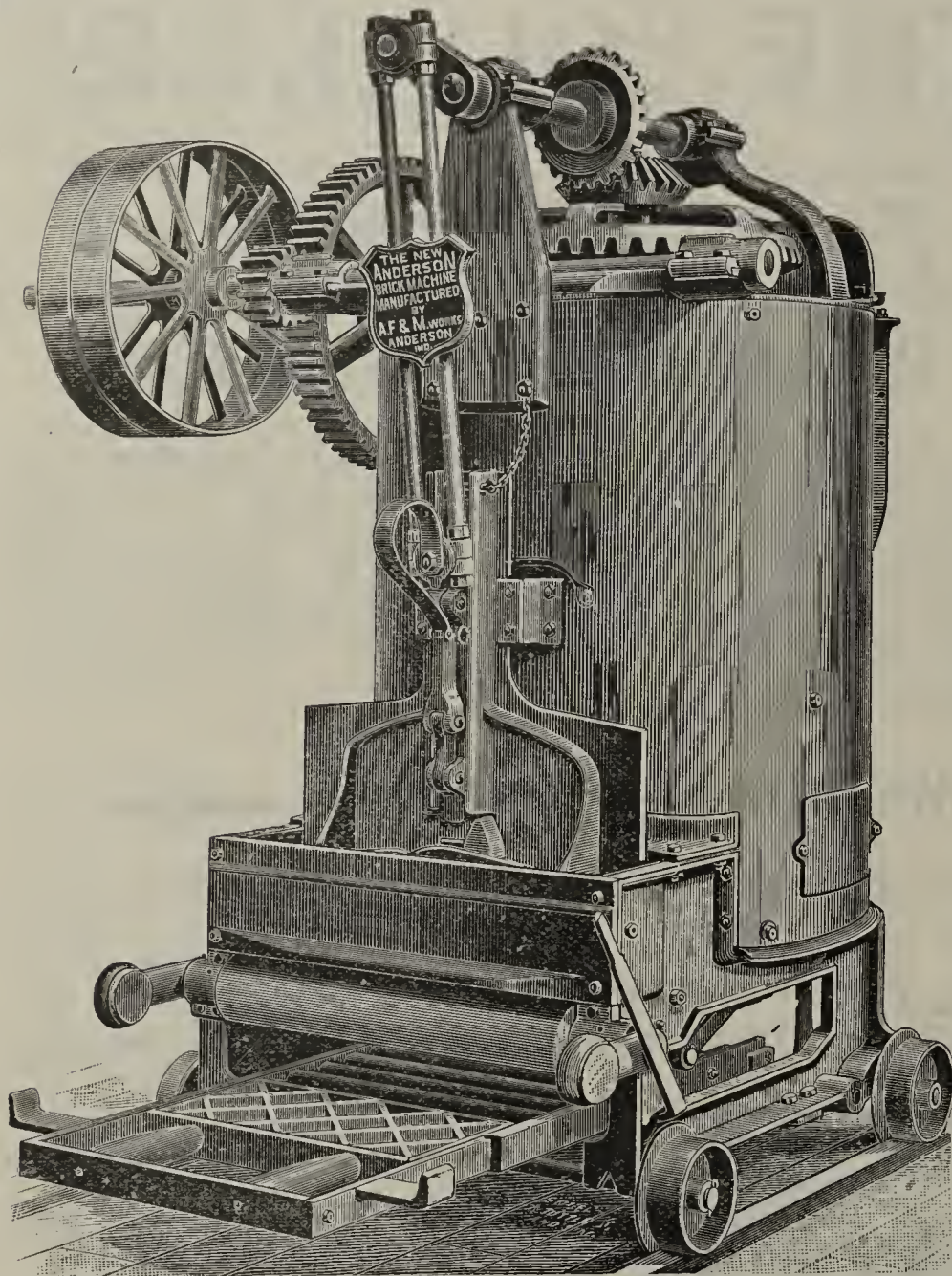
(FOUNDERS AND MACHINISTS.)

Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

**The Wellington Machine Co.,**  
Wellington, Ohio.





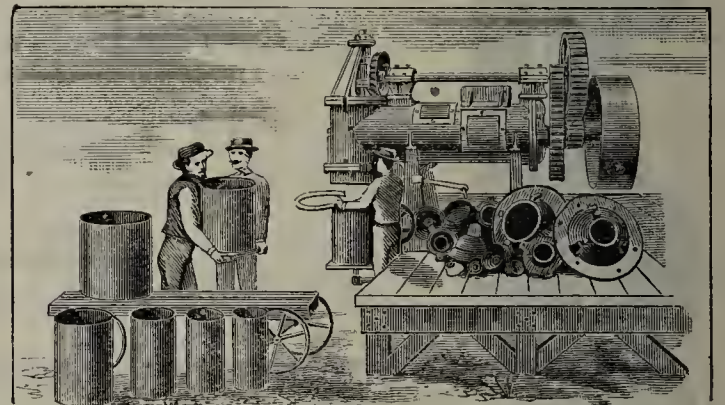
## THE New Anderson Brick Machine

MANUFACTURED BY

THE Anderson Foundry & Machine Works

ANDERSON, IND.

THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.



### The Greatest on Earth.

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 24 in. in diameter in a manner that defies competition.

Down Delivery for Large Tile.

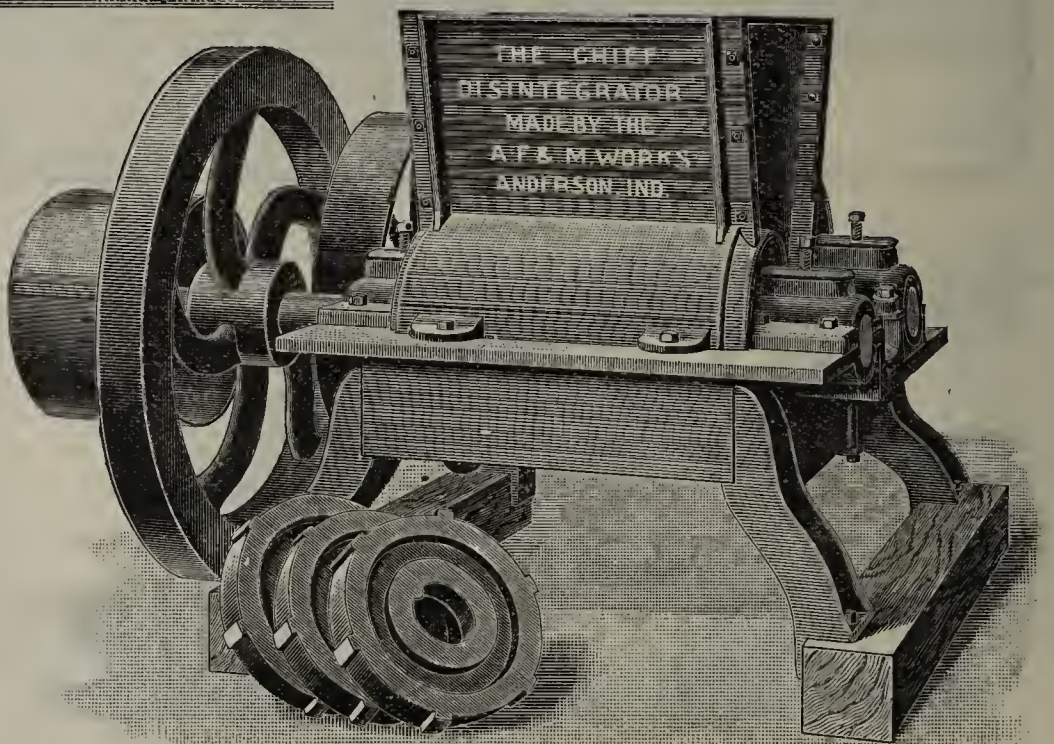
Side Delivery for Small Tile.



## The Chief Disintegrator and Stone SEPARATOR.

Unexcelled for reducing hard lumps of clay, dry bats and broken tile. It also separates stone from the clay. The high speed roll is composed of hard steel sections 10 inches in diameter, by 1 1/4 inches thick, which can be reversed on the shaft when dull or replaced with new sections when worn out, at a very small expense. Every Disintegrator is thoroughly tested and guaranteed to reduce any kind of clay, either wet or dry.

PUG MILLS,  
DISINTEGRATORS,  
TRUCKS BARROWS  
And All Brickyard Supplies.





# NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

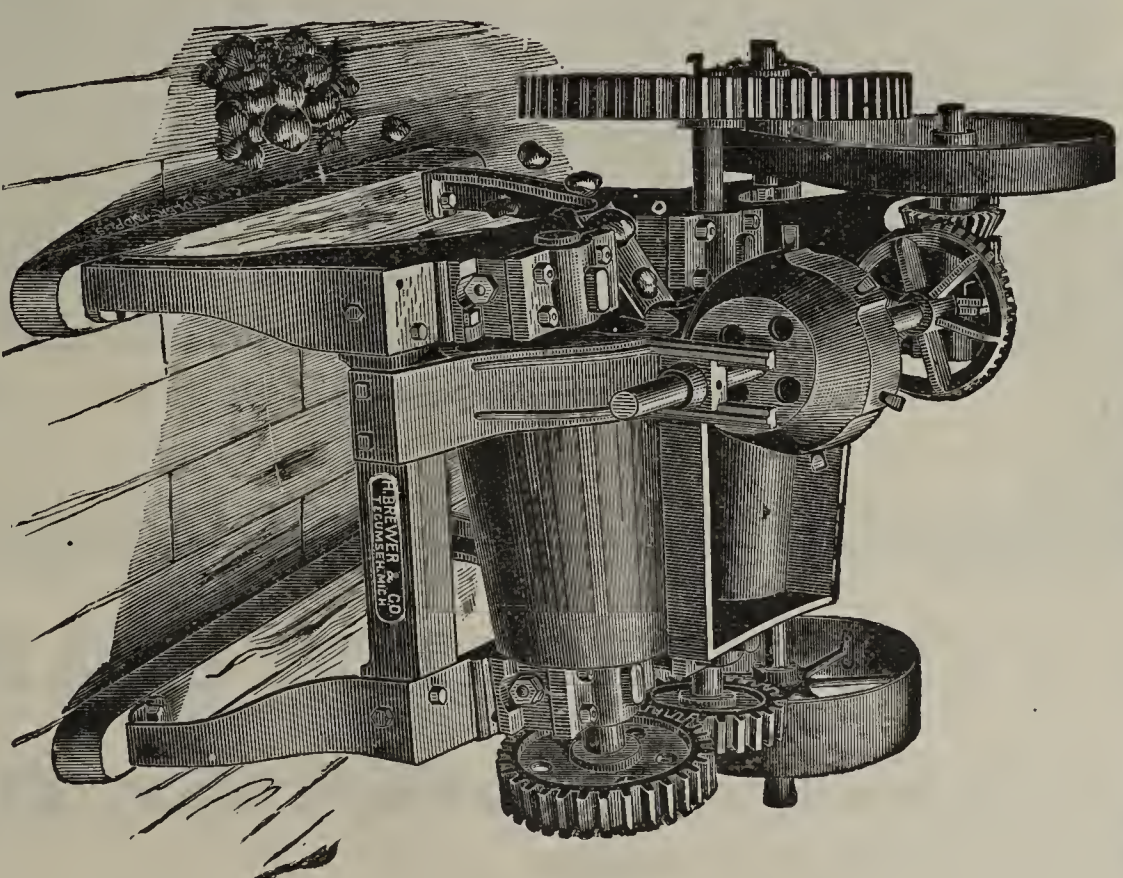
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

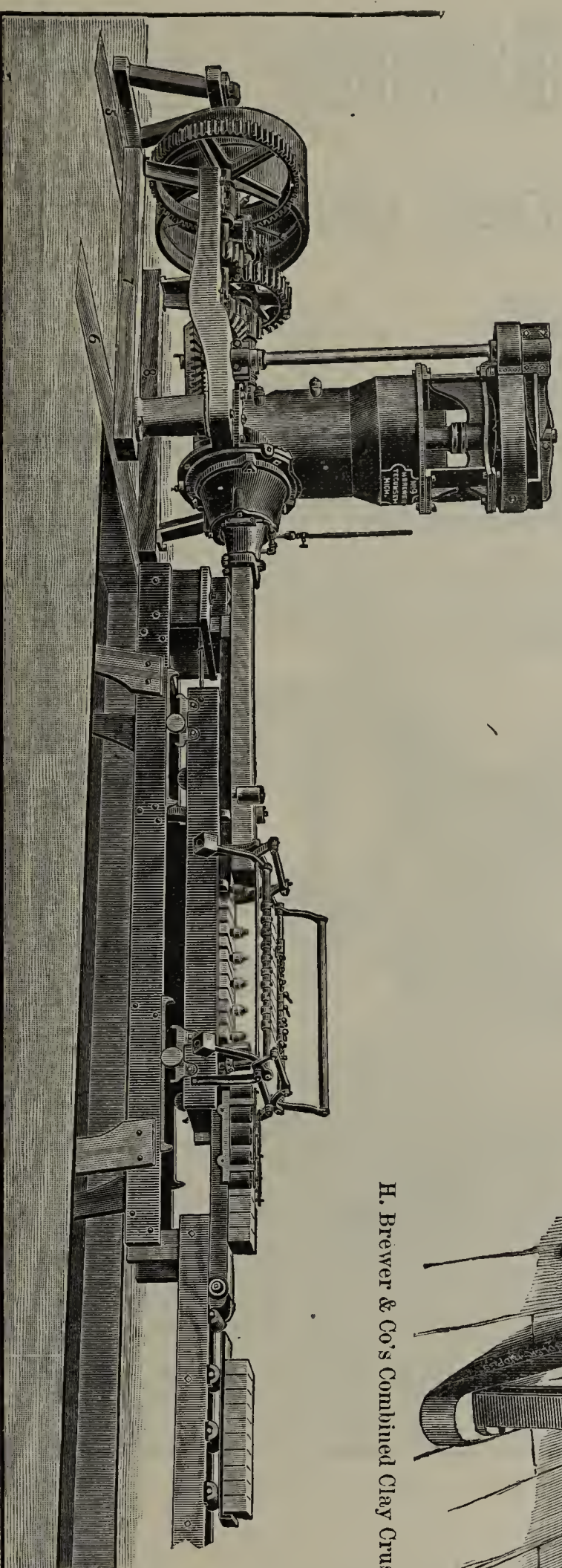
## H. BREWER & CO.,

[Mention the Clay-Worker.]

## Tecumseh, Mich.



H. Brewer & Co's Combined Clay Crusher and Stone Separator.



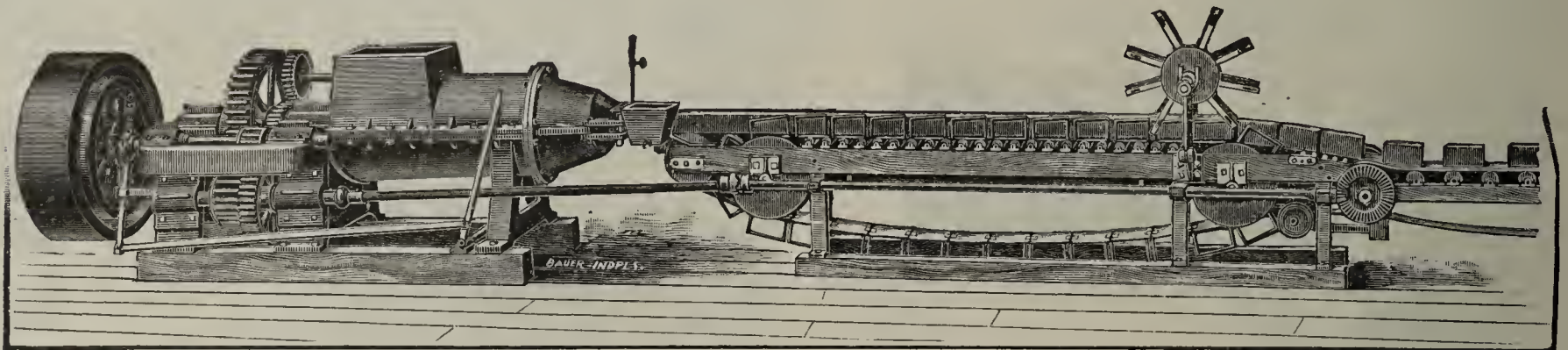
The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



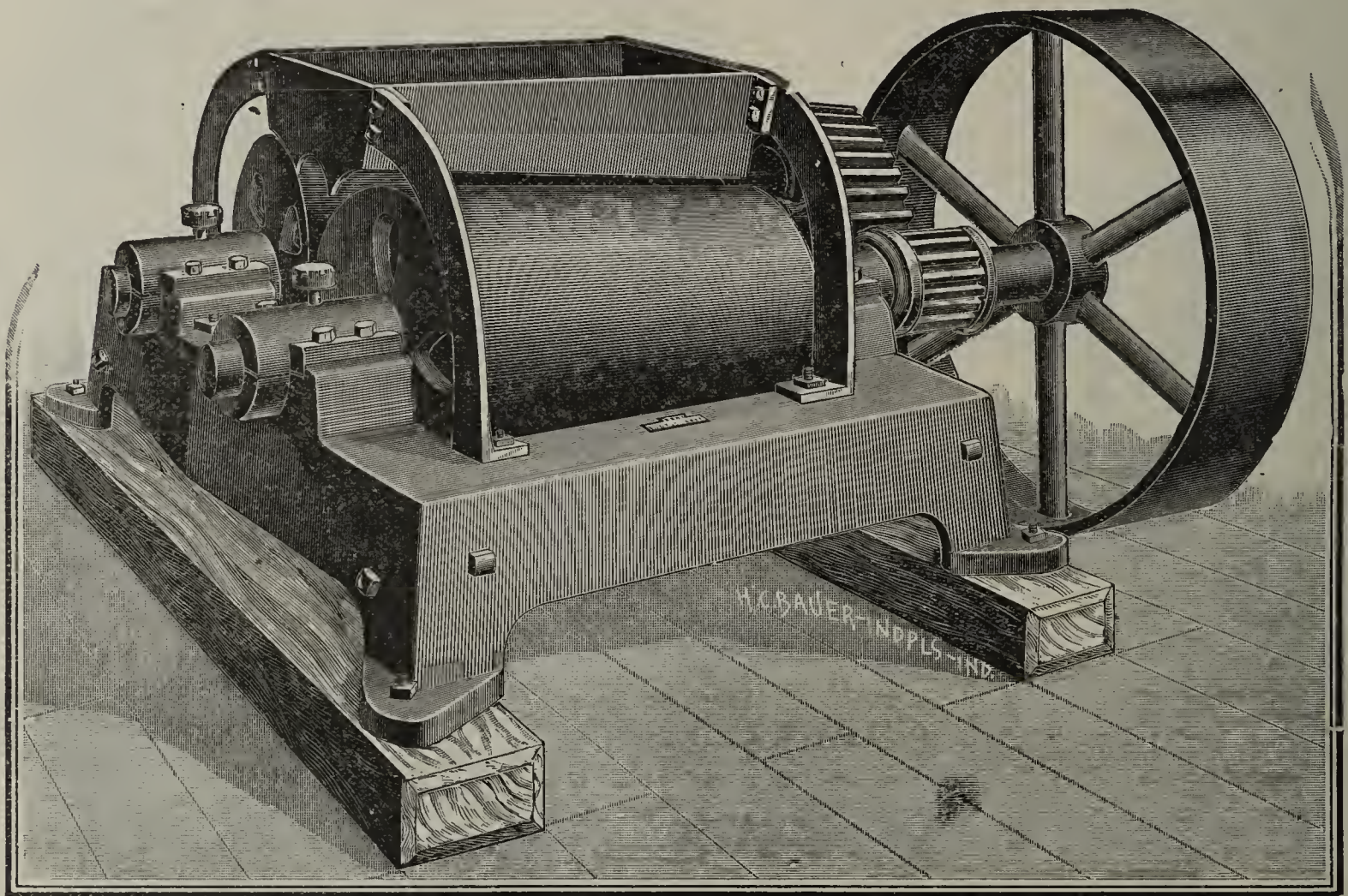
# Improved Brick and Tile Machinery



THE DECATUR LEADER MFG. CO.



Auger Machine with Automatic Cutter and Sander.



Heavy Smooth Conical Roll Disintegrating Crusher. Separates the Stones.

Complete Outfits. Send for 1893 Catalogue.

THE DECATUR LEADER MFG. CO.,

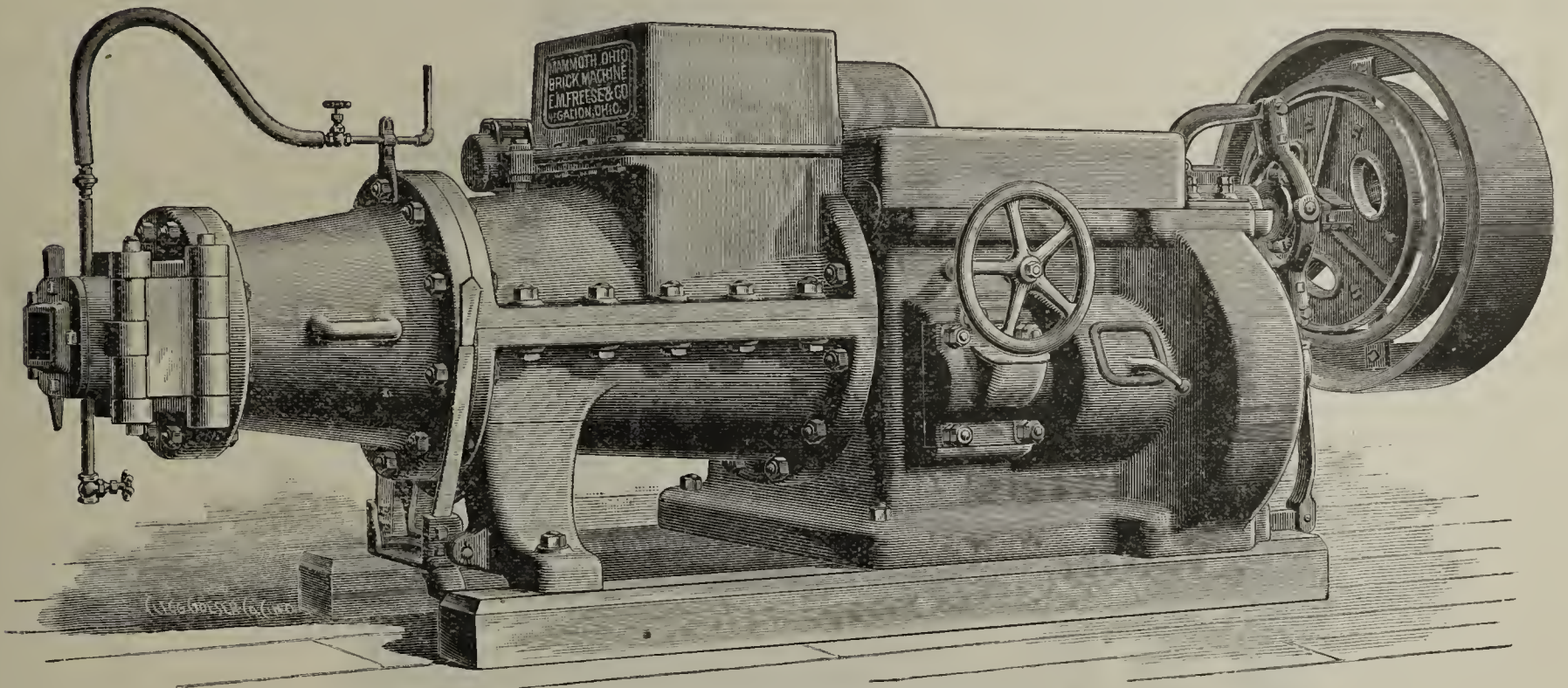
[Mention the Clay-Worker.]

**Decatur, Ill., U. S. A.**



# SUPERIOR BRICK MACHINERY.

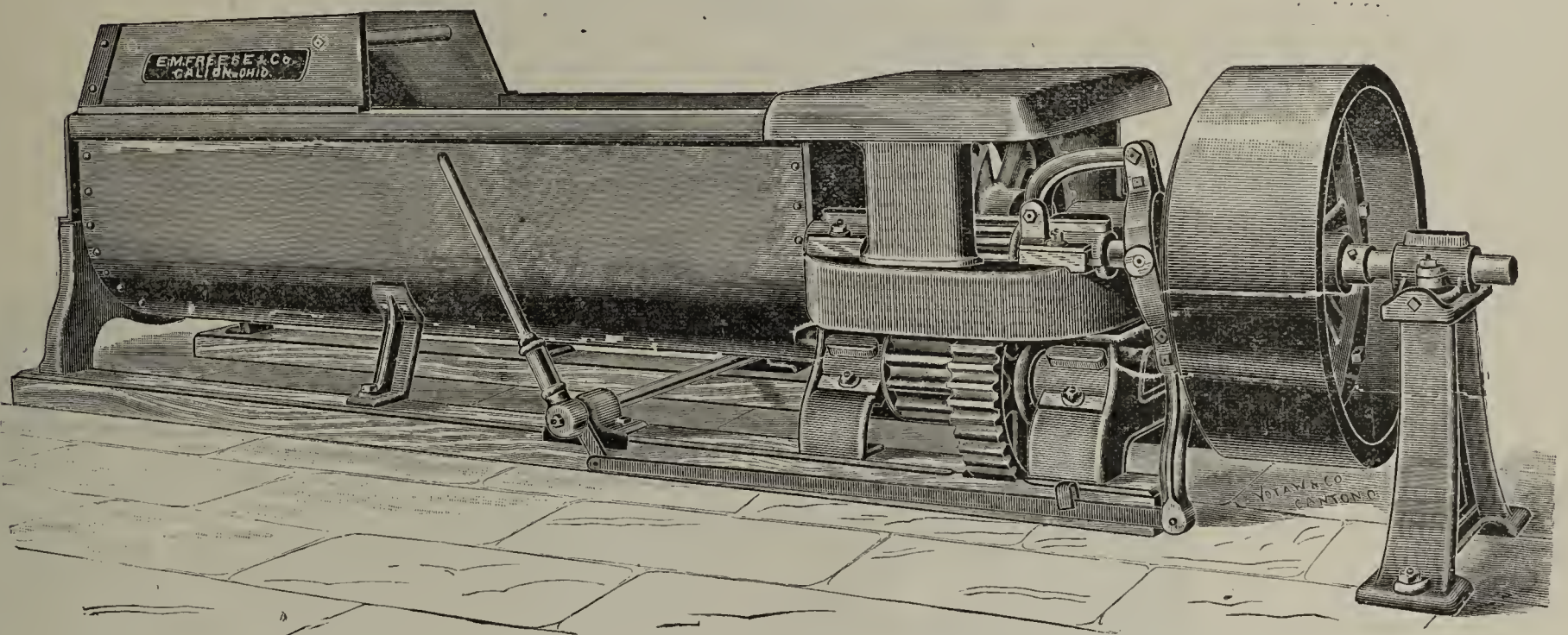
*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

## *PUG MILLS THAT PUG THE CLAY.*



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

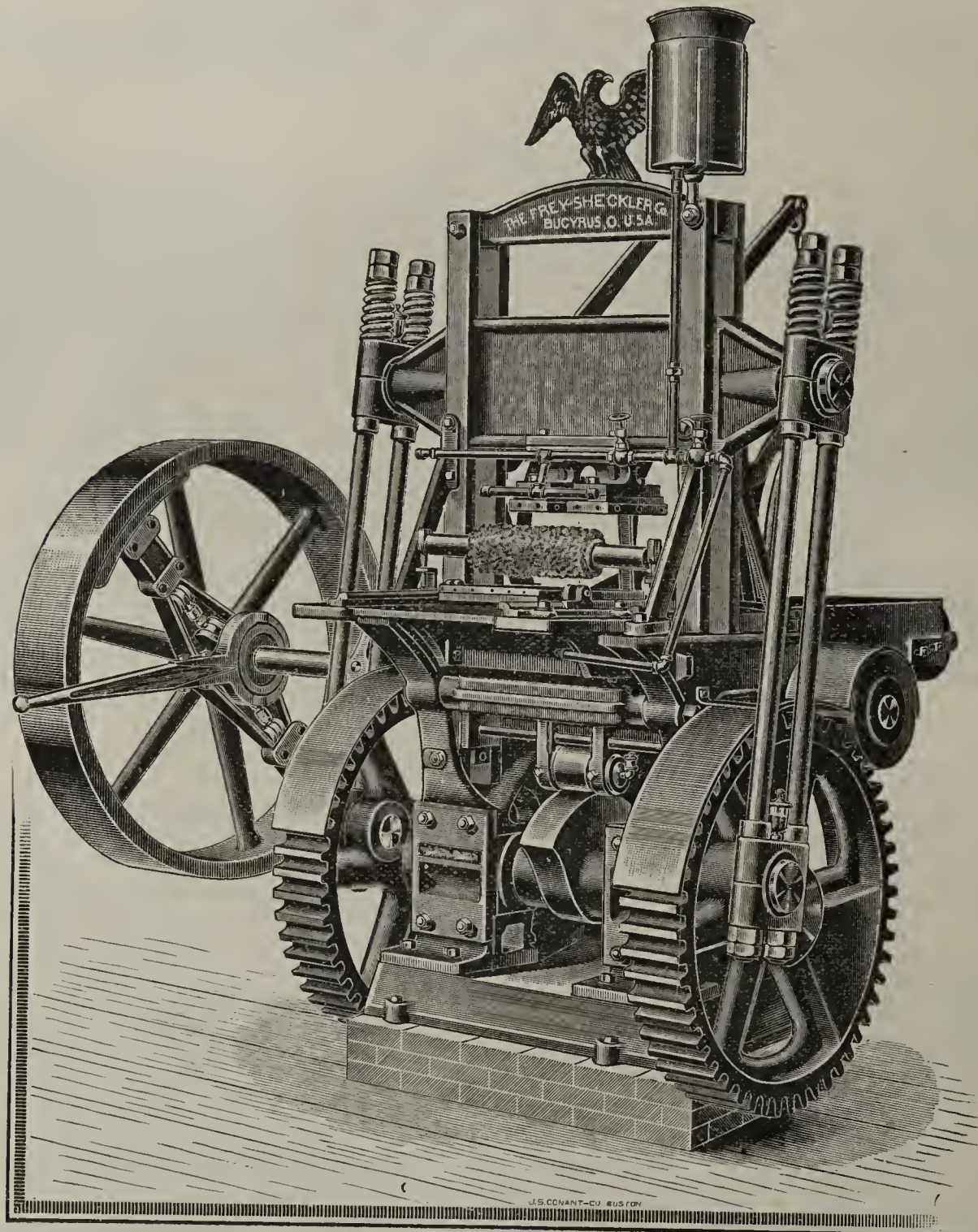
IT WILL PAY~~~~~

ADDRESS

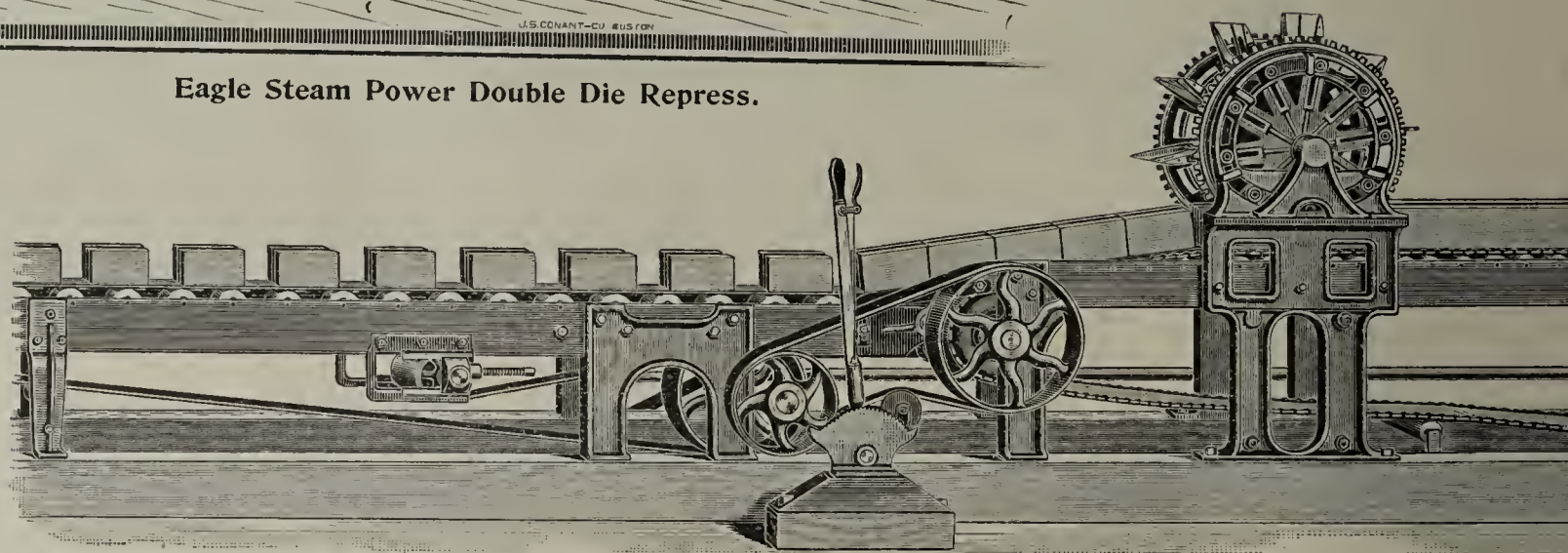
**E. M. FREESE & CO.,**

~~~~~**GALION, OHIO.**


THE LATEST



Eagle Steam Power Double Die Repress.

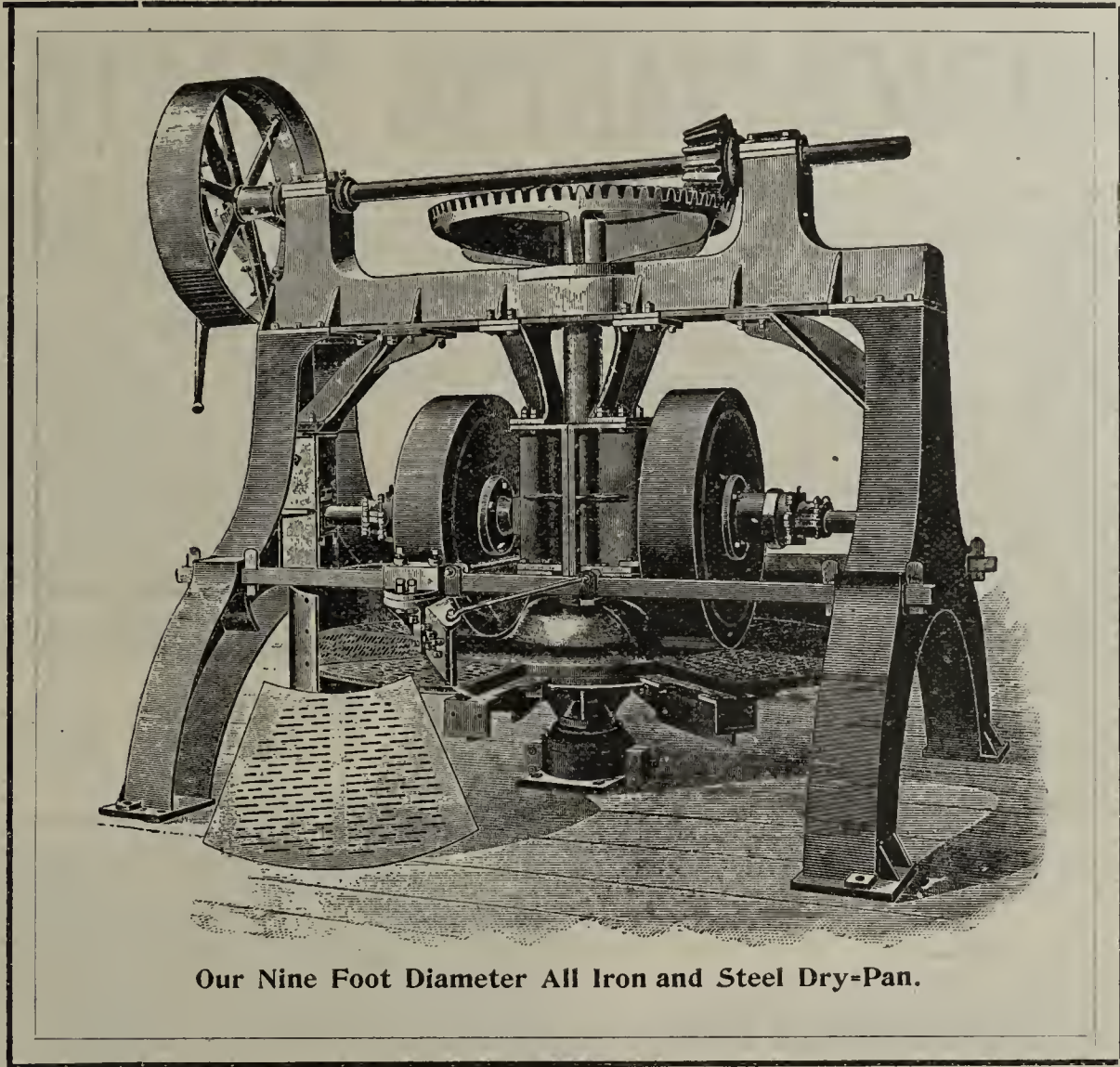


AUTOMATIC CUTTING TABLE.

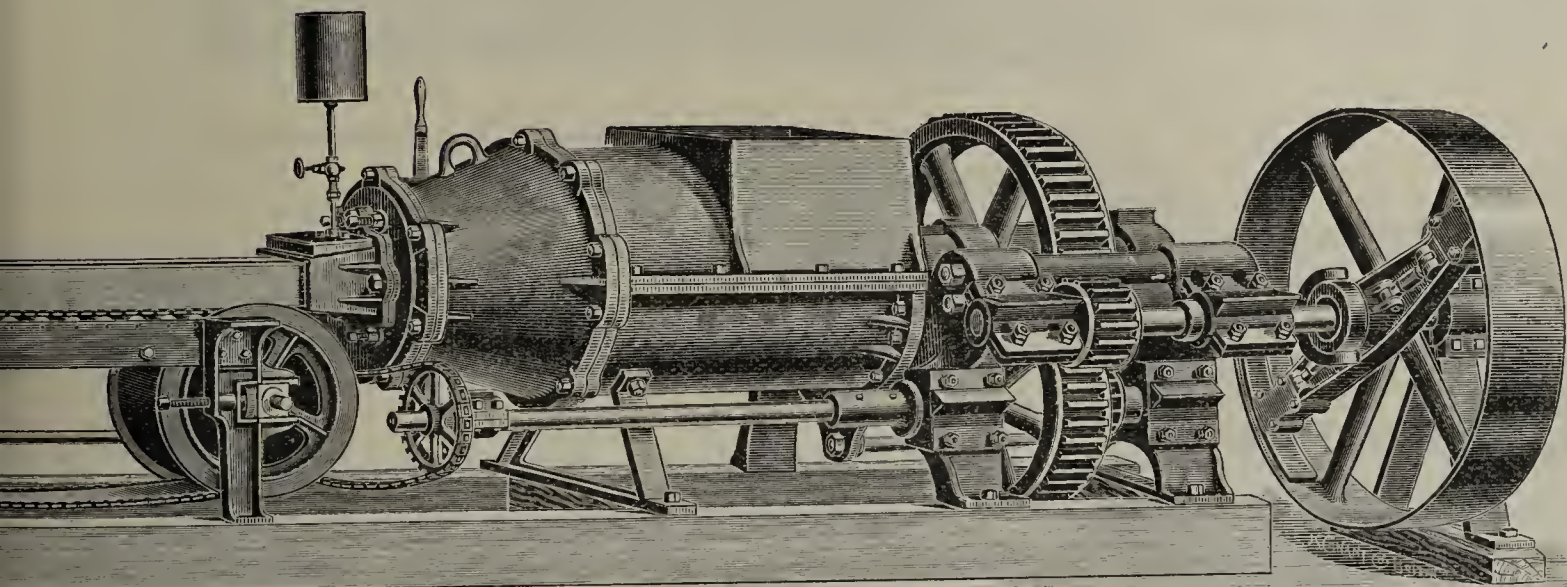
THE FREY-SHECKLER COMPANY,

Send for 1894 CATALOGUE, Just Out. —

AND BEST.



Our Nine Foot Diameter All Iron and Steel Dry-Pan.



No. 1 GIANT BRICK MACHINE.

Manufacturers of Clayworking Machinery, . . .

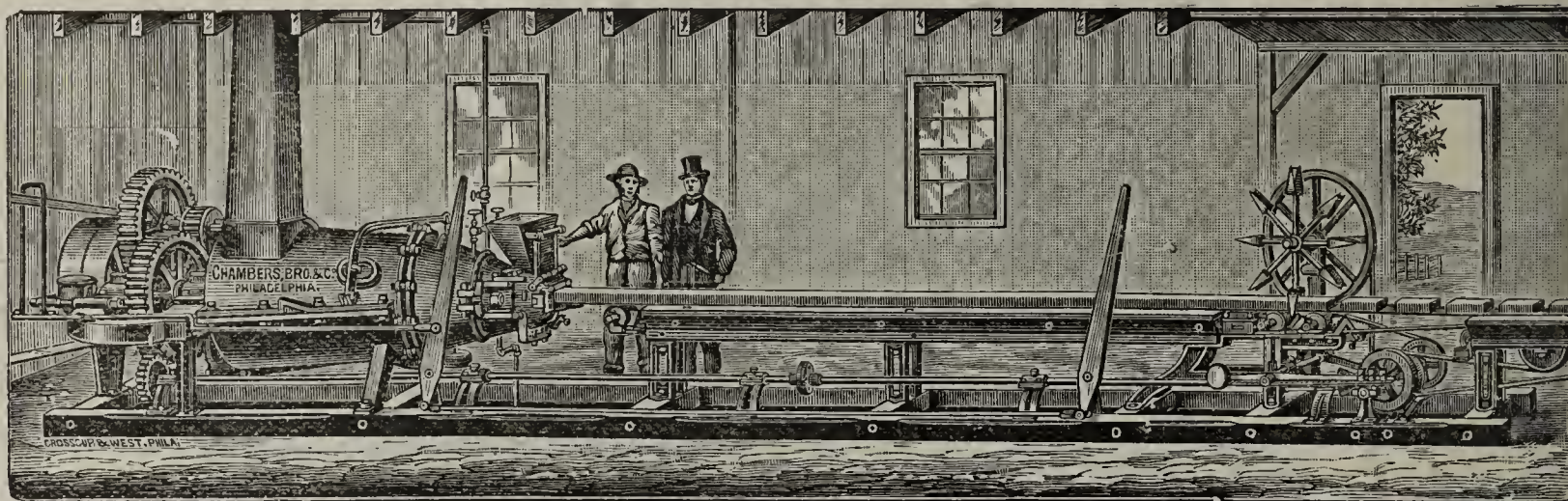
 BUCYRUS, OHIO, U. S. A.

CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

IMPROVED BRICKMAKING MACHINERY.



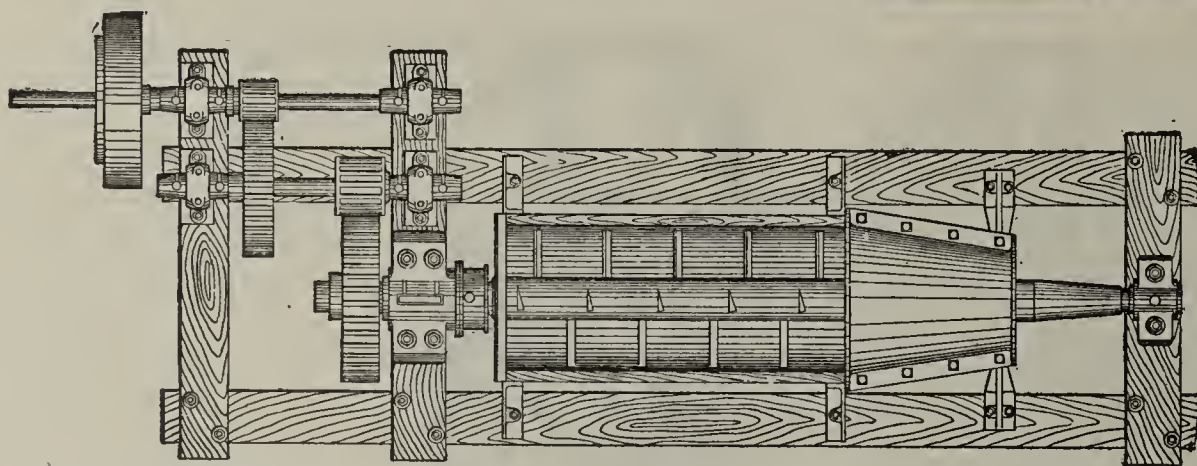
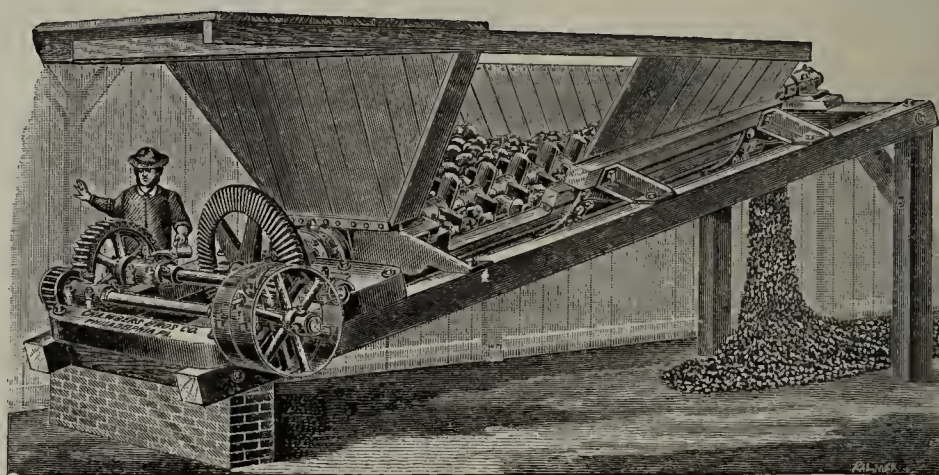
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]

CHAMBERS BROTHERS CO.,

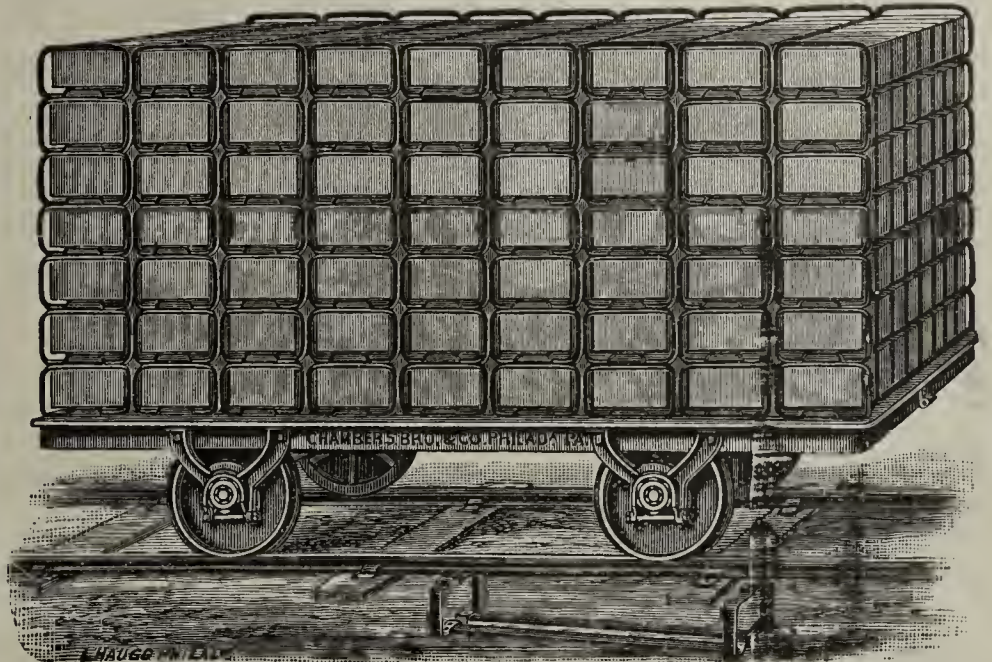
Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

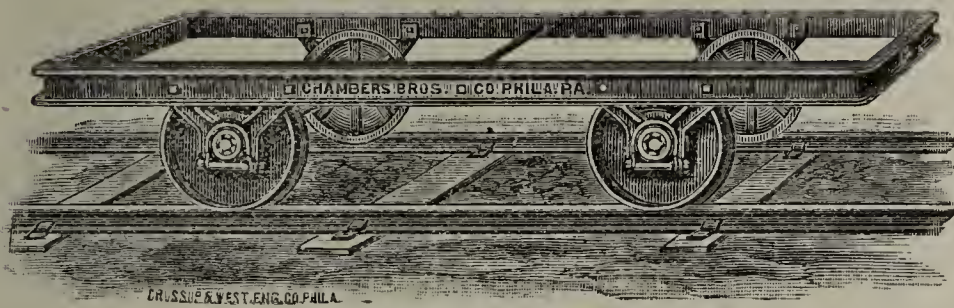
IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

Cars and Complete Equipment
For Artificial Dryers of
all Kinds.

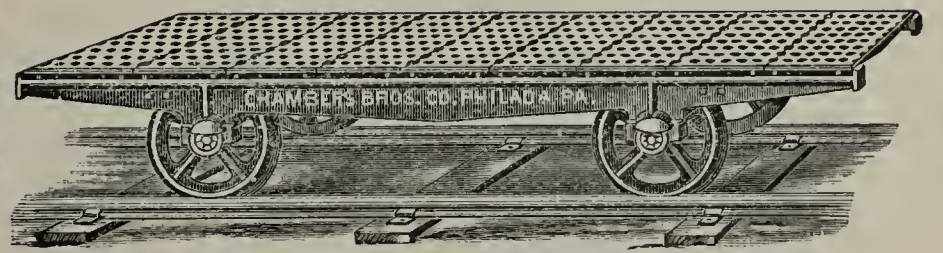
STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

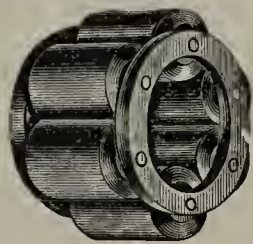


(No. 1 WROUGHT-BODY DRYER CAR.)

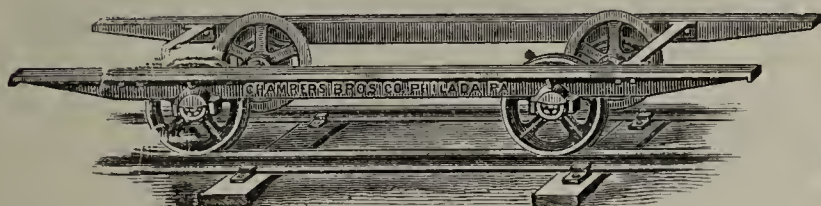


(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

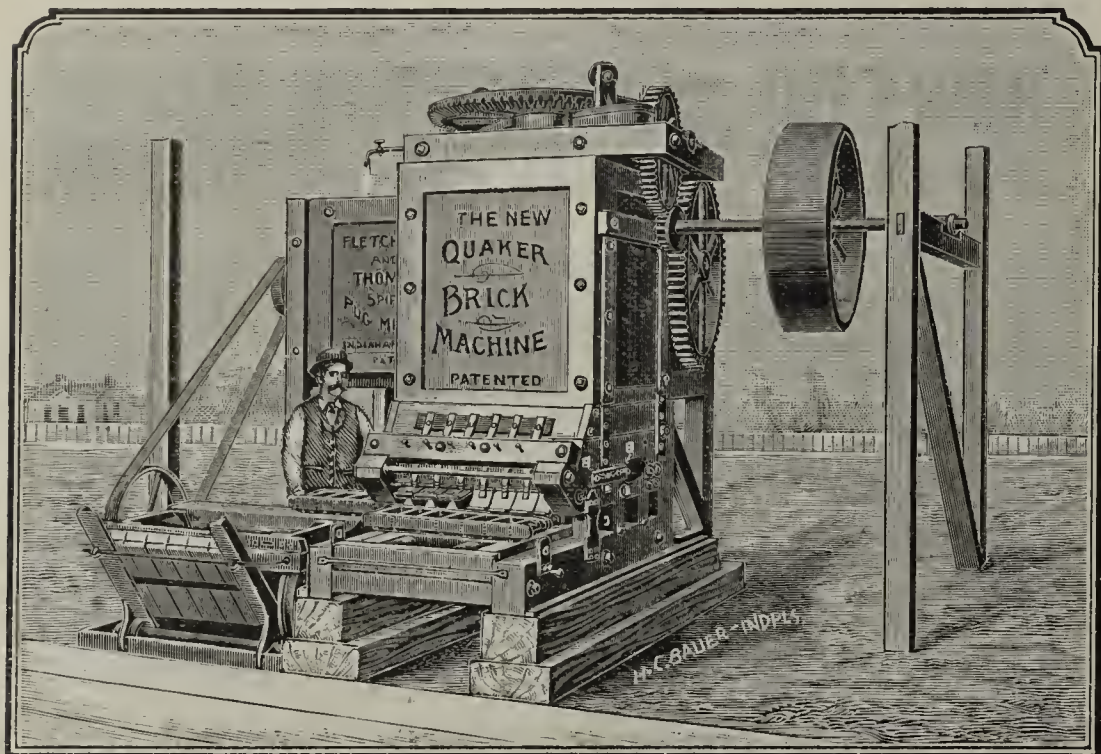
See ad. on front cover page.

[Mention the Clay Worker

FLETCHER & THOMAS, INDIANAPOLIS, IND.,

MANUFACTURERS AND DEALERS IN

Brick Machinery and Brickmakers' Supplies.

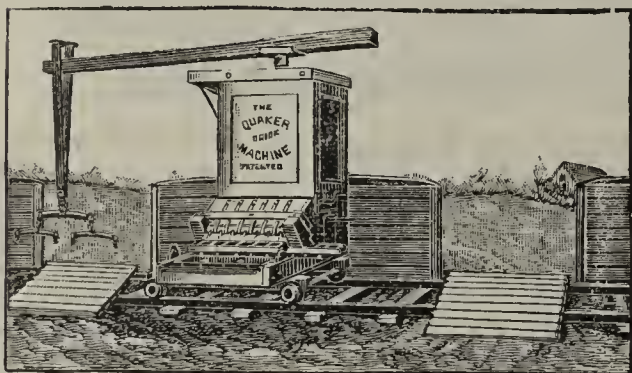


Machine Molds.



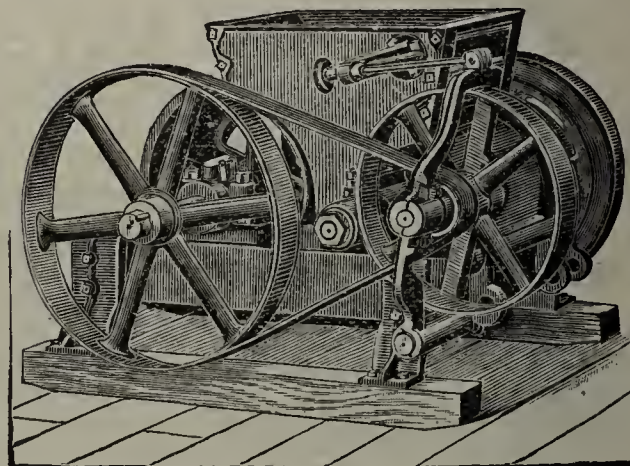
Made of Best Cherry.
All Iron Bound.
Any Size Desired.

This Machine with our Spiral Pug Mill and Mold Sander combined makes the most complete plant in use. Capacity limited only by the ability to provide clay and take care of the product.



THE NEW QUAKER HORSE POWER MACHINE. Simple, Durable and reasonable in price. Capacity 15,000 to 20,000 per day.

Repress Machines,
Tempering Wheels,
Clay Carts,
Kiln Doors,
Grate Bars, Etc.

**DISINTEGRATORS.**

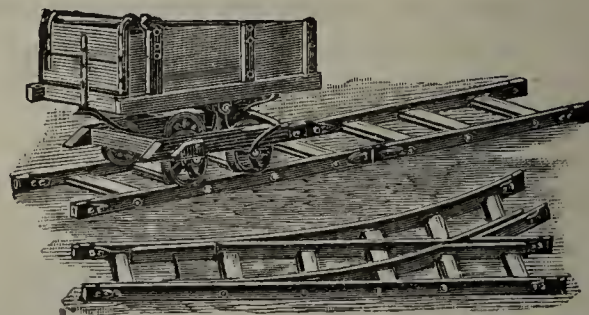
The best pulverizer in use. Different sizes. Capacity 25,000 to 150,000 per day.

Wheel Barrows, Off-Bearing Trucks,
Etc., Etc.



Brick Barrows, with or without Springs.
Mud Barrows, Sand Barrows, Etc.

Engines,
Boilers,
Shafting,
Pulleys,
Belting,
Steam Pumps,
Fittings, Etc.



Dump Cars, Portable Track,
Winding Drums, Wire Cable, Etc.

We make a specialty of equipping and fitting up complete yards in every detail, either large or small. Correspondence solicited. Send for Illustrated Catalogue.

[Mention the Clay-Worker.]

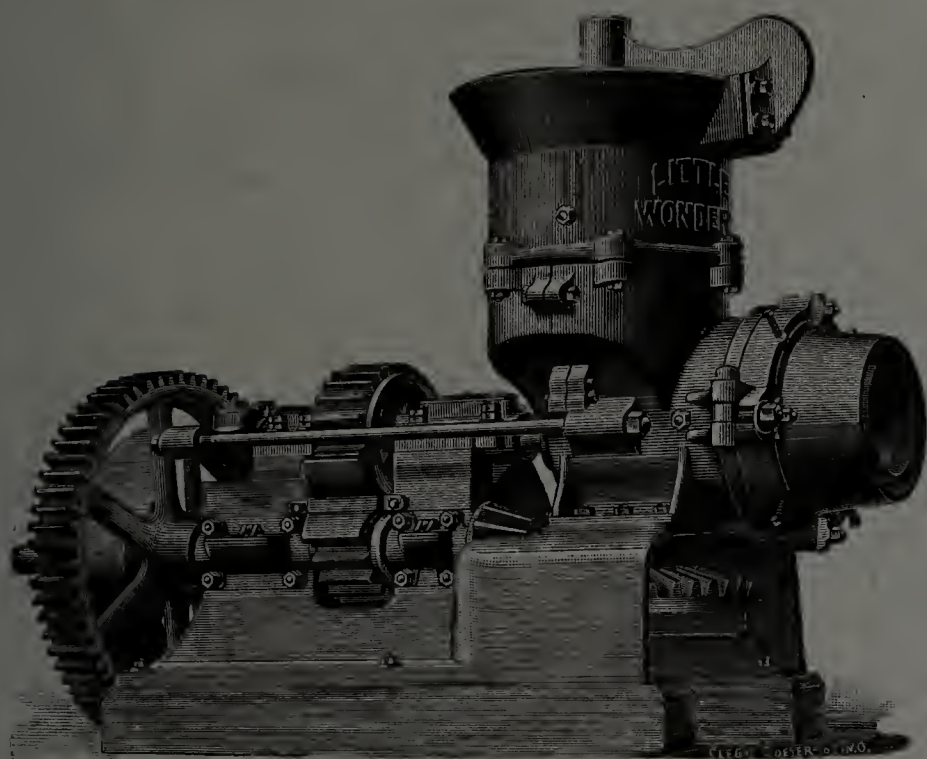
FLETCHER & THOMAS, Indianapolis, Ind.

The WONDER'S IN NEW DRESS.

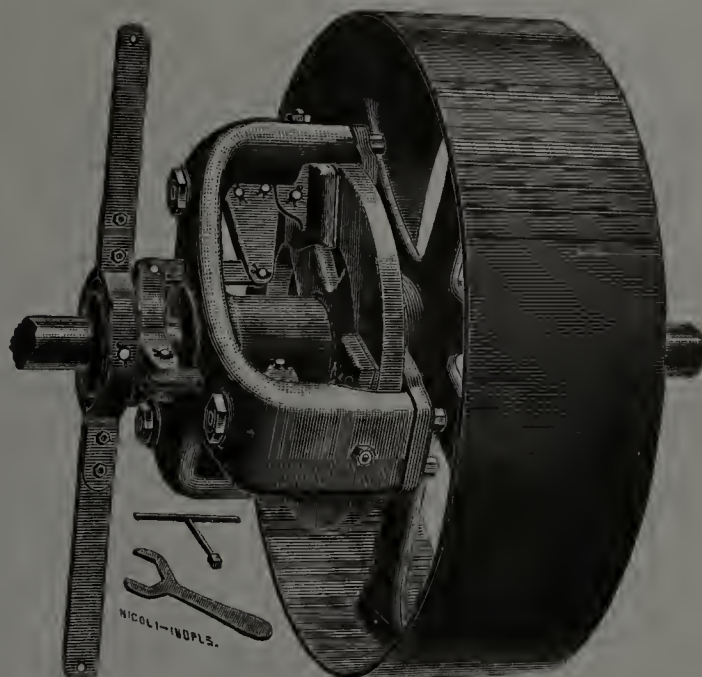


NICOLI-IND.

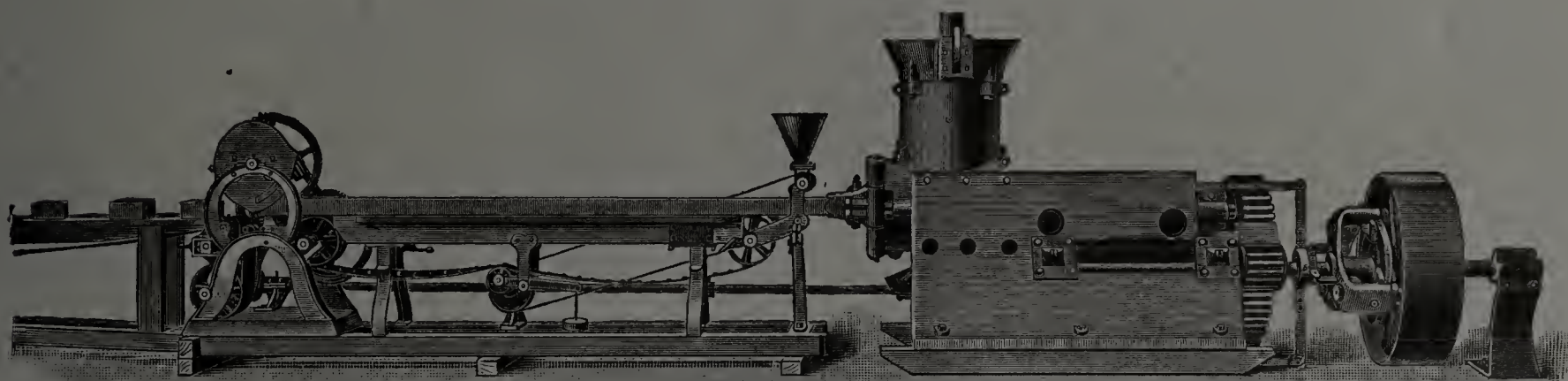
Little Wonder Brick Machine with Cunningham's Automatic Cutter and Sander. 25 M. daily Capacity.



Little Wonder Brick and Tile Machine.



Friction Clutch Pulley.



Big Wonder Brick Machine with Cunningham's Automatic Cutter and Sander. 60 to 75 M. daily Capacity.

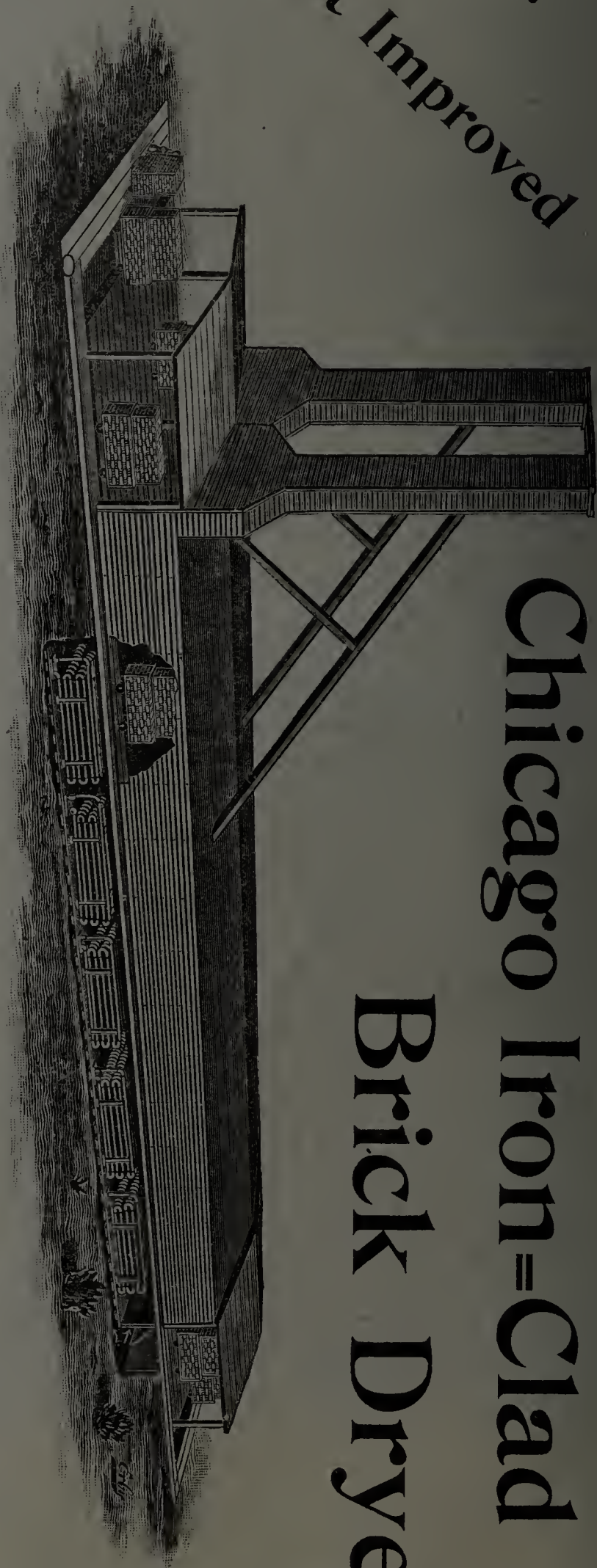
The Wallace Mfg Co.,

FRANKFORT, IND.

When You Send for Further Particulars
Mention the CLAY-WORKER.

The...

Latest Improved



Chicago Iron-Clad Brick Dryer.

We refer to the following parties using the Iron-Clad Dryer:

Weckler-Prussing Brick Co., Chicago, drying 175,000 stiff mud brick per day.
Purlington Brick Co., Chicago, drying 150,000 stiff mud brick per day.
Labahn Brick Co., Chicago, drying 100,000 stiff mud brick per day.
Thomas Moulding Co., Chicago, drying 75,000 stiff mud brick per day.
Lillis & Glennon. Brownington, Mo., drying 30,000 paving brick per day.
Baritan-Hollow and Porous Brick Co., Perth Amboy, N. J., drying fire-proofing.
National Clay Co., Rock Island, Ill., drying 25,000 paving brick.
Utica Fire Clay Co., Utica, Ill., drying fire proofing.
Ottawa Fire Clay and Brick Co., Ottawa, Ill., drying 25,000 paving brick.
Quincy Press Brick Co., Quincy, Ill., drying 25,000 stiff mud brick.
Trimble Brick Co., Trimble, Ohio, drying 25,000 stiff mud brick.
Pioneer Fire-Proof and Construction Co., Ottawa, Ill., drying fire-proofing.
Excelsior Brick Co., Chicago, Ill., drying 20,000 fire brick.
J. P. Tappan & Co., New Kensington, Pa., drying 60,000 stiff mud brick.
A Hammerschmidt, Elmhurst, Ill., drying 25,000 stiff mud brick.
Chicago Refort and Fire Brick Co., Chicago, Ill., drying 15,000 fire brick.
Spurck Street Paving Brick Co., Peoria, Ill., drying 50,000 paving brick.

Royal Brick Co., Canton, Ohio, drying 50,000 paving brick.
Buckeye Fire Clay Co., Uhrichsville, Ohio, drying 25,000 paving brick.
Buckeye Brick Works, Wellsville, Ohio, drying 25,000 paving brick.
Vulcan Clay Co., Wellsville, Ohio, drying 25,000 paving brick.
Logan-Granite Clay Co., Logan, Ohio, drying 25,000 paving brick.
Athens Brick Co., Athens, Ohio, drying 50,000 paving brick.
Salem-Garfield Mining and Mfg. Co., Salem, Ohio, drying 25,000 paving brick.
Ottumwa Brick and Construction Co., Ottumwa, Iowa, drying 50,000 paving brick.
Hugo Becker, Le Claire, Iowa, drying 50,000 paving brick.
Davenport Paving Brick Co., Davenport, Iowa, drying 25,000 paving brick.
Huntington Paving Brick Co., Huntington, W. Va., drying 40,000 paving brick.
Wabash Clay Co., Veedersburg, Ind., drying 40,000 paving brick.
Benton Harbor Brick and Tile Co., Benton Harbor, Mich., drying 25,000 stiff mud brick.
John Porter Co., New Cumberland, W. Va., drying 30,000 paving brick.
Zeeland Brick Co., Zeeland, Mich., drying 150,000 stiff mud brick.
E. Webster & Nephew, Philadelphia, Pa., drying 30,000 soft mud brick.
Fallston Fire Clay Co., Fallston, Pa., drying 30,000 paving brick.
Park Fire Clay Co., Park Quarries, Pa., drying 30,000 paving brick.

Pittsburg Clay Mfg. Co., New Brighton, Pa., drying 30,000 paving brick.
W. A. Doyle, Fort Smith, Ark., drying 25,000 paving brick.
Standard Brick Co., Milwaukee, Wis., drying 30,000 soft mud brick.
Futcher & Dyas Brick Co., Nashville, Tenn., drying 40,000 stiff mud brick.
Evansville Press Brick Co., Evansville, Ind., drying 45,000 stiff mud brick.
Glens Falls Terra Cotta and Brick Co., Glens Falls, N. Y., drying 25,000 soft mud brick.
St. Louis Press Brick Co., St. Louis, Mo., drying 40,000 press brick.
Cleveland Vitrified Press Brick Co., Cleveland, Ohio, drying 30,000 press brick.
J. A. Blaffer & Son, New Orleans, La., drying 35,000 soft mud brick.
St. Joe Paving Brick Co., St. Joe, Mo., drying 30,000 paving brick.
Kankakee Tile and Brick Co., Kankakee, Ill., drying 25,000 stiff mud brick and tile.
Alton Paving, Building and Fire Brick Co., Alton, Ill., drying 75,000 paving brick.
Mackolite Fire-Proofing Co., Chicago Heights, Ill., plaster paris fire-proofing.
Boone Paving Brick Co., Boone, Iowa, drying 28,000 paving brick.
Flint Brick Co., Des Moines, Iowa, drying 50,000 paving brick.
Turner Brick Co., Turner Junction, Ill., drying 35,000 building brick.
Mayer & Toll, Chicago, Ill., drying 35,000 building brick.

IN looking over this list of references, it will be noticed that we are drying bricks for a great number of successful brickmakers, many of whom have added one tunnel at a time, as required by the growth of their business, proving that our system does good work. Our success, we regret to say, has led many to attempt imitating us, with disastrous results. Our imitators argue, from our success, that steam heat is the proper and only heat for drying clays, losing sight of the fact that we absorb the moisture from brick by drawing the hot air over and around the brick by natural draft, using a large volume of moderately-heated air to accomplish the work, just as nature does it, while our imitators are using high degrees of heat and little or no ventilation; cooking the moisture out of the brick, making it impossible to produce tough bricks, no matter how they are burnt. If the reader wants to adopt nature's method, write us.

WOLFF DRYER CO., 358 DEARBORN STREET, ROOM 304, CHICAGO.



THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXI, No. 2.

INDIANAPOLIS, IND., FEBRUARY, 1894.

\$2.00 a Year in Advance.

Brick Making Machinery,

YOUNG O. WILSON, PRESIDENT.
JOSEPH R. WILSON, MANAGER.
ARTHUR BOEHM, TREASURER.

YARDS, WASHINGTON ROADS.
WORKS, CAMDEN JUNCTION.

...THE...

Young O. Wilson Brick Company, OF BALTIMORE CITY.

OFFICE, 10 East Lexington Street, BALTIMORE, MD.

MESSRS. CHAMBERS BROTHERS COMPANY,

GENTLEMEN:—Please accept thanks for the handsome catalogue received to-day of your brick yard equipment and supplies. The book is characteristic of the push of your firm.

I do not know any better card for your brick than to state that in the new tunnel that has recently been finished for the Baltimore & Ohio Railroad here, that from samples submitted of hand made, Martin, Talco t and Penfield brick, your brick was given the preference as being the strongest brick that could be obtained, and accordingly placed an order for twenty million of the Chambers Machine made brick.

Yours truly,

ARTHUR BOEHM, Treasurer.

Chambers Brothers Company,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,

J. E. EASTES, Chicago Agent,

203 South Canal Street.

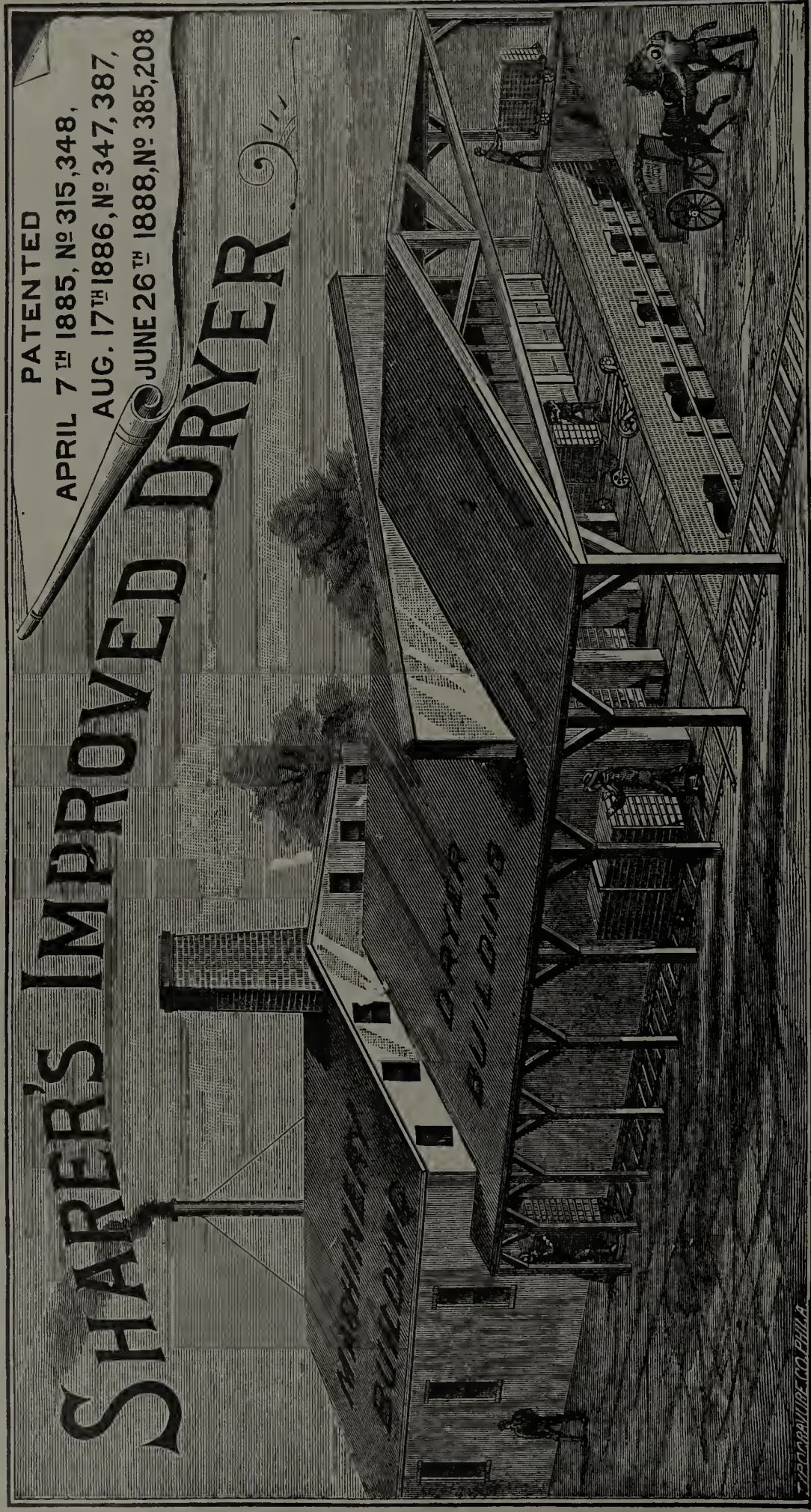
PHILADELPHIA, PA.

See ads. on pages 310 and 311.

THE SHARER DRYER AND CONSTRUCTION CO.,

BRICK MANUFACTURING EXPERTS.
CONSTRUCTING ENGINEERS. : CONTRACTORS AND BUILDERS.
COMPLETE PLANTS A SPECIALTY.

Builders of All Kinds of Dryers and Kilns for Drying and
Burning any and all Kinds of Clay Products.



Owners of SHARER'S IMPROVED DRYER;
SHARER'S IMPROVED CALORIFIC KILN.

Manufacturers of Cars, Transfer Cars, Turn Tables, Furnace Castings and Complete Dryer and Kiln Equipments.

.....Dealers in All Kinds of Clayworking Machinery, Engines, Boilers, Shafting, Pulleys, Etc.
New plants built and equipped complete in every particular. Old plants remodeled and modernized. Clays tested and analyzed. Plans and estimates furnished.
Information costs you nothing. Send for Catalogue "C."

SHARER DRYER & CONSTRUCTION CO.,

TORONTO OFFICE: 71 Adelaide, East, Toronto, Ont., Canada,
HUGH CAMERON, Manager.

Rooms 506 and 507, The Mutual Life Building,
N. W. Cor. 10th and Chestnut Streets,
PHILADELPHIA, PA.

For Clay Screens

..USED...

In Making Brick,
Tile, Terra Cotta,
etc., etc.

Also for Dry Pan,
Pulverizer, Chute,
Shaking and Re-
volving Screens.



Heavy Iron and Steel Plates

Punched for sizing
Coal, Coke and
Ores; Macadam,
Concrete, Railroad
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS
—USED FOR—

CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

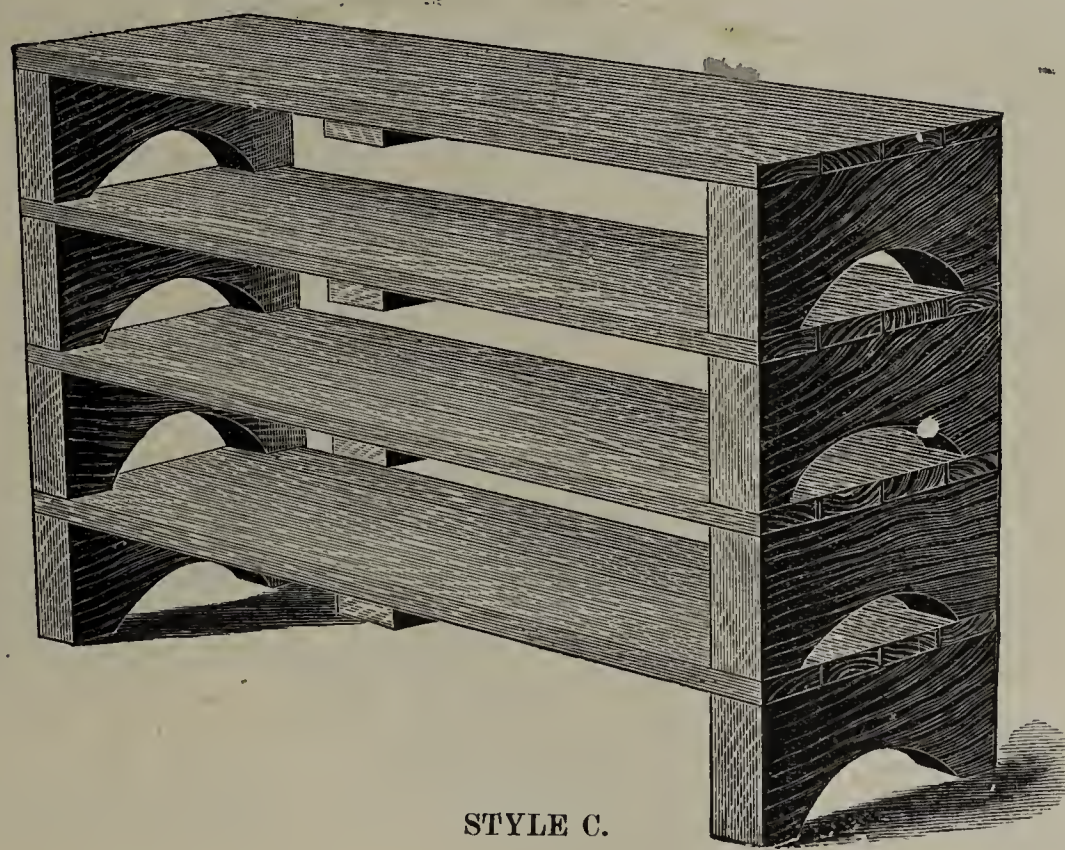
THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,
CHICAGO, ILL.

WOODEN BRICK PALLETS

WOODEN
BRICK
PALLETS



STYLE C.

WOODEN
BRICK
PALLETS

We manufacture all styles and sizes. Write to us direct for descriptive circulars and prices.

WM. B. MERSHON & CO., = Saginaw, East Side, Mich.

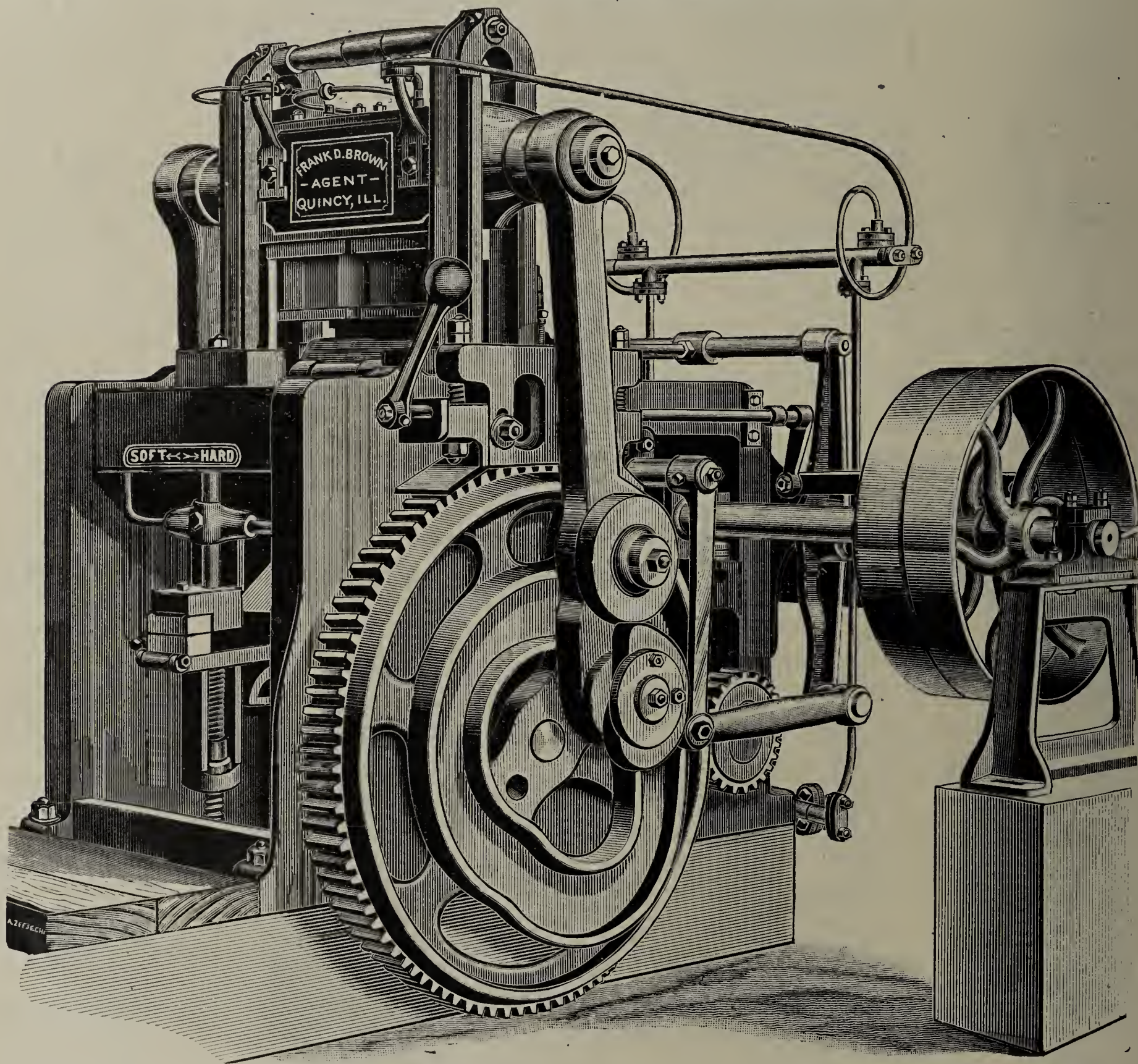
WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

• HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. •

Best, Cheapest and Most Durable Press in the World.

* ————— One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

FRANK D. BROWN, Room 18 Major Block,
Cor. La Salle & Madison Sts. **Chicago.**

The Ross-Keller Brick Machine.

(Triple Pressure)

Weight 75,000 Pounds, Capacity 35,000 to 40,000 Brick Per Day.

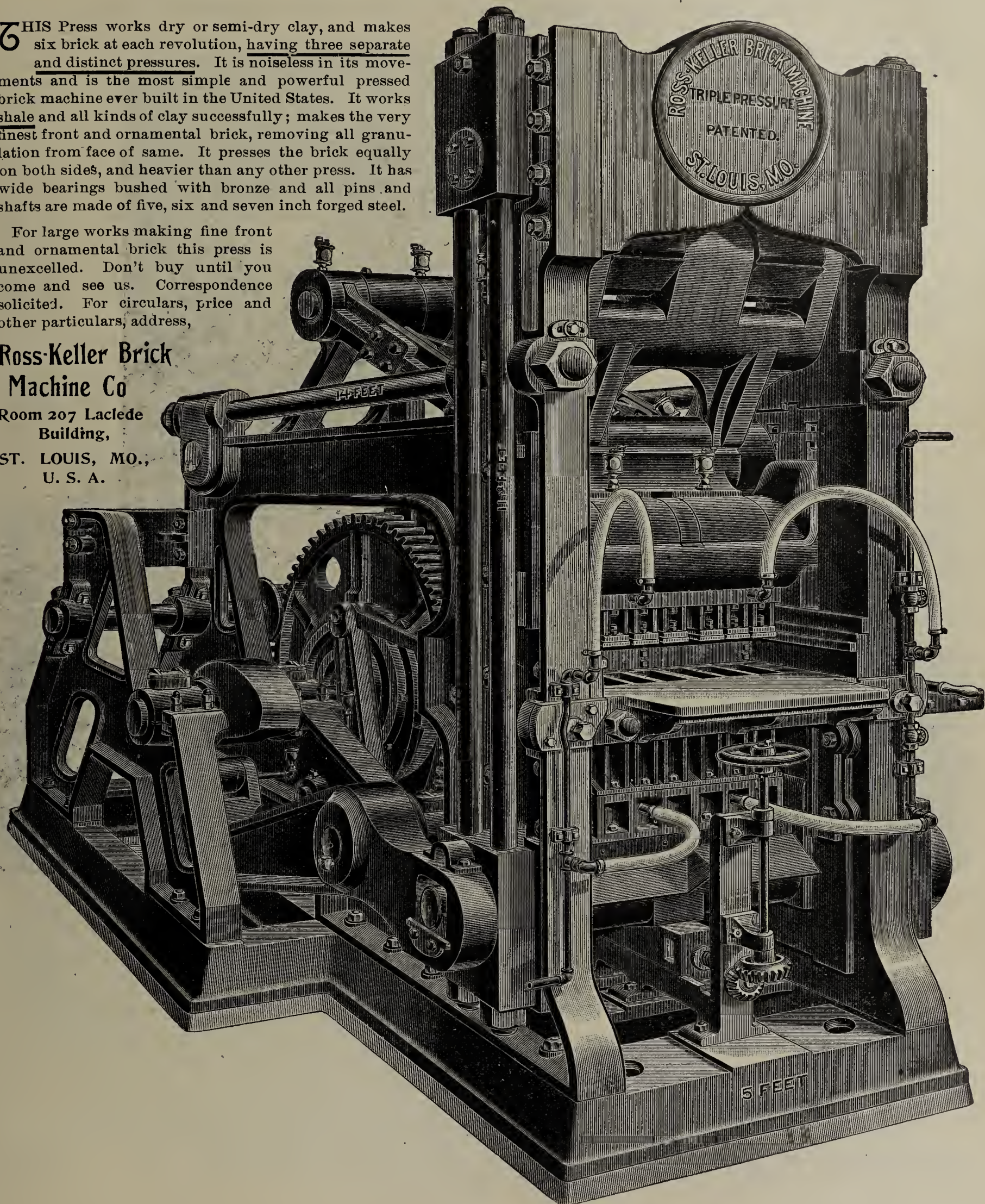
THIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five, six and seven inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address,

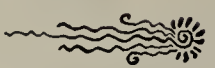
**Ross-Keller Brick
Machine Co**

Room 207 Laclede
Building,

ST. LOUIS, MO.,
U. S. A.



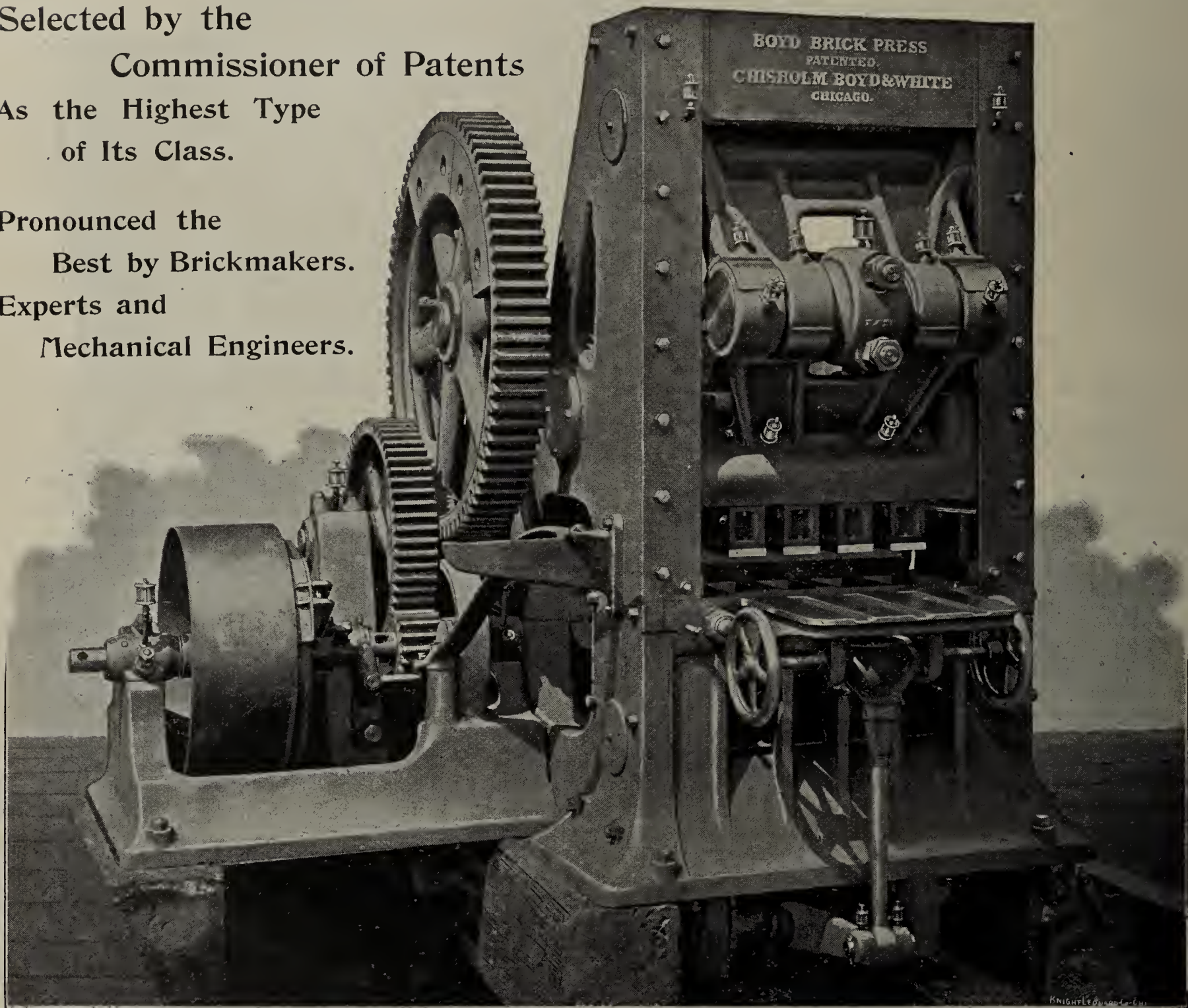
TRIUMPH OF THE BOYD PRESS

.  ALL THE HONORS.

AWARDED A MEDAL AND DIPLOMA.

Selected by the
Commissioner of Patents
As the Highest Type
of Its Class.

Pronounced the
Best by Brickmakers.
Experts and
Mechanical Engineers.



THE BOYD BRICK PRESS IS THE ONLY AMERICAN BRICK MACHINE
TO RECEIVE A MEDAL, DIPLOMA, OR OFFICIAL MENTION AT

❖ The World's Columbian Exposition. ❖



Monon Block :
324 Dearborn Street.

CHISHOLM BOYD & WHITE,
Chicago, Ill., U. S. A.

THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

Refer to . . .

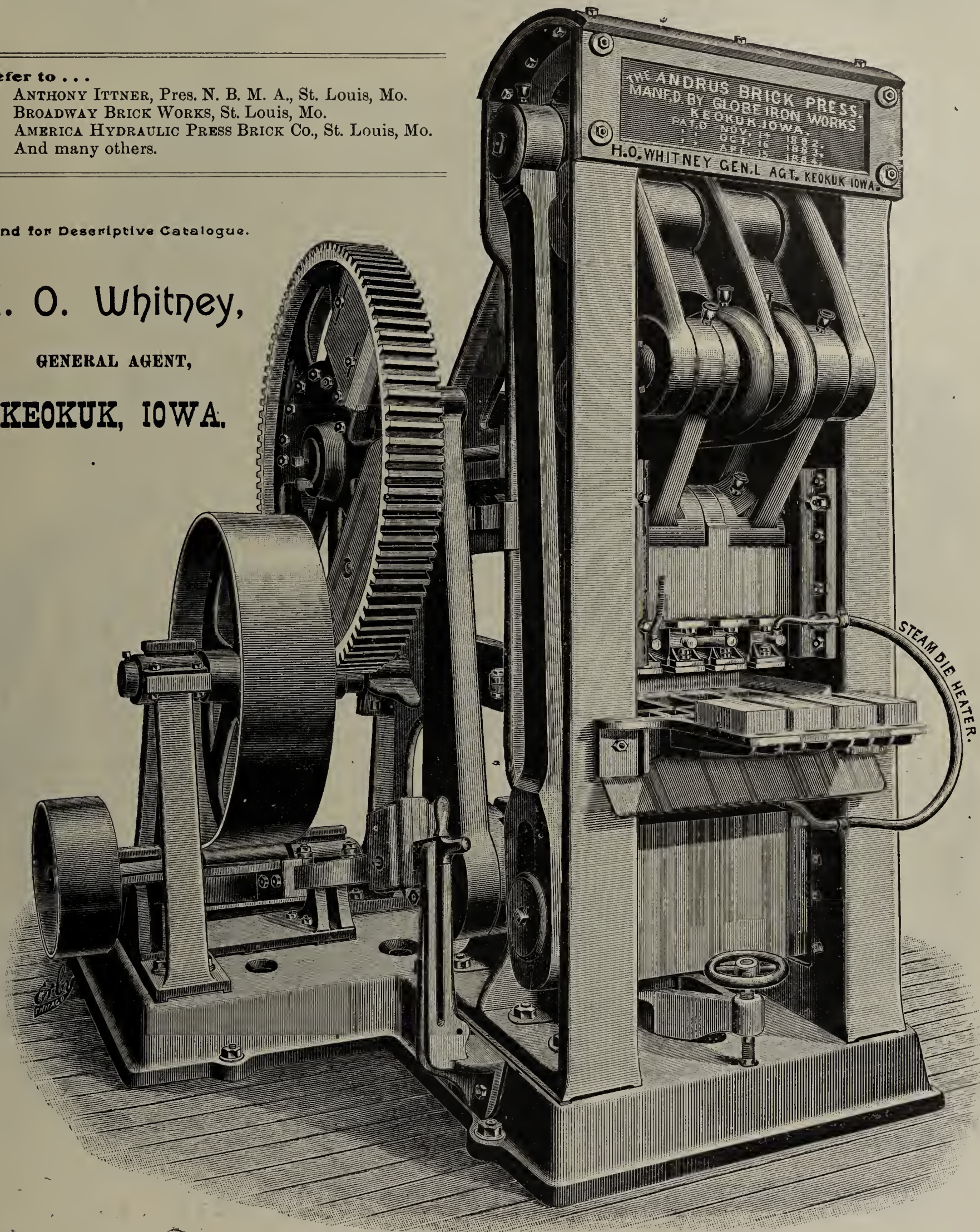
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.
BROADWAY BRICK WORKS, St. Louis, Mo.
AMERICA HYDRAULIC PRESS BRICK CO., St. Louis, Mo.
And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.

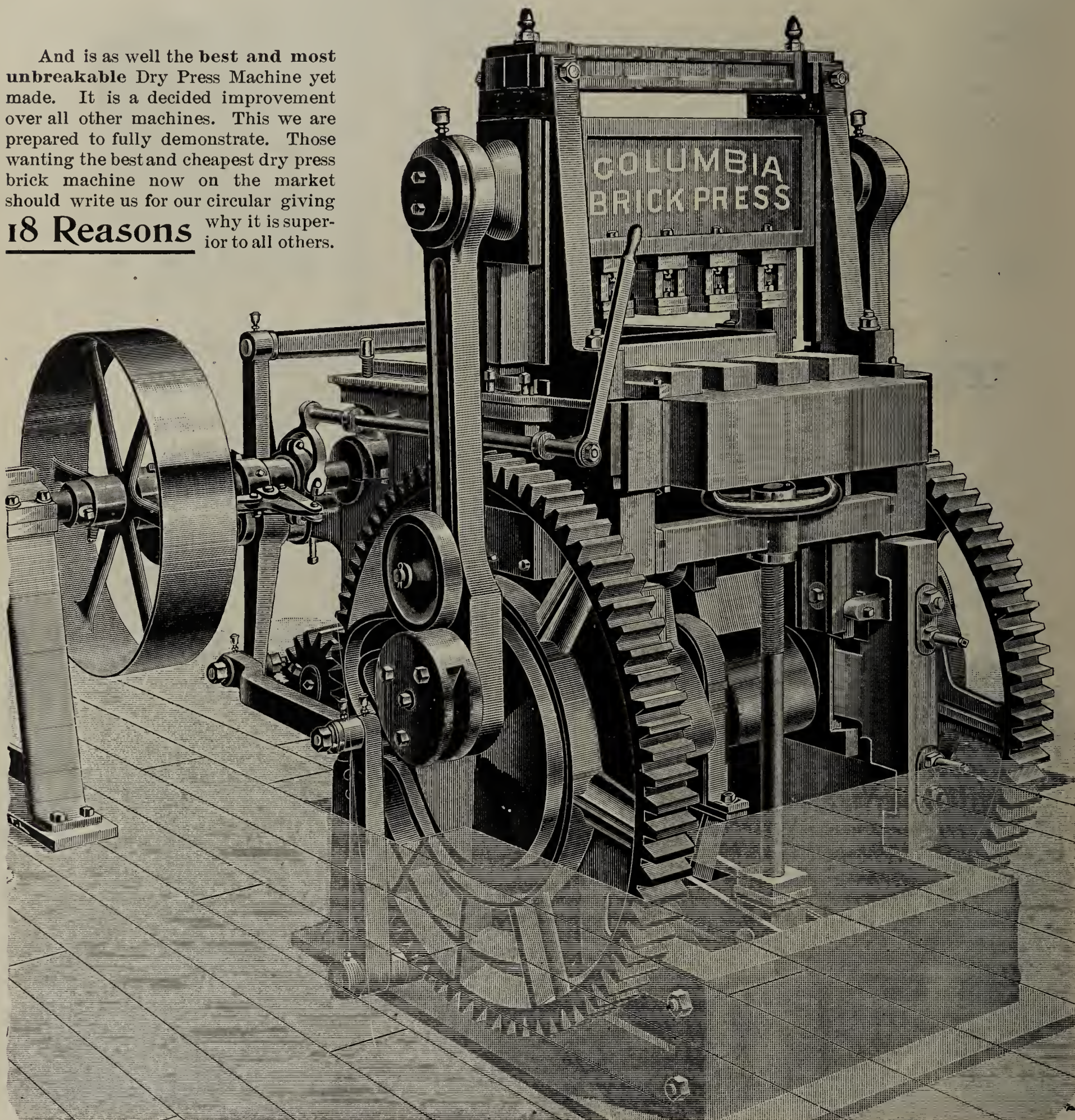


❖ THIS ❖ PRESS ❖

IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF

FINE ORNAMENTAL BRICK

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

COLUMBIA MANUFACTURING CO.,

Send your clay and we will test it and send you the results....

2119 N. Ninth St., ST. LOUIS, MO.

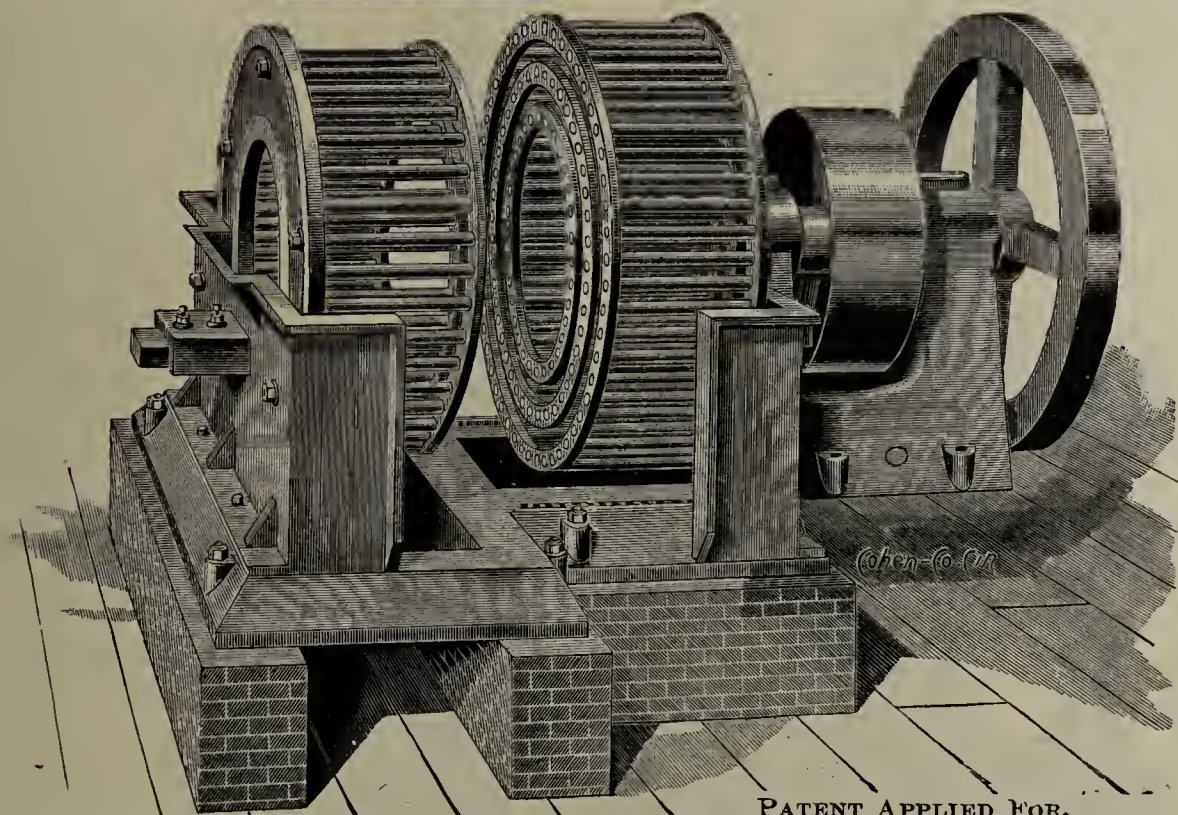
Description.



This Disintegrator is especially designed for pulverizing clay for making **"FINE PRESSED BRICK."**

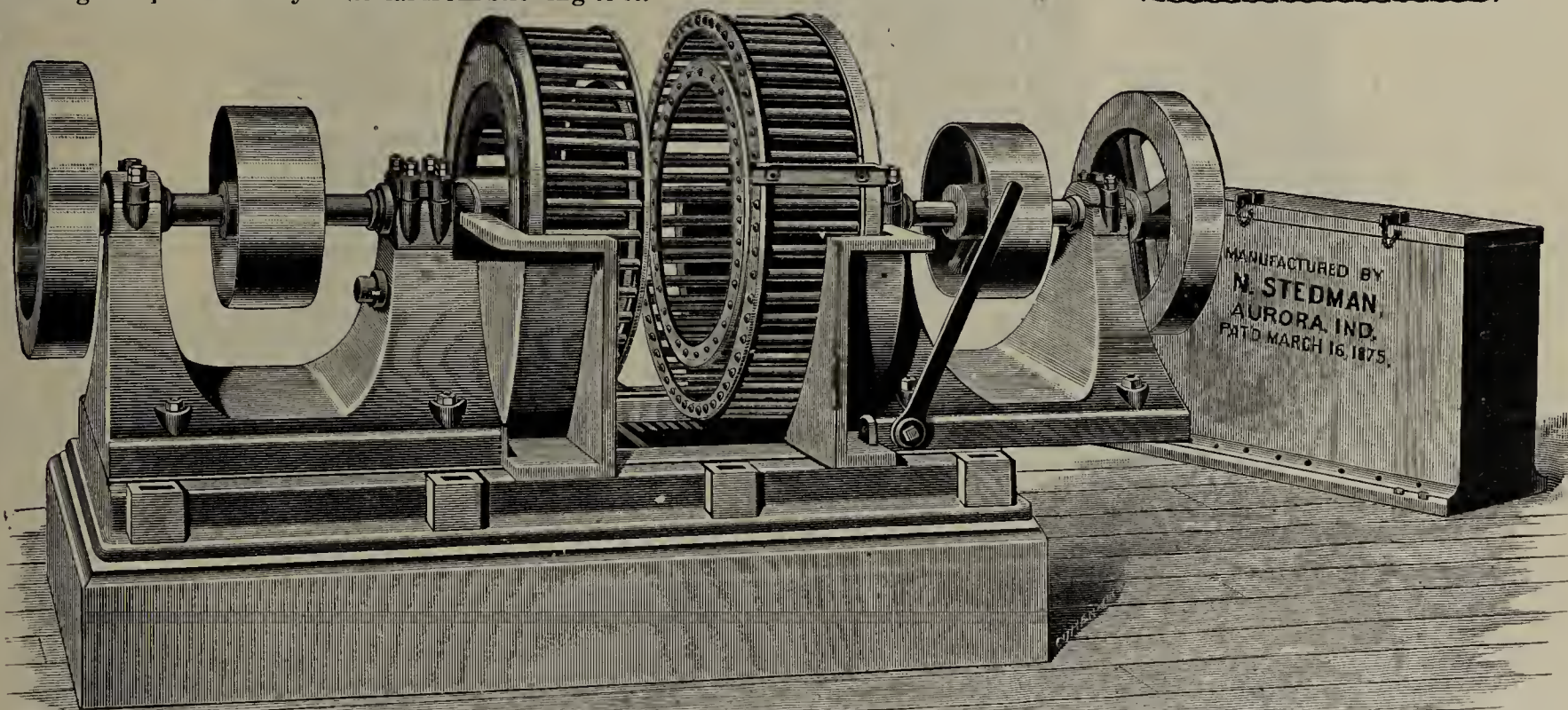
The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our **DOUBLE CAGE DISINTEGRATOR** which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



PATENT APPLIED FOR.

NOTICE.—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our **SINGLE REVOLVING CAGE DISINTEGRATOR**. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.

Mention the CLAY-WORKER

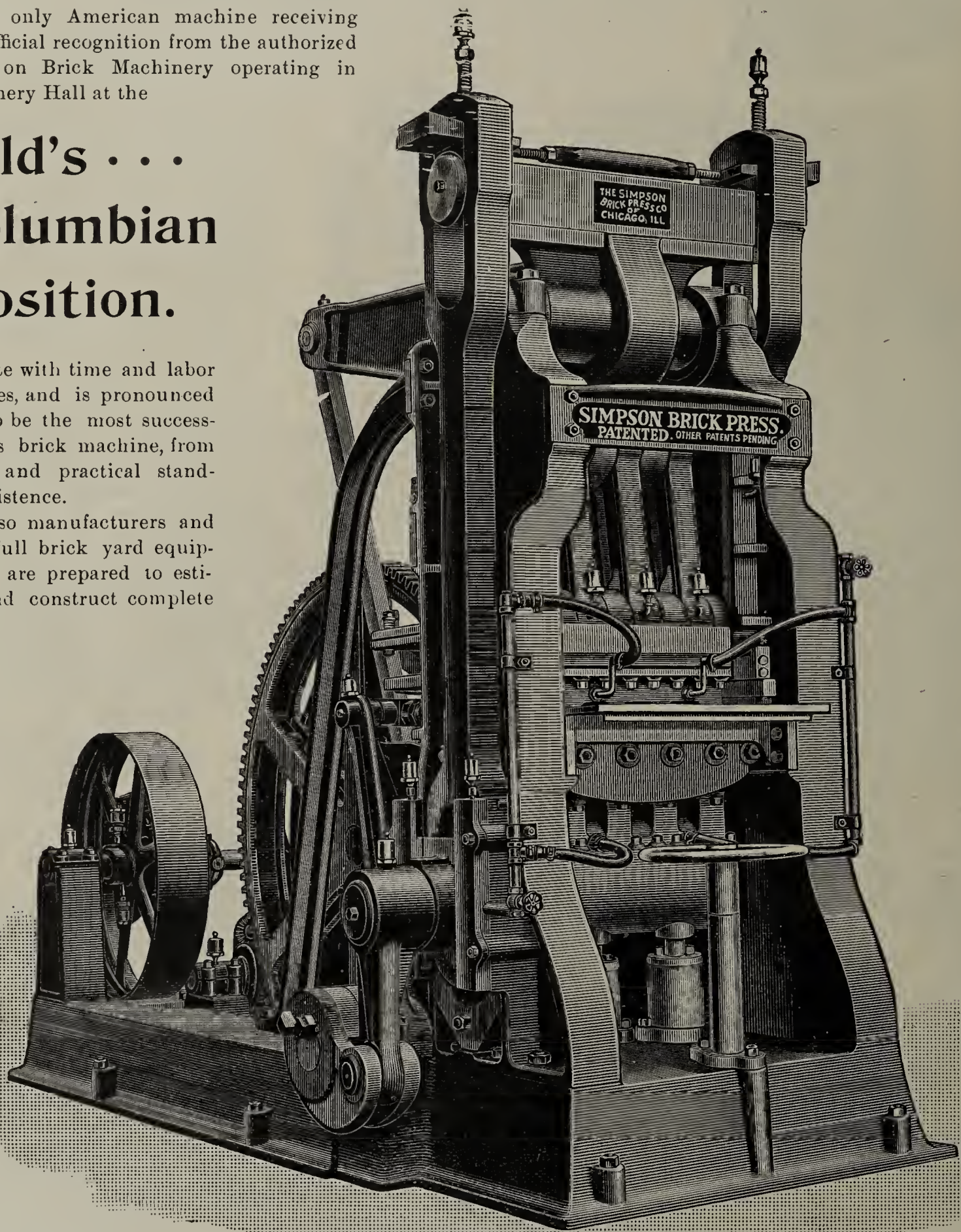
THE SIMPSON BRICK PRESS.

THE only American machine receiving official recognition from the authorized judge on Brick Machinery operating in Machinery Hall at the

World's . . . Columbian Exposition.

It is replete with time and labor saving devices, and is pronounced by experts to be the most successful dry press brick machine, from mechanical and practical standpoints in existence.

We are also manufacturers and dealers in full brick yard equipments, and are prepared to estimate on and construct complete plants.



For prices, terms and other information address,

THE SIMPSON BRICK PRESS CO.,

Agents for Canada:

WATEROUS ENGINE WORKS CO., Brantford.

87 Washington St., CHICAGO, ILL.

Improved Clay Disintegrators

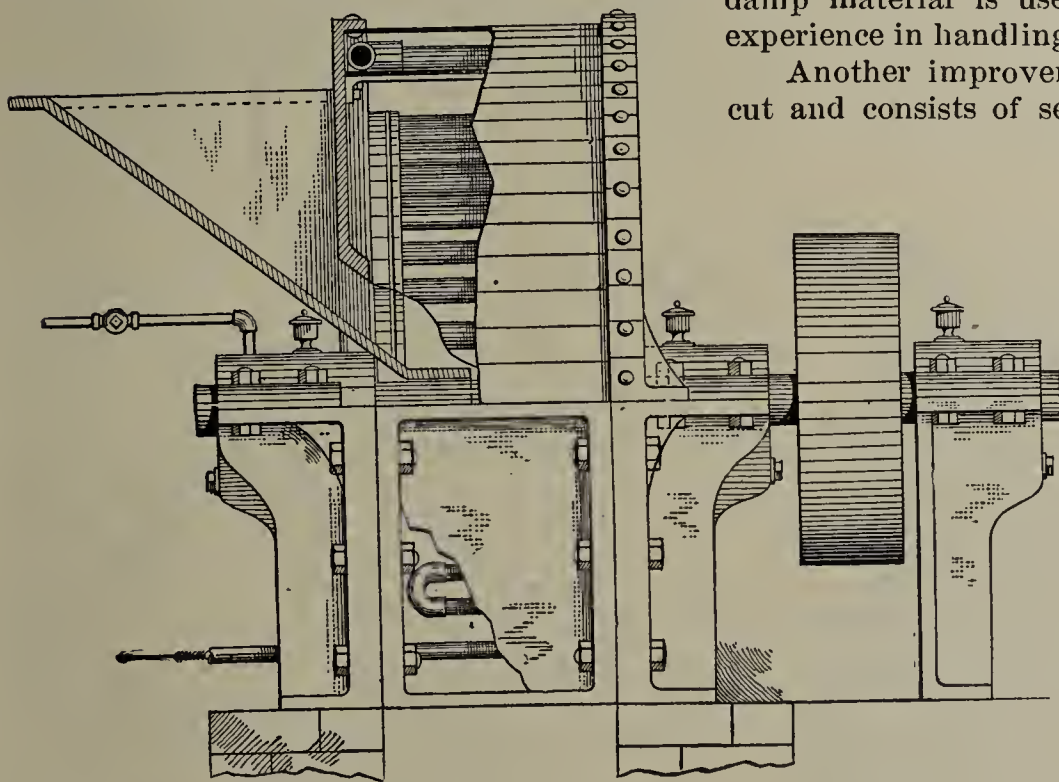
(OUR OWN PATENT.)

LARGE CAPACITY WITH LITTLE POWER.

For Pulverizing Common Clay, Fire Clay, Slate, Paint, Bones, Flint and Ore of Any Description.

WE BUILD five sizes ranging from 30 to 60 inches in diameter. The accompanying cuts will give the reader an idea of the principle upon which our improved pulverizers are constructed. While there are disintegrators now on the market somewhat similar, ours have several patented devices that makes them much more efficient and durable. The steam jacket shown in the larger cut is an especially valuable feature and prevents any tendency to clogging when damp material is used, a great advantage, as all who have had any experience in handling moist clay will readily concede.

Another improvement (our own invention) is shown in the smaller cut and consists of self-oiling, dust-proof journal boxes, which insure smooth, easy running, and reduces the strain and wear to the lowest possible degree.

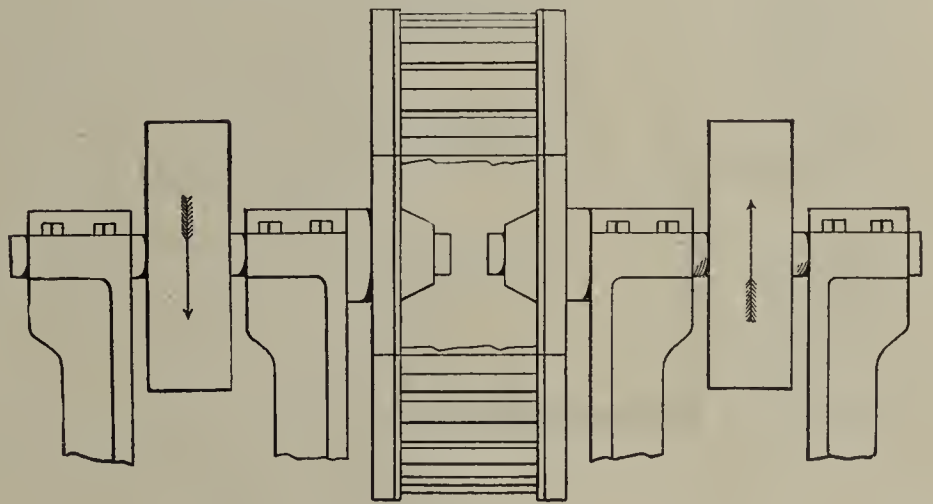
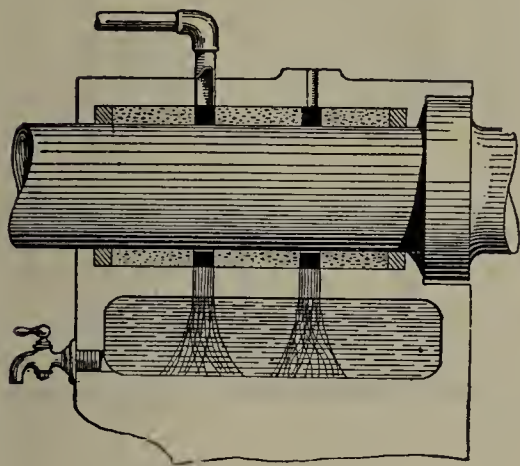


÷

Our Disintegrators are built for service. We have a large number of them in use on different materials and all are giving entire satisfaction.

÷

We will be pleased to furnish full description of machines and testimonial letters from users.



If you want the best, write us for prices, etc.

Schoellhorn-Albrecht Machine Co.,

MANUFACTURERS,

609-610 North Levee,

=

=

ST. LOUIS, MO.

“Morrison’s Improved Kiln Record”

IS NOW READY FOR DISTRIBUTION.

Success is the only positive evidence of merit.....

.....Merit without success is faith without works.

Here is a page from “The Record.”

Office of SELMA BRICK & TILE CO.

SELMA, ALA., Oct. 3rd, 1893.

R. B. MORRISON & Co.,
ROME, GEORGIA.

GENTLEMEN:—We have burned the kiln you put in for us second time and are perfectly satisfied with results. Each time we burn your kiln we save \$100 on fuel and \$50 on labor, and in saving of our arch brick and uniformity of color throughout the kiln and large increase in percentage of hard brick, we realize at least \$200 more for the 350,000 brick, making us \$350 saved each burn.

Yours truly,
SELMA BRICK & TILE CO.

For further encouragement write us for copy of “The Record.” No stamp need be sent.

Brick Manufacturers, you want results! We give them in the Record of our Kiln for seven years past in all parts of the United States and Canada.

For the “Record” descriptive pamphlet, and all information desired, address,

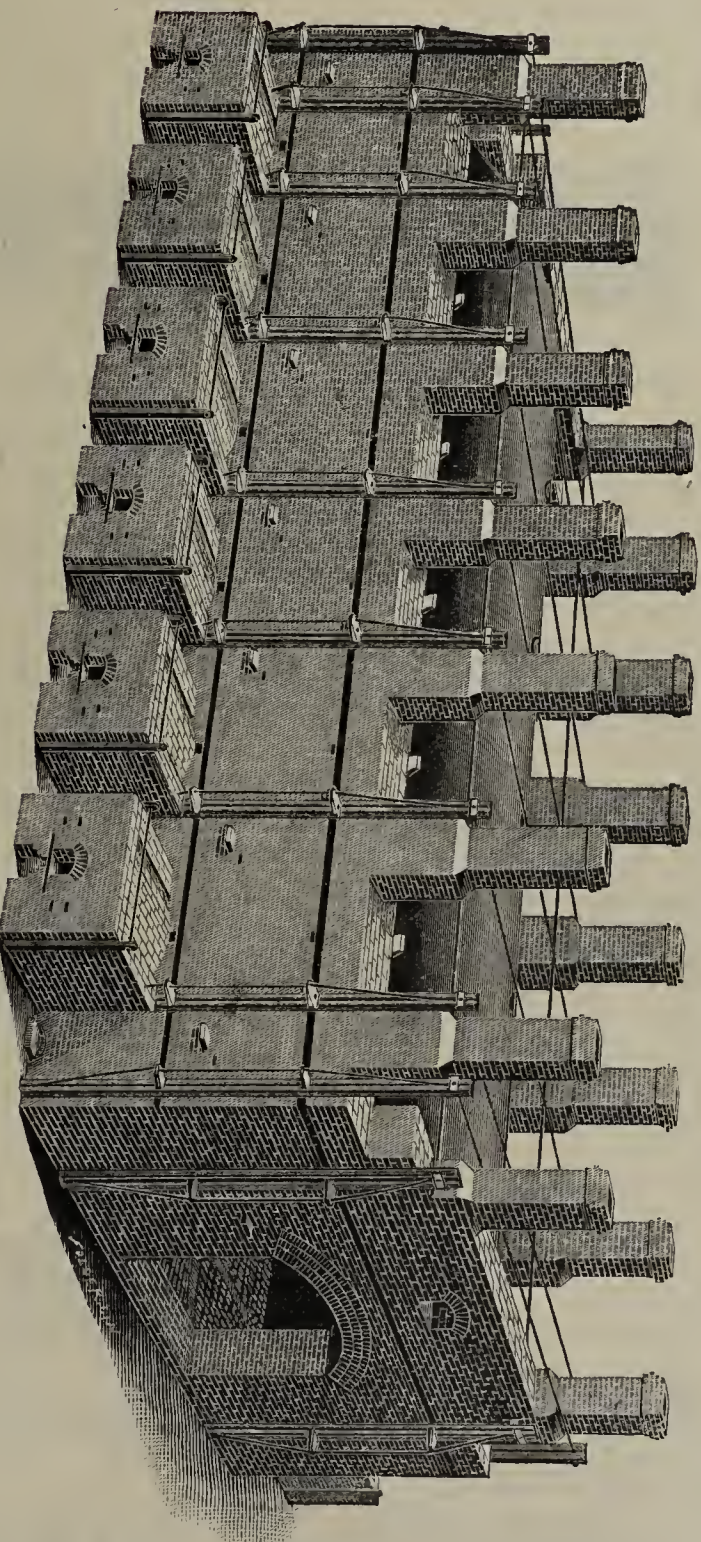
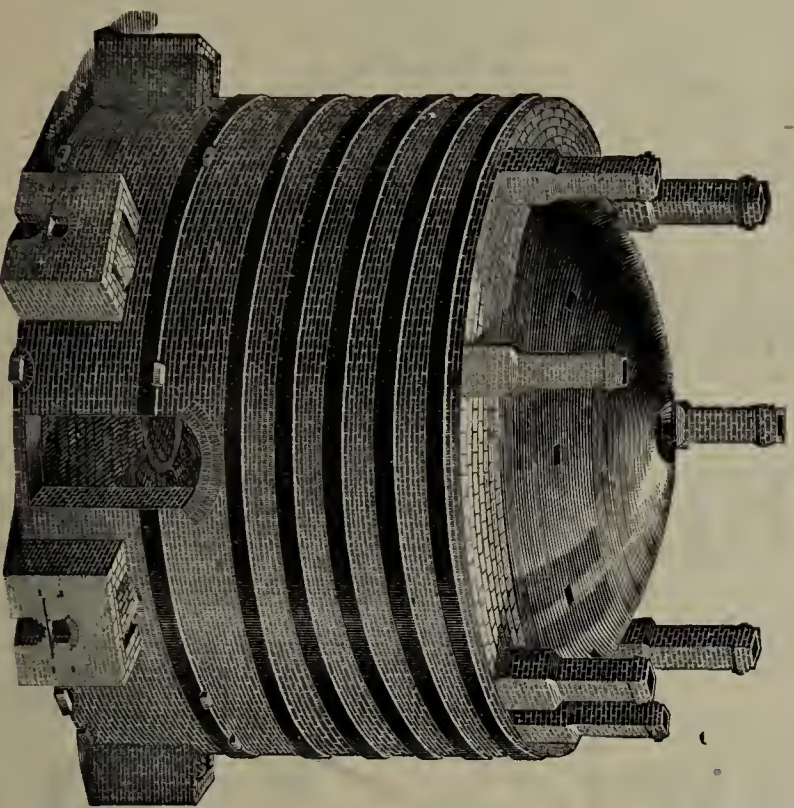
R. B. MORRISON & CO.,
P. O. Box 335. Rome, Georgia, U. S. A.

The Eudaly Improved Down-Draft Kiln.

Mr. W. A. EUDALY, Cincinnati, Ohio,
LINCOLN, NEB., January 18, 1894.

My Dear Sir:—I take great pleasure in recommending your Kiln, after investigating and experimenting with most every Kiln on the market. It is a very true saying that "a man profits by experience." This I think I have had in the past few years at a cost of thousands of dollars. I have burned in your Kilns over sixty millions of Paying Brick in the past six years. I cheerfully and truthfully say in my opinion it is the best Down-Draft Kiln on Earth, for the following reasons: Easy to operate the Kiln at all times being under the absolute control of the burner; easy to fill and empty; as economical of fuel and labor as any Down Draft Kiln; cheaper to construct than any Down Draft Kiln having same capacity, and same amount of material in its construction, as the Brick are all common stock sizes. This testimonial I give you for the benefit of some poor brickmaker who has not been through the mill, and if some day in the future I find that I have saved a fellow brickmaker from paying out thousands of dollars in experimenting, I will have been well repaid for expressing my views on this subject. Wishing you and your Eudaly Kiln continued success. I am as ever

Yours very truly,
J. A. BUCKSTAFF.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

W. A. EUDALY,
64 Johnston Buildings,
Cincinnati, Ohio.

W. H. KELSO, President.

PAUL BOEHNCKE, Treas. & Sec'y.

MAX A. TH. BOEHNCKE, Gen'l Mgr

P. O. Address:
Centinela,
Los Angeles County,
California.



THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:
Inglewood, California.
Tel. Address:
Inglewood, California.

Incorporated October 15th, 1892.

.....Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,
No. 474,807, May 17th, 1892.

BOEHNCKE'S

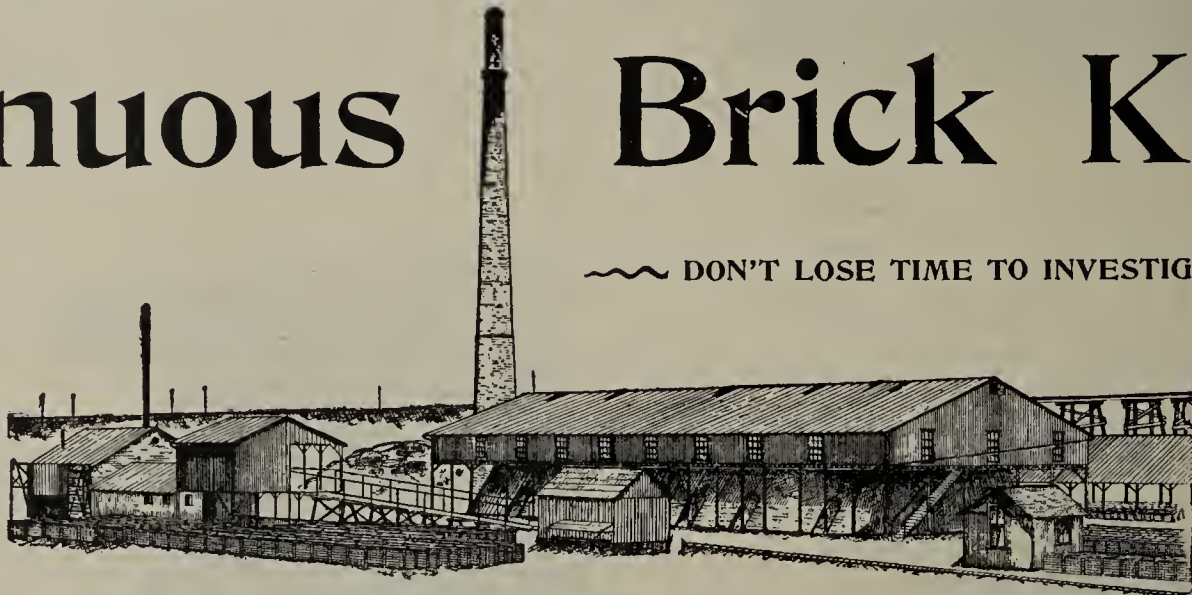
Several other U. S. Pat-
ents applied for.

UP AND DOWN DRAFT

Continuous Brick Kiln.

12 Kilns in Operation
...in the...
United States.

5 Kilns in course of
construction
East and West.



Ingleswood Works since five years in successful operation turns out 97 per cent. sewer brick.

DON'T LOSE TIME TO INVESTIGATE.

Beware
of
Infringe-
ments.

ADVANTAGES OF THE KILN.

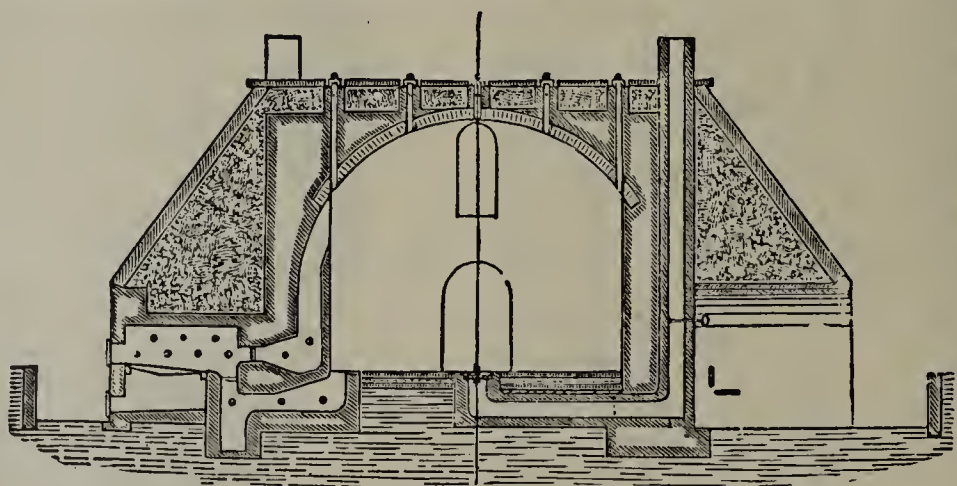
1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

Write for Circulars to

Centinela Brick Kiln & Drier Co.,

Box 35, Centinela, Cal.

COMMON SENSE KILN.



Patent No. 475,433.

FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

A NEW BRICK DRYER.

We have also Boehncke's Brick Drier, which is very economical

THE KILN OF THE PERIOD.

THE "PERFECT KILN."

Sercombe's Patent.

Designed on Economic and "Common Sense" Lines, for Burning Brick, &c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.
 Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

NOTE WHAT THE USERS SAY.

Sample of English Testimonials.

From Messrs. W. T. WRIGHT & CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

To MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT & CO.

Third kiln now ordered.

From Messrs. WILLIAM THOMAS & COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,
Fulton Fire Brick and Mining Co.

FROM CANADA.

Toronto, February 28th, 1893.

MESSRS. SERCOMBE, OSMAN & WARREN.

DEAR SIR:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular (Extract.) Yours truly,

N. B.—Messrs. Carroll & Co. are erecting one kiln, and contemplating erecting others.

References can be given to over Forty first-class firms already. For further particulars please apply to

SERCOMBE, OSMAN & WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER.

AGENTS FOR CANADA R. H. PYNE & CO., Yonge St., TORONTO.

THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

St. Louis, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,
BELLEVILLE, ILL.

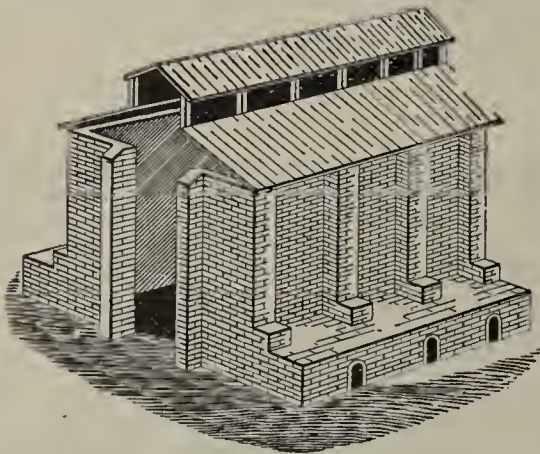
GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain
Yours very truly,
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

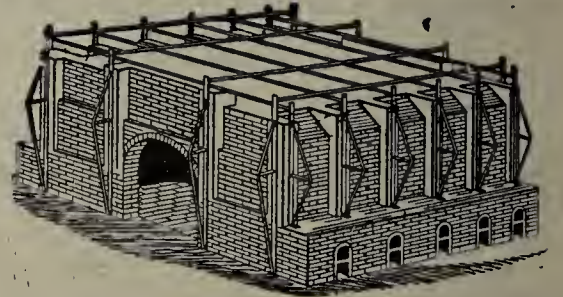
[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.



LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

VITRIFIED PAVING BRICK.

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }
NEVADA, MO., July 17, 1892. }

H. REPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

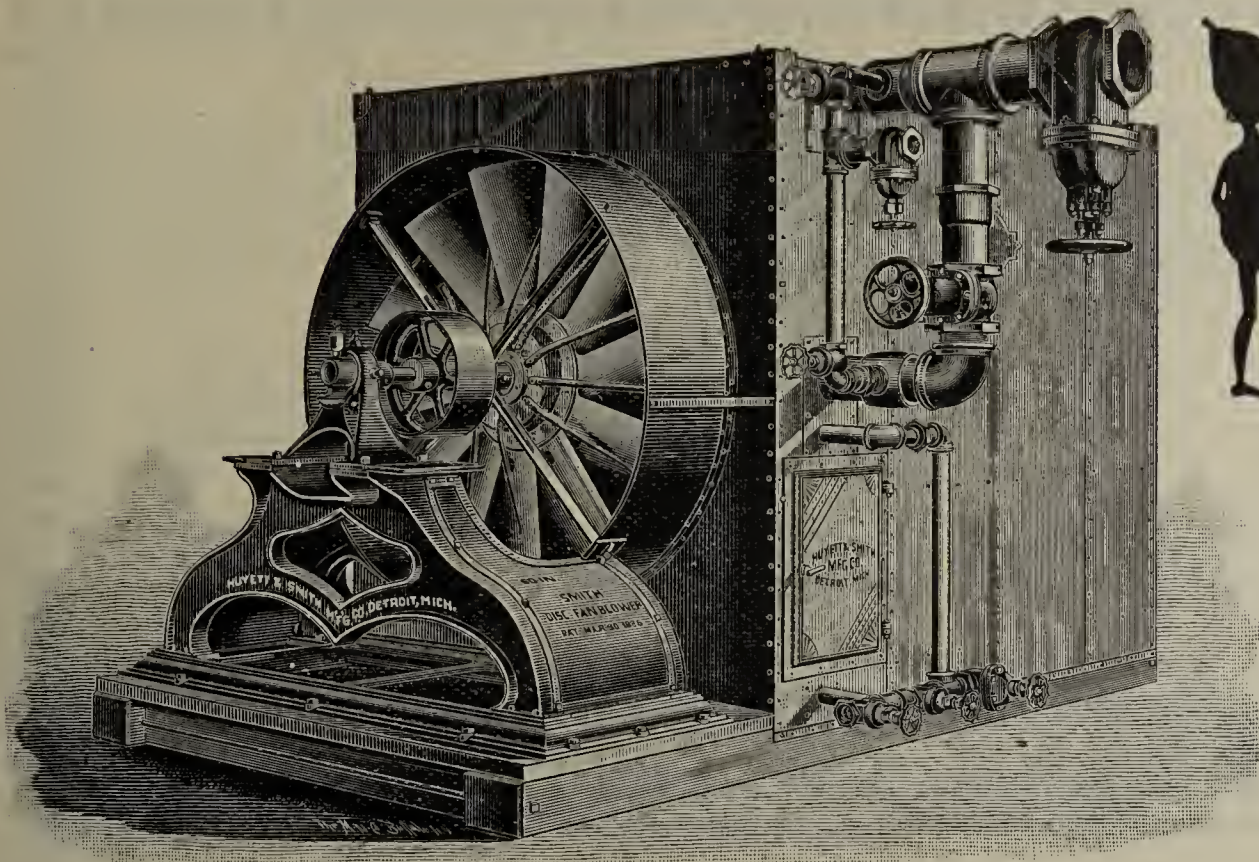
Yours very truly,
COTE BRILLIANT PRESSED BRICK CO.,
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

LOUIS H. REPELL,

1,913 Indiana Ave.

KANSAS CITY, MO.



FREE! FREE! FREE!

Catalogue, plans and prices
on the

Best Brick Dryer

—MADE—

The Smith Hot Blast Brick Dryer

Guaranteed to dry Brick quickly,
evenly and without checking, and
to be economical in operation.

Manufactured by

The Huyett & Smith Mfg. Co.

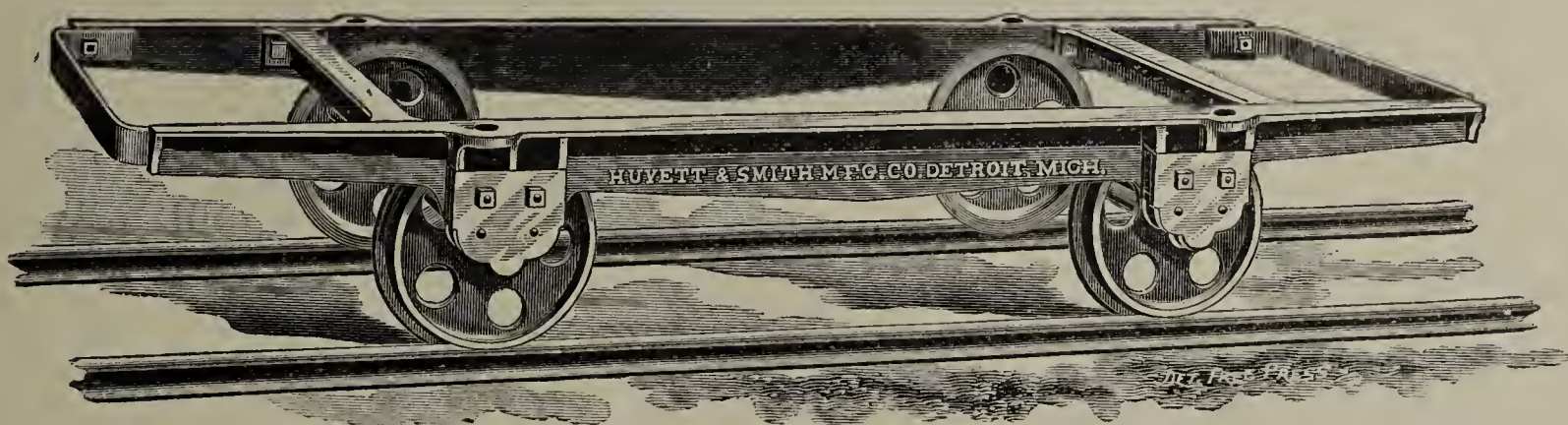
DETROIT, MICH.

SMITH HOT BLAST BRICK DRYER

Among the many references are the following in Eastern Pennsylvania :

| | | |
|------------------------------------|-----------------------------------|--|
| James E. Dingee, Philadelphia, Pa. | Penn Brick Co., Philadelphia, Pa. | John A. Schmitt, Wilkes-Barre, Pa. |
| Gunn Bros., " " | Wm. F. Albrecht, " " | Swoyer Bros., Allentown, Pa. |
| Flood Bros., " " | Philadelphia Brick Co. " " | Montello Clay & Brk. Co., Reading, Pa. |

More of these Dryers in operation in Philadelphia than all others put together.



A NEW BRICK CAR. WRITE FOR CIRCULAR.

For full information, catalogue, plans and references write

The Huyett & Smith M'f'g Co.,

Main Office and Works, 1,400 Russell St.,

DETROIT, MICH.

NEW YORK, 107 Liberty Street.

CHICAGO, 31 South Canal Street.

BOSTON, 48 Union Street.

.....BRANCHES.....

PHILADELPHIA, 118 Custom House Place.

LONDON, ENGLAND, 13 Little Trinity
Lane, E. C.

"Something New"

IN Brick Drying,

Is the title of a pamphlet we have just issued, and which we believe will prove profitable reading to any and all brick manufacturers who are interested in this subject. The prime object of this book is to place before the clayworking public more forcibly than has hitherto been done, the special features and merits of

THE STANDARD PATENT

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While this drier is NEW, in that it contains many modern "up-to-date" ideas, yet it is not new in the sense of being an experiment; it has long since passed that stage and is now well on the highway of success. Investigation will prove to the satisfaction of the most skeptical that for

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to different kinds of clays, it is without an equal. If you are in need of drying facilities, it will certainly pay you well to correspond with us and give us the opportunity to send you our large Illustrated Catalogue No. 15, and also "Something New."

SPECIAL ANNOUNCEMENT.

The Brick Drying Branch of our business has now assumed such important proportions that the necessity of having a more central distributing point than our Southern location afforded has been forced upon us.

To accomplish this end and moreover as a means of being brought in closer "touch" with the clayworking industries, we have removed our MAIN OFFICE and WAREROOMS from Louisville, Ky., to INDIANAPOLIS, IND., to which latter address all communications should be sent.

Equipped with increased manufacturing and unsurpassed shipping facilities, we shall hope to cater more fully, if possible, than heretofore to the wants of Brick Manufacturers, in our line.

A cordial invitation is extended to all to visit us in our new quarters at 184 South Meridian Street, directly opposite the Union Depot.

The Standard Dry Kiln Co.,

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INDIANAPOLIS, IND.

LOUISVILLE, KY.

THE CLAY-WORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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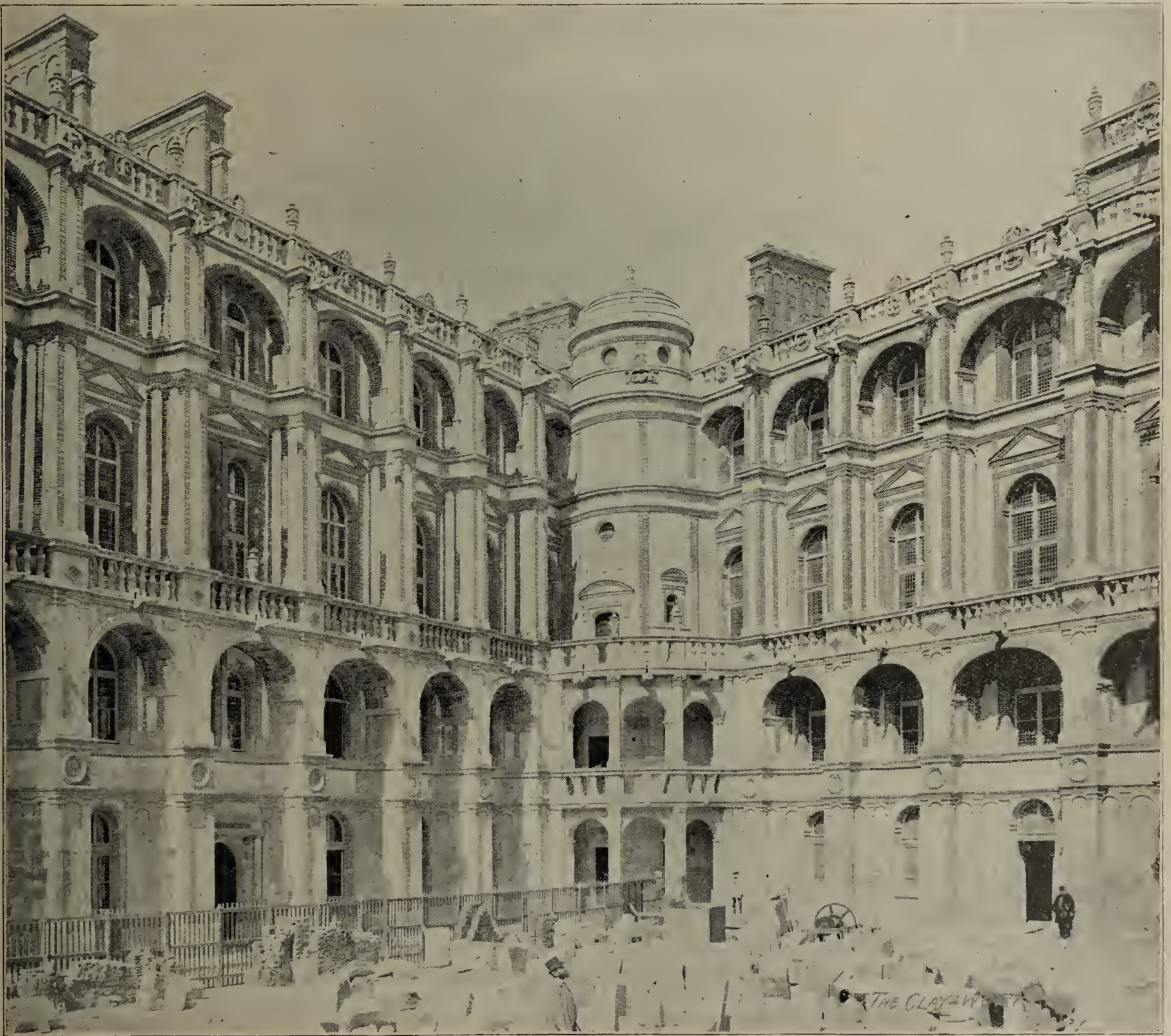
Written for the CLAY-WORKER.

THE CHATEAU OF SAINT GERMAIN.

THE Chateau of Saint Germain is one of the few chateaus of its kind which contain any large amount of brick in their composition.

A prominent exception is the Louis XII part of the chateau at Blois. If one were to follow the history of this chateau, it would carry him into the eleventh century. A large part of the present structure is built on the foundation of the earlier building. A peculiar fact

in connection with some of the walls is, that they are faced on either side with brick and filled on the inside with stone. This is done by building two separate walls and filling in between with a concrete made of broken stone and mortar, which makes a most admirable structure.



CHATEAU OF ST. GERMAIN, NEAR PARIS.

The exterior of this structure is not wholly satisfactory in appearance. It has none of the vivacity and brilliancy of the architecture of its time. On the interior, however, the condition is quite different, and the view which we give is of one of the courts. It is very robust in style, and shows a remarkably original method of treatment. The first two stories are joined at the top by a large barrel vault. Immense piers project from the base of the main wall and are joined in the manner stated. Over the top of the arches is a balustrade which extends from pier to pier. The immense pilasters continue to the top of the structure. At the top again these piers are joined by other great arches, though these arches do not come out on a line with the face of the pier as do the ones below.

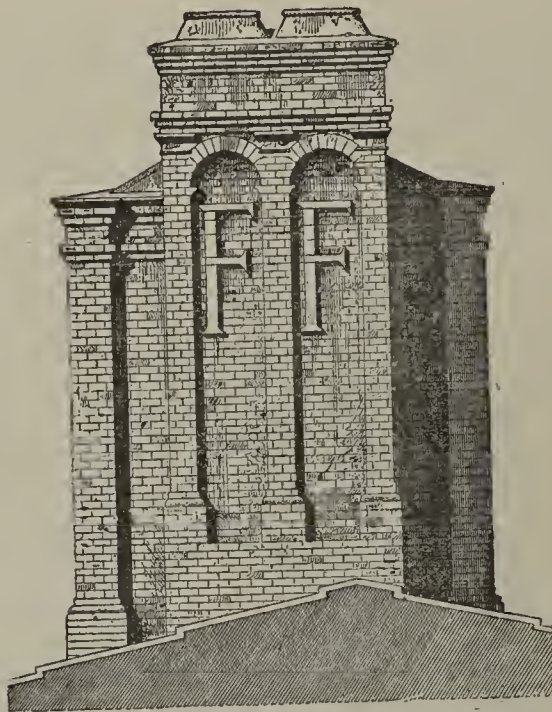
The windows of the third and fourth floor are particularly interesting, and especially so to the worker in brick. The general motive of the design of these windows is that of the old classic forms. There are the pilasters on either side with the classic pediment above, and all carried out with ordinary brick. This makes it very interesting when we consider the efforts which are being made to do the same thing to-day with this material.

The windows of the fourth story are simpler than those below, but yet none the less interesting. The large projecting pilasters are handled in a most ingenious manner. If they were to come out from the wall in such heavy masses as they do here, without such skillful treatment, there would be an appearance of heaviness and grossness, which would be unfortunate in any great structure. However, it is to be noted that these heavy pilasters are adroitly paneled with little sub-pilasters, which in turn are connected with diminutive arches. Thus we have the great pilasters connected with one another by larger arches, and then the smaller arches on the pilasters themselves, connecting the component members thereof. It is to be noted that the paneling of these pilasters does not extend to the face alone, but extends to the sides, where there is a double row of panels, and into the soffit of the arches as well. The splendid urns on the balustrade of this structure are worthy of careful attention by those who are interested in decorative terra cotta.

It is well to bear in mind that the part of the structure which we have

illustrated was constructed under Francis I, and therefore belongs to the XVI century. In that connection we call attention to the fact that the lower arch in each bay is molded, and that the panels on the under side of the arch are molded in a similar manner. When we stop to consider, we must naturally understand that the molding of the panels on the under side of an arch is an exceedingly difficult piece of construction, and would be a fine test of the skill of a bricklayer of any time.

At the top of each pilaster is a gargoyle which discharges the water from the flat roof of this building. These were used in lieu of down-spouts. In this same connection, however, it is interesting to know that most of the older buildings, which were originally only provided with gargoyles for the discharge of water, have had added to them,



during recent years, metallic down-spouts.

The interior fire-places in this building are immense structures, and are constructed entirely in brick. Unless we except certain details which are very elaborately decorated, this is the only building of its time which the writer has in mind that contains brick fire-places. The ones here referred to are conceived in the luxurious spirit which was inseparable from the time of Francis I.

We give an illustration of one of the great chimneys in which this chateau abounds. It illustrates, as well as any thing can, the very ingenious method of adding a lightness and airiness to the mass of details of this great chateau.

LOUIS H. GIBSON.

FIRE INSURANCE.

The question of insurance is becoming a serious one to brickmakers. Some thirty-five years ago it was a serious question to the cotton and woolen mills of New England. They formed mutual insurance companies, studied the cause of loss, and during recent years insurance has cost them less than one-fourth of one per cent. In some instances it has gone as low as one-tenth of one per cent. Considering that in the earlier times their insurance cost them three, four and five per cent., it is easily understood that their methods are well worthy of study.

The insurance companies had the same way of looking at a cotton mill at that time that they have of looking at a brickmaker's plant at this time. They merely said: "Your plant is extra hazardous, your rate is so and so, and you must pay it." One of the prominent mill owners of that early time fitted up his establishment in every way that he could think of, with the hope of having his insurance reduced. The insurance companies said: "We have no experience with the particular kind of risk that you present. We cannot reduce your premium." Certainly there was no inducement in this to spend money in the improvement of the plant. It is so with the brickmakers to-day. We may spend money reducing the chances of loss by fire, and yet receive no special consideration from the insurance companies. Hence, there is little inducement to provide against fire, and therefore no improvement in the physical risk, and so matters are going on from bad to worse.

Before the rate of insurance is made less, it will be necessary for the brickmakers to do what other manufacturers have done during recent years. They will have to form mutual organizations, employ a competent inspector to visit the various plants and inform the managers of the mutual organization as to the character of the risk. This being done, a rate can be made or changes in the plant suggested with a view of enabling the company to make a fair rate. The study of the various brick plants will soon develop the chief cause of the loss, and the risks will gradually improve, and in a short time the losses will be appreciably diminished.

It has been the experience of other manufacturers that as soon as the mutual companies spring into existence and the character of the risk is improved, that a much lower rate of insurance was given by the stock companies themselves.

A NOTED PHILADELPHIAN.

THE gentleman whose portrait we present to our readers, bears a name which has been long and honorably known to the brick-making fraternity. William H. Melcher, the President and General Manager of the Peerless Brick Company, of Philadelphia, is not only a practical, but a scientific brickmaker. From a child he has been familiar with the brickyard, and during the last twenty years has been actively engaged in every department of the brick business, and been identified with every step which has marked its progress during that period. The Peerless Brick Co., of Philadelphia, originated in a yard which he and his father owned in the year 1876. Long before that time Mr. Melcher realized that an immense development might be made in the business of making, not only the highly finished plain and pressed bricks, for which the brickmakers in Philadelphia are famed, out of the red clay of the city, but equally well finished bricks in other colors, such as brown, buff, white and other tints. In order that his ideas might be carried out, he spent a great deal of time and money in the search for suitable clays, in experiments and in devising and perfecting machines which would manipulate them so as to make them thoroughly plastic and homogeneous and fit when burned, to meet the requirements of a "Peerless" brick. The shape and finish and color of the bricks not only engaged his attention, but he took hold of and developed the idea of making bricks with molded and ornamented faces, so that architects might have furnished to them ready-made shapes which would conform to the rules and orders of classic architecture. Patterns and molds of an almost endless variety thus became necessary. All of these have been made under his direction and supervision. It was in this way that the plant and products of the Peerless Brick Company originated, and its history is the history of Mr. Melcher's efforts to contribute to the building world the largest share of progressive effort in brick as a building material, which the last twenty years have witnessed.

He is also well-known as the inventor

of a kiln which bears his name. Some years since, when the National Brick Manufacturers' Association held its annual meeting in Philadelphia, the hospitality of the Peerless yard was extended to the delegates. Those who availed themselves of the invitation were, it will be remembered, surprised at the appearance of the burned bricks in the kiln, because of the excellence with which they were burned, their uniformity of color, and the absence of waste. These kilns still do their work, and enable the Company with which Mr. Melcher has been so long identified to produce the brick, which not only



WILLIAM H. MELCHER, President and General Manager
Peerless Brick Company, Philadelphia.

justify the name of the Company to have been well selected, but certify to their excellence.

Written for the CLAY-WORKER.

CLAYWORKING IN OHIO.

Second Paper.

BY EDWARD ORTON, JR., E. M.

HAVING briefly outlined in the first paper, the commonly accepted theories of the origin of clays and indicated how these theories are substantiated by their composition, we will now consider

THE PROPERTIES OF CLAYS.

Every one knows that clays are indis-

pensible to mankind, and that perhaps there is no product of the mineral kingdom which humanity could so ill afford to spare. Even the savage in the forest can kill his game with wooden weapons, if he has no metal ones, but he cannot replace his primitive earthen pot with anything which answers the same purpose.

The properties of clays which have so made them necessary to man can be classified as three-fold:—

1st. They are plastic and cohesive when mixed with water, and can be made to take any shape which suits our convenience.

2nd. These shapes, fashioned when the clay is wet, are made permanent and nearly indistructible by simply burning the clay to a proper and easily attained heat.

3rd. They unite with these two wonderful qualities, the ability to withstand high and long continued heat, without melting or losing their shapes.

These qualities, plasticity, permanence and refractoriness, while not directly chemical phenomena, are nevertheless best studied by the light which chemistry throws on the subject.

PLASTICITY.

Plasticity is a quality which is shared by very few other minerals and very few other artificial compounds capable of enduring heat. It has never been satisfactorily explained by any one as yet. All clays are not equally plastic in the condition in which we find them, and cannot be made equally plastic by subjecting them to the same grinding with water. There are two reasons for this:

1st. Clays have been already shown to be mixtures of very various composition, and as the true clay base is the source of the most of the plasticity of the clay, it is entirely natural that great variations in plasticity from this cause should exist, and

2nd. It has also been shown that plasticity is a quality which does not characterize all pure kaolins alike, and that differences in clays may be attributable to this fact.

The plasticity of pure kaolins has been studied by the New Jersey Geological Survey to some extent. Their researches, mostly made by the microscope, tend to show that kaolin naturally has a crystalline composition, and that when

these crystals are perfect, the plasticity is very imperfect—but that by wetting and working the kaolin these crystals become broken up, and that the clays become plastic in proportion, as the crystalline structure is destroyed. In the ordinary clays which we have to deal with, it is probable that all semblance of crystalline structure has been long ago destroyed, and that their relative plasticity depends on composition.

These theories all seem reasonable and to accord with all we know practically of clays, but we are confronted by one fact which stands in the way of their unreserved acceptance.

The flint fire clays found in the coal measures of Ohio and adjoining States, are frequently absolutely non-plastic and cannot be made so by any ordinary means. In composition they are nearly pure kaolins, and from their position and surroundings, their origin evidently must have been very similar to the impure plastic clays on all sides of them. Under these circumstances it is difficult to conceive of a crystalline structure which interferes with plasticity. Their purity is as remarkable as their lack of plasticity, as they must have had a sedimentary origin like the rest of the surrounding strata.

While it seems probable that the physical structure of clays is important in explaining variations of plasticity, the phenomenon is clearly proved to have a direct connection with a chemical basis, for as is well known to all, when clays are burnt at a temperature high enough to expel their water of constitution, the plasticity is gone, never to return. This goes to prove that the particles of a clay, while they retain their water of combination, are of a soft and greasy nature, which permit an easy motion one in the other, especially when this motion is facilitated by the presence of extra water. But that the expulsion of all the water both free and combined, leaves the particles of the clay as hard, sharp and angular as sand, and no more likely to permit motion one on the other, than the grains of sand in a sand-stone or crystals of lime in a lime-stone.

PERMANENCE.

Thus the permanence of shape and hardness which comes in burning are seen to be explained by the same theory which establishes the influence of the water of hydration in plasticity.

The extent of the permanence ob-

tained is dependent on two factors: 1st, the composition of the clay, and 2nd, the temperature to which it is subjected.

If the heat has been low, merely enough to draw out the water of constitution, the clay ware will be soft and easily destroyed by friction and easily affected by the action of weather and frost. But as the heat increases, the particles of the clay knit and shrink together constantly, growing harder and denser with every raise in temperature. A point is finally obtained in all clays where the particles cease to come closer together. Generally this point is obtained just short of melting, while the whole structure of the clay is obliterated and a complete union of all the minerals into a new and compound silicate has taken place.

If the heat be decreased from this point, the clay will be found to be at its hardest, toughest and strongest state, and no more imperishable material exists on the earth's crust than clays thus burnt. Nothing but animate force is sufficient to destroy its structure.

If the heat be still increased, the permanence of the given shape is impaired, as the clay will either melt or swell up like a sponge.

The effect of composition on permanence is not so marked, as the effect of the heat, for nearly any clay can be made excessively hard and strong by proper treatment. But the effect of composition in the temperature required to get the best results is everything.

Some mixtures of clay with silica and fluxes, will melt easier than others, and while all clays are in a measure refractory, or capable of standing heat, their difference in fusibility causes them to be graded with reference to their qualities in this particular as being refractory or not.

REFRACTORINESS.

This quality of comparative infusibility is one whose importance to civilized man can scarcely be over estimated. All metallurgical processes, the manufacture of iron and glass and all the other comforts dependent on these articles would hardly be possible without clays of high fusing point.

A study of this quality of refractoriness or difficult fusion is strictly a chemical one; it is no other than the study of the melting point of silicates. Silica is almost the only element which has the power to unite in true chemical combination with other elements in *indefinite and varying proportions*.

It only does so under the influence of heat, for silicates formed with water as a constituent part, always are found to exist in compounds of definite composition. But under sufficient heat, any quantity of silica will unite with any quantity of any base.

Kaolin is itself a mineral of great heat resisting power; it can only be melted by the use of special chemical furnaces, ordinary heats employed in commercial work will not melt it. Silica, its chief and bulkiest impurity, is likewise practically infusible. But, as has just been explained, mixtures of kaolin and silica, when heated highly enough, will unite to form a new compound in which all the silica unites with all the alumina.

The presence of other minerals than clay and quartz facilitates greatly the melting of the mixture, and clays may be judged as to their heat resisting power in proportion to their purity and freedom from other minerals.

The infinite variations in the compounds produced thus in the fusion of clays has led to an investigation of some means to classify them, and to judge superficially of their heat resisting power. This is found to be best obtained by their oxygen ratio.

By the oxygen ratio is meant the ratio existing between the oxygen of the silica and any other acid elements on one side, against the oxygen existing in the alumina, iron, lime, magnesia, alkalis and other bases on the other. This ratio gives some idea of the constitution of the compound which could not be obtained from a scrutiny of the analysis.

By calculation of the ratio, one can see at a glance whether the oxygen in the base is equal to that in the silica, or one-half as much, or one-third as much, etc., and the compound is thus easily classified as a uni-silicate, or bi-silicate or tri-silicate, or as being nearest to one or the other of these standard compounds.

But while one learns much from a calculation of the oxygen ratio of a clay, it alone would be inconclusive; in other words, two clays, both practically bi-silicates, might be of very different heat resisting power. In order to gain a closer measure of this quality, it is necessary to contrast by a ratio, the amounts of oxygen existing in the alumina (which is supposed to represent the real refractory kaolin base,) and that existing in the fluxes (which tend to lower the melting point). By the use of this ratio in the illustration just

cited, one bi-silicate clay might be found to have the following ratio:

Oxygen in Silica 2; Oxygen in Base 1;
Oxygen in Alumina 10; Oxygen in Fluxes 1;

While the second clay would show:

Oxygen in Silica 2; Oxygen in Base 1;
Oxygen in Alumina 4; Oxygen in Fluxes 1.

In such a case, no one would fail to see which clay would melt first under the influence of heat.

While the use of oxygen ratios in examining clays in reference to their melting points is unquestionably the most serviceable and comprehensive plan that is now in use, still the clay-worker should learn to weigh in his mind the probable effects of the chemical elements and minerals which he sees before him in a clay analysis.

As has been stated, the refractory properties of both kaolin and its chief associated mineral, silica, are by themselves very high. In mixture, the results are also high, though lower than either constituent alone. But with the admixture of other minerals, of the iron group, or the earths or alkalies, the melting point falls lower at once.

THE FLUXING INGREDIENTS.

The relative activity of these fluxes, as they are called, form the subject of much inquiry and experiment. The alkalies, potash and soda are undoubtedly the most powerful fluxes commonly found in clays. Their affinity for silica, under heat, is great, and they tend to melt at low temperatures into clear, vitreous compounds, of which common glass is the type.

The actual quantity of either potash or soda which a fire clay can contain without too early fusion is hard to say. If no other minerals than kaolin and quartz and feldspar were present, it is likely that the effect of 4 or 5 per cent. of alkali might be endured. But as the other fluxing minerals are also introduced the quantity of alkali permissible becomes less and less. In ordinary fire clays, two per cent. is a high figure, and many of the better grades do not contain over one-half or one-quarter of the amount.

Lime and Magnesia, the alkaline earths so-called, are two fluxes of well-nigh universal occurrence in clays. Their condition in the clay varies much more than that of the alkalies and their

effect varies in proportion. When found as lime-stone gravel, their effects on the refractoriness is at a minimum, for the grains are not intimately mixed with clay and do not unite with it under heat.

When found thoroughly mixed and impregnated through the clay, and obviously deposited simultaneously with it in its present situation, their ill effects on refractoriness are naturally at their worst.

Typical examples of such calcareous clays are seen in the deposits of Michigan, Illinois, Wisconsin and Minnesota, from which the famous cream-colored brick of those States are produced.



C. H. WOOD, SEC'Y THOS. MOULDING CO., CHICAGO, ILL.

The lime here not only hides the coloring effect of a large quantity of iron which these clays usually contain, but causes the clay to become hard and semi-vitrified at the low temperatures employed in burning common brick.

Lime is also present as silicate in the form of feldspatic minerals. Its amount from this source is always small, never exceeding one or two per cent., and its effect in this quantity is not marked. Sulphate of lime is a very common form in clays. Its effect is very adverse, as the sulphuric acid being expelled by high heat, causes the clay to swell or sponge up, and in this connection, it is much more effected by temperature than when solid.

The fluxing effects which iron is capable of exercising in clays is less clearly understood than either of the preceding groups of elements.

The protoxide of iron, either free or in any mineral containing it, is free to unite directly with the silica of the clay by heat, and it forms a very easily melted silicate as a result. The sesqui-oxide in the other hand, does not combine directly with silica to form a silicate, but must be first reduced to the protoxide condition. On this account sesqui-oxide of iron is far less active as a flux than the lower oxide.

These oxides of iron are known to exist both free and combined in minerals, either in little lumps or permeating throughout the clay in indistinguishably fine condition. A clay reasonably free from other fluxes may contain quite a large quantity of sesqui-oxide of iron without serious detriment—perhaps three or four per cent. Protoxide of iron would do much more harm, and as the change from one degree of oxidation to another is accomplished by the gases generated by burning the clay, it is not safe to assume that a high grade fire clay can safely contain over two or two-fifths per cent. of iron.

In addition to these comparatively well known conditions in which iron is found in clays and in which its effects are fairly well understood, it is believed by many to exist in another still more common and important state; as a hydrated sesqui-oxide of iron, chemically united with the alumina and silica as an *iron* clay. Chemically, such a compound would be called a *double* salt, and instances of such bodies are very frequent and important.

There are many facts concerning the influence of iron in clay which cannot be understood, if the iron is supposed always to exist uncombined, no matter how fine its state of division may be.

If iron does not exist in clays as a chemically combined part of the clay base, it can be expected to operate in a different way from either of the free oxides.

The clay being *per se* partly composed of iron, would naturally have a different melting point than a pure alumina clay. But the iron being already combined, cannot unite to form new compounds without a disruption of the old. Conse-

quently we should expect, on theoretical grounds, that an iron clay would *vitrify* or *begin* fusion at comparatively low temperatures, but that excess of heat, instead of melting it to a glassy slag, would cause a complete disorganization of the clay.

Such is practically the case with a large class of clays, which easily vitrify but instead of melting, swell up as a sponge or cinder.

Whatever the truth may be in regard to the part that iron plays in the refractoriness of clays, it is certain that its importance is great.

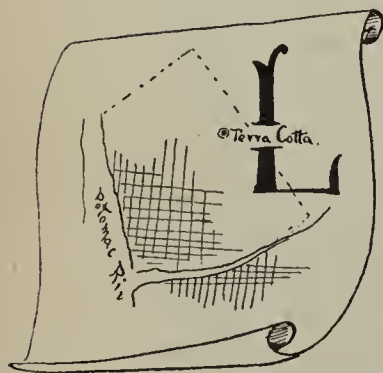
The effect of other occasional chemical ingredients of clays is much less important than those that have been described.

One fact, however, must always be borne in mind, viz., that a mixture of fluxes is always more potent than any one alone, and in estimating the effect of any one ingredient, we must always bear in mind the effect of its associates.

(To be Continued.)

Written for the CLAY-WORKER.

CLAY WORKS NEAR THE NATIONAL CAPITAL.



LOCATED in a very interesting neighborhood is the little way-station of Terra Cotta. Within a very short walk are the beautiful grounds of the famous Soldier's Home of Washington, D. C., and

overlooking the spot is the high hill surmounted by old Fort Totten. In the days of the war, the city of Washington was surrounded by a chain of elevated forts composed in the main of very fine clays. While these cannot, in any sense of the word, be designated as clay manufactures, they did, to a certain extent, lay bare the wealth of the soil for brick-makers and the kindred industries.

Terra Cotta however, as its name would indicate, is a spot devoted to terra cotta manufacture. The class of work is, of a confined nature. The principal product is sewer and drain tiling, with a growing output of flue lining and vitrified brick. The latter is somewhat in the experimental stage, but so far nothing has occurred to make success doubtful.

In the manufacture of tilings a Barbour machine is used, and also a Frey-Sheckler Acme machine. At this

time there is a great spread of the products of these machines in and about Terra Cotta, it being, in fact, a perfect sea of tilings. The photograph will give a fair idea of the great piles of the materials. All sizes are to be found, and Terra Cotta is appropriate to its name.

Principally engaged in this manufacture is the Somerville firm—one that has done business in the Capital City for nearly thirty years. The clayworking plant located in Terra Cotta was the outcome of circumstances, rather than a direct venture. Before 1888, the firm used great quantities of drainage and sewer tilings, but towards the latter period their source of supply became so

are slow and difficult. However, they seem pretty certain in the long run, as none of their trade is running far behind. Of course, in terra cotta, this portion of the year is the quiet time, and the recess, but the shipping clerk is as busy as usual. When asked about these things, Mr. Somerville naively remarked that the tariff did not affect them, as their products were not scheduled. With this as a beginning, he was soon interested in a chat over the tariff, and expounded a few ideas that may interest others. In brief, he was rather dubious as to the proper connection of modern politics with the revenue schedules. These latter are matters of good business policy, and ought not to



CLAY WORKS NEAR THE NATIONAL CAPITAL—A SEA OF TILE.

uncertain that it was decided to erect their own plant. This manufacture has been attended with peculiar success, and is now in the personal charge of William H. H. Somerville, one of the firm. His administration is also successful, and at this time the Somerville Tilings are sent to many parts of the country, especially into West Virginia and Pennsylvania and the neighboring States. One of the best customers for the tiles is the United States Government, they shipping it to various points. A great deal of the product is also used in Washington.

In talking about the financial situation, Mr. J. Somerville was free to state that their firm felt severely the strain of hard times. Collections upon all hands

be subject to violent and partisan change. "Why not," he continued, "arrange a commission somewhat similar to the Civil Service Commission or the Interstate Commerce Commission, with the power of altering the schedules of the tariff at all times and at their discretion? If this were possible, such changes would, from the very nature of things, be imperceptible in the industrial world, and violent cataclysms that follow party changes would be unknown. The Commission should be beyond partisan control, and in fact after they had been established for a period of time, tariff, and the schedules, would cease to be matters of political interest."

"And by the way," said Mr. Somerville

"You will find a great deal more of the same thing in a recent issue of the *Iron Age*, and in far better shape than I can express it in the course of an every-day conversation."

One more word about the financial situation records the fact that the Somerville's look for a reaction in the near future, and that by the middle of next summer, the plant at Terra Cotta will be working double time again.

Written for the CLAY-WORKER.

CONTINUOUS KILNS.

Second Paper.

BY PETER YOUNG.

IN my previous paper on this subject, I called attention to the fact that the continuous kiln must be of such construction that the material to be burned can be treated in essentially the same manner as it would if properly burned in the old style or down-draft kiln. By this I mean to say, that if a certain clay requires, say, three days of watersmoking in the old kiln, six days to raise the temperature to finishing heat after the watersmoke is off and ten days to withdraw the heat from the finished material, nearly the same length of time should be allotted to these processes in the continuous kiln burning similar clay to the same degree of hardness. This leads us to consider the

DIMENSIONS OF THE TUNNEL AND NUMBER OF COMPARTMENTS OR CHAMBERS.

Although it is not necessary, it is desirable, for sake of regularity in operation and setting, to have each section of the kiln correspond to a day's output and should therefore equal the distance d the fire advances in twenty-four hours $+\frac{d}{6}$, as it is not desirable to take out and set on Sundays, the progress of the fire on that day must be made up in setting and taking out on week days.

In order to avoid confusion in the description of the kiln we will refer to this distance d or "days run" as a section, whether or not it constitutes a distinct section or compartment of the tunnel. To determine this distance we must base our calculations principally on the results obtained in existing examples of continuous kilns, but it will also be modified somewhat by the length of time required to burn the particular clay in ordinary kilns, or, in other words, by the mode of manufac-

turing, density and hardness of the finished material.

At first sight it may appear as though it was simply a question of building a tunnel of any desired length and provide the same with a stack of sufficient power to carry the draft through the necessary number of sections, as above stated, and in that manner obtain any desired capacity, but I will endeavor to show why the rate of advance is limited. With the increase of the distance d , we must increase the velocity of circulation and the supply of feed-air passing from the cooling brick into the active fire. If we now bear in mind that this is the very point where we apply the finishing heat to the material and that, in the continuous tunnel kiln, all air necessary for combustion of the fuel in the succeeding compartments must necessarily first pass through the finishing section, we readily see that by increasing the progress of the fire and proportionate increase of feed-air supply we render the finishing heat of a highly oxidizing nature, which invariably destroys the color of the brick. Furthermore, a strong draft through this portion prevents a uniform diffusion of the heat in this, the most important section of the kiln, inasmuch as it necessitates an excessive firing, which causes a high local heat immediately around the feed holes, leaving portions between the feed-holes underburned.

Another objection to a rapid circulation through this portion is, that it carries off the heat from the finished material too rapidly, preventing a proper annealing of the same.

It is also obvious, that with a strong draft the feed-air will enter the burning section in greater volume through the space formed under the arch by the settling of the finished material, as well as along the lower portion of the kiln where the atmospheric pressure is greatest, thus rendering it impossible to maintain an even degree of heat.

By this, I have endeavored to show why it is not consistent with the best results to advance the heat too rapidly, and, while I cannot offer any formulæ for theoretically determining the distance the fire should advance, I will give it as my experience, after repeated practical observations, that the same should not exceed 15 feet for 24 hours in the continuous tunnel kiln, where the feed-air passes directly into the finishing section from the hot finished material.

This, of course, will also be modified

to a certain extent by the quality of brick it is desired to burn, so that for burning dry press brick, or brick of great density, requiring a very gradual increase and decrease of the temperature and consequent prolonged firing, the rate of advance should be still less; otherwise such great distance of the tunnel would be under active fire that the fuel, introduced in the forward sections, would not receive the necessary oxygen for its combustion, and, therefore, would simply volatilize without the production of heat.

Having determined upon the rate of advance, we will now proceed to ascertain the number of sections required to burn a certain class of brick.

I have stated before, that nearly the same time should be allotted to each part of the operation in the continuous kiln, as similar material requires in the old style kiln, but I will take an exception in the time required for raising the temperature after the watersmoke is off, which can be done somewhat faster in the continuous kiln, without injury to the product, owing to the uniform and uninterrupted increase of the heat and progress of the fire, which can not be attained by ordinary furnace firing, where the heat is raised and lowered periodically.

In the continuous kiln the cooling bricks perform the function of a generator and the immense amount of heat stored there, keeps the temperature of the feed-air at a certain degree at all times, and when firing is done at short intervals there is practically no variation in the heat between such firings.

On the strength of this, we can safely make a reduction of about one-quarter of the time for raising the temperature to finishing heat.

If a certain clay, when burned in the old style kiln, requires n days for watersmoking, m days for burning and o days for annealing in order to produce the best results, we can determine on the number of sections N , necessary in a continuous kiln for burning similar clay as: $N = n + \frac{3m}{4} + o + 2$ empty sections for taking out and setting.

The height and width of the compartments or tunnel can be varied to suit the required capacity but the length of the section or "days run" is limited below 15 feet, and should be contained a certain number of times in the total length of the kiln, according to above formulæ. It will be understood, of course, that it is no injury to have

the tunnel or kiln longer, but enough is as good as a feast.

The above rule should be strictly adhered to in making calculations for kiln capacity, as well as in the subsequent operation of the kiln, because it is a general fault with builders of such kilns to promise a far greater capacity than the same is capable of producing, and, what seems more ridiculous yet, they do not appear to make any distinction between the requirements necessary for burning soft mud, dry press or paving brick; their kiln is a cure-all, resembling the patent medicine that will cure anything from a toothache to a cancer.

After having determined on the several dimensions of the kiln we must take great care in locating the fire-holes properly, so that the setting can be done systematically, without crowding the brick together in certain places and spreading them apart in other places. The brick should be set uniformly from top to bottom and from side to side, in order to facilitate a uniform horizontal draft.

If, from some cause or other, such as irregularity in setting, this uniform draft should be interrupted in a certain portion of the kiln it is certain to result disastrously to the product, inasmuch as such obstruction deflects the passage of the feed air to either side during the final or finishing firing, so that the fuel introduced on the leeward side, so to speak, undergoes imperfect combustion, which, as is well known, is attended with greater calorific intensity than perfect combustion, which latter takes place on either side of the obstruction under increased air supply.

From this it will be seen how easy it is to produce irregular burns in a continuous kiln when the fundamental principles are not fully understood, and when the kiln does not embody specific means for regulating the intensity of the final or finishing heat.

[To be continued.]

AND THE VERDICT WAS —

He failed for sixty thousand,
Took a last look at the wreck,
And when next they found him,
Was suspended by the neck.

His creditors said he drank ;
His wife said he was robbed ;
While his moneyed country partner
Simply sat around and sobbed.

But the wily coroner
(His brain was extra sized)
Said the man was plainly crazy,
For he'd never advertised.

—Francis Sullivan.

Written for the CLAY-WORKER.

DOWN IN MEXICO.

Seventh Paper.

OLD Mexico is a country full of interest, and anyone who has the time, the inclination and a little money to spare, can put in a few months in a most enjoyable manner. Its history dates back to about the 7th century, having two distinct and widely different periods, the first of which was that of the Toltecs, which appears to have ended about the 12th century; the latter, the Aztecs, which began about the 12th cen-

shows them to have been of a higher type and different origin from the regular North American Indian. From every indication, they were of mild and peaceful instincts, industrious, active and enterprising.

The Aztecs up to the time of the conquest possessed a magnificent empire, reaching from the Atlantic to the Pacific. The government was a Monarchy, but the Monarch was elected, only brothers or nephews of the late king being eligible.

They believed in one supreme being, Creator of all things, but there were a



DOWN IN MEXICO — NATIVES.

tury and ended with the conquest of Cortez, in 1519.

But little is really known of the very early history of the country or its people. However, the Toltecs seem to have come from the north, but the origin and primitive seats are shrouded in mystery. The locality designated by them was called Tullan, but just where this was situated is not known.

It is thought by some that at one time Behrings Strait was an Isthmus, connecting Asia with North America, and that the Toltecs or their ancestors drifted over from Asia and gradually down to a warm and genial climate.

They brought the first elements of civilization into Mexico, and the little that can be learned from the hieroglyphics, mounds and other remains,

number of inferior divinities. Human beings were sacrificed to appease their gods, prisoners of war being kept especially for this purpose. On the top of their high pyramidal temples they had what they called a sacrificial stone, on which the victim was laid preparatory for the bloody work.

Prescott's history of the Conquest of Mexico is a most fascinating work, perfectly describing the manners and customs of the Aztecs as Cortez found them, but if one delights in a beautiful story woven out of facts from wild history, then read Gen. Lew Wallace's "Fair God." In it the fighting on the Causeways in the city of Mexico, the temples, the sacrifices, etc., are so vividly described that one is transported right into the midst of it all.

Of course, Mexico of to-day is entirely changed, especially in the larger cities, where within a few years electric lights, street cars and other elements of civilization have been introduced. However, but few modern buildings are being erected. Back in the rural districts one sees scarcely any change in the character of the architecture, or the manner of doing the work from that of two or three hundred years ago.

In a former article we described the adobe bricks and the manner of making them, the size being about 3 or 4 inches thick, by 6 by 12 inches, that is

The better class of houses have stone foundations. The walls of the houses are the thickness of the length of the brick, thus making them 20 to 24 inches thick; they are seldom more than one story, but the ceilings are 15 to 20 feet high, so that the rooms are very cool in the hot part of the year, and comfortable in the slightly cool season without fire. You seldom find a Mexican house, in the country districts at least, with any arrangements for fire outside of the kitchen.

An acquaintance of the writer moved from Indianapolis to Parral, Mexico, for

they first build up a solid foundation 6 or 8 feet long, about 30 inches high and 30 inches wide; over this is thrown a heavy arch, forming against the chimney flue, which runs up from the centre; a long crane is used, and a half dozen pots and other vessels will be seen stewing away at one time. In this one respect the Mexicans have, for years, been away ahead of our forefathers and grandmothers, who did their cooking by the open fire, for the old-time fire-place was a low down, inconvenient arrangement.

The manner of building and cementing or plastering their houses, both out-



DOWN IN MEXICO — AN OLD TIME ADOBE STRUCTURE.

about the size used in the larger cities, but getting back from the railroad into the rural districts, we find the adobes are 4 to 6 inches thick, by 10 or 12 by 20 to 24 inches, and weighing, when dry, 50 to 60 pounds. These bricks are invariably made with straw, it being a positive necessity, to prevent their cracking and falling to pieces while drying. Straw is used on the same principal as hair in mortar in this country for plastering our houses. Everything of a fibrous nature that can be obtained is used for this purpose. All the bedding from horse stables with the manure is dried, chopped up together and worked in.

permanent residence. He built a large adobe house, introducing some of the comforts of modern dwellings, including flues and fire-places in a number of the rooms. When his Mexican friends would call to see him, if there was a fire burning they would not come into the house; they said if they came into a room that was warmed by a fire they would catch cold and get sick.

A cook-stove is hardly known in Mexico, outside of a few used in the larger cities. They cook entirely by an open fire in a large fire-place, which is made different from anything in this country. In making this fire-place,

side and inside is worthy of attention. In building the house, the wall is laid up with the large adobe bricks with a finely tempered mud for mortar, no lime is used. The rafters are round, and about the size of ordinary telegraph poles. The roof being large and the pitch very slight, it is broken into quite a number of slopes, forming numerous gutters, which project out by spouts over the sidewalk, so as to throw the water into the street. The rafters are covered with a sort of a clap board laid on without nails, and these covered over with about six inches of dirt, and over this a thick

coating of mortar which cements hard as stone.

The plaster used on the walls both outside and in is made of lime which seems very much like that in this country, but for some reason, possibly their manner of working it, it is far better than any thing we have outside of expensive Portland cement. First they make a regular mortar of lime and sand as we do for plastering; then it is shoveled into an empty mortar bed, but instead of pitching it over in the ordinary way, it is thrown with great force so that each shovelful strikes hard against the mass, then the operation is repeated by shoveling it back again; this operation is repeated half a dozen times or more; then the mass is rounded up smoothed over and covered with a little sand and allowed to remain a month or more; it is then worked over and the operation of plastering begins, but not as we do it; no trowel is used, but the mortar is taken up by the hands, worked into balls, then thrown with all force against the wall so that it sinks deep into every crack and crevice of the adobe bricks. Following this operator comes a man with a round flat stone just large enough to be held in one hand; with this he rubs the mortar down to a smooth polished surface, and when it becomes perfectly set, it is impervious to all kinds of weather; cisterns are made with this same mortar which becomes water proof. Of course this manner of plastering would seem very slow to us, but in Mexico labor is cheap, and when once done in this way, it is there for all time.

BRICKMAKERS AND THE TARIFF.

THE Annual meeting of the National Association of Fire Brick Manufacturers was held at the Broadway Central Hotel, New York City, December 12th and 13th. The attendance was fully equal to that of former years, while the enthusiasm exhibited surpassed that of any meeting for some time. The address of the president, Mr. H. B. Newton, was received with applause. The report of the secretary, Mr. Henry Gleason, was read and heartily approved. In making the report for the Executive Committee, the chairman of that board, Mr. William Homes of Fiske, Homes & Co., Boston, read a paper that proved to be of especial in-

terest to the members present, and the desire was expressed that it be published in the CLAY-WORKER that the members might read it at their leisure.

As most of the address was devoted to general matters pertaining to the interests of the Association and was quite long, it is deemed advisable to publish only that portion which pertains to the working of the present tariff bill as it applies to the interests of manufacturers in the clay industry.

"We are now being confronted by a question of serious import to every manufacturer here present, as well as those not present. That which I refer to is the question of tariff legislation. We may truthfully say that this association as a body was the means of having the tariff schedule placed on the present basis. It was at that time that our worthy Secretary, Mr. Gleason, was engaged to engineer through Congress such a rate as would aid our American manufacturers, and reduce if possible the importation of the foreign article. Of his success and others connected with him in causing an advance in duty rates, we are well aware, and although many of you may not be cognizant of the general working of the McKinley Bill, I think I am prepared to state that in the short time it has been in force, the results have been most flattering. You must acknowledge the truth when I say that every brick brought into the United States from foreign lands displaces one made in this country, and any legislation preventing this is a benefit to you individually. I herewith present for consideration, figures to substantiate my assertion, and make a comparison between the operations under the old schedule and that at present in force.

Comparative Statistics Regarding the Importation of Fire and Other Bricks into the United States of America for Years as shown in Margin.

| OLD SCHEDULE. | | | |
|---------------------------------------|-------------------------|-------------|-------------|
| Advalorem duty 20 per cent. | | | |
| FIRE BRICK. | | | |
| | QUANTITY
M. | VALUE. | DUTY. |
| June 30, 1888
to
June 30, 1889. | 6,439,852 | \$68,611.94 | \$13,722.39 |
| June 30, 1889
to
June 30, 1890. | 8,674,615 | 83,235 07 | 16,646.99 |
| June 30, 1890
to
Oct. 6, 1890. | *6,748,344
1,799,562 | 25,342.41 | 5,068.47 |
| Totals..... | 16,914,029 | 177,189.42 | 35,437.85 |

*This quantity of brick would appear if year were filled out in same ratio.

| BRICK OTHER THAN FIRE BRICK. | | | |
|---------------------------------------|----------------|-------------|------------|
| | QUANTITY
M. | VALUE. | DUTY. |
| June 30, 1888
to
June 30, 1889. | 2,714,990 | \$45,905.55 | \$9,181.11 |
| June 30, 1889
to
June 30, 1890. | 4,435,720 | 56,777.36 | 11,355.47 |
| June 30, 1890
to
Oct. 6, 1890. | 2,047,590 | 36,602.21 | 7,320 44 |
| Totals..... | 9,198,300 | 139,285.12 | 27,857.02 |

Grand total importation for two years three months and six days:
Quantity, M..... 26,112,329
Value \$316,474.34
Duty \$63,294.87

McKINLEY TARIFF.
Taking effect October 6th, 1890.
FIRE BRICK.
Not glazed, enameled, ornamented or decorated in any manner. Duty \$1.25 per ton specific.

| | QUAN-
TITY,
TONS. | QUAN-
TITY,
M. | VALUE. | DUTY. |
|------------------------------------|-------------------------|-------------------------|-------------|-------------|
| Oct. 6, '90
to
June 30, '91 | 17,804 | 5,934,667
*8,392,440 | \$76,905.46 | \$22,255.36 |
| June 30, '91
to
June 30, '92 | 22,464 | 7,488,000 | 93,974 55 | 28,080.57 |
| June 30, '92
to
June 30, '93 | 14,989 ⁶² | 4,996,540 | 74,443 22 | 18,737.07 |
| Totals.... | 55,257 ⁶² | 18,419,207 | 245,323.23 | 69,073 00 |

*This quantity of brick would appear if year were filled out in same ratio.

FIRE BRICK.
Glazed, enameled, ornamented or decorated. Duty 45 per cent. advalorem.

| | QUAN-
TITY,
TONS. | QUAN-
TITY,
M. | VALUE. | DUTY. |
|------------------------------------|-------------------------|----------------------|-------------|------------|
| Oct. 6, '90
to
June 30, '91 | 1,357.30 | 452,433 | \$18,748.50 | \$8,436.83 |
| June 30, '91
to
June 30, '92 | 886.60 | 295,533 | 16,368.00 | 7,365.60 |
| June 30, '92
to
June 30, '93 | 715.74 | 238,580 | 10,379.59 | 4,670 82 |
| Totals.... | 2,959 64 | 986,546 | 45,496.09 | 20,473.25 |

BRICK OTHER THAN FIRE BRICK.
Not glazed, enameled, ornamented, painted or decorated. Duty, 25 per cent, advalorem.

| | QUANTITY
M. | VALUE. | DUTY. |
|---------------------------------------|----------------|------------|------------|
| Oct. 6, 1890
to
June 30, 1891. | 915,360 | \$7,900 07 | \$1,975.02 |
| June 30, 1891
to
June 30, 1892 | 1,874,120 | 15,334.97 | 3,833.75 |
| June 30, 1892
to
June 30, 1893. | 2,225,000 | 14,929.96 | 3,732.50 |
| Totals..... | 5,014,480 | 38,165 00 | 9,541.27 |

BRICK OTHER THAN FIRE BRICK.
Ornamented, glazed, painted, enameled, vitrified or decorated. Duty, 45 per cent.

| | QUANTITY
M. | VALUE. | DUTY. |
|---------------------------------------|----------------|-------------|-------------|
| Oct. 6, 1890
to
June 30, 1891. | 791,710 | \$35,507.00 | \$15,978.15 |
| June 30, 1891
to
June 30, 1892. | 1,170,490 | 57,204.00 | 25,741.80 |
| June 30, 1892
to
June 30, 1893. | 960,980 | 48,662.00 | 21,897.90 |
| Totals..... | 2,923,180 | 141,373.00 | 63,617.85 |

Grand total importation for two years eight months and twenty-four days:

Quantity, M..... 27,343,413
Value..... \$470,357.32
Duty..... \$162,705.37

ASSUMED.

Deduct importation for 5 months 18 days equal 168 days to equalize and make time same as old schedule. Based on last year's importation under McKinley regime.

Old schedule made for 2 years 3 mos 6 days.

McKinley schedule made for 2 years 8 mos 24 days.

| | QUAN-
TITY,
M. | VALUE. | DUTY. |
|---|----------------------|---------------------|---------------------|
| Fire Brick, \$1.25 per ton..... | 2,331,672 | \$34,740.72 | \$8,744.40 |
| Fire Brick, glazed, 45 per cent..... | 111,384 | 4,843.44 | 2,178.96 |
| Brick other than glazed, 25 per cent..... | 1,038,408 | 6,966.96 | 1,742.16 |
| Brick other than ornamented, 45 per cent..... | 448,372 | 22,680.00 | 10,219.44 |
| Totals..... | 3,929,836 | 69,231.12 | 22,884.96 |
| Vs. McKinley's amount..... | 23,413,577 | 401,126.20 | 139,820.41 |
| Actual figures in favor of McKinley..... | Decrease. 2,698,752 | Increase. 84,651.66 | Increase. 76,525.54 |

NOTE—Fire Brick are taken at the usual standard of three tons to a thousand.

The accomplishment of these results is directly due to this organization. Ask yourselves whether it has been a benefit or not. To-day we are threatened by a bill that unless a way can be devised or influence exerted that will prevail upon the good sense of our representatives to allow the rates to remain where they are, we shall practically see the good effects of our former efforts wiped out. If we would prevent such rash action, it must again be done by this Association. The importance of our united effort is again to be made apparent, and consequently there is again good reason shown why we should hold together to meet just such emergencies that occasionally arise. We have a difficult path to tread to accomplish our desires, for the party now in power is in favor of reduction of duties, and is not prone to listen to our arguments. Certainly as individuals we would not have the least show, but when we go, backed up by an Association which really embodies all the manufacturers in the country, the weight of such a request can but be felt, or at least if it is not, it will be barefaced opposition to the desires of all the parties in interest.

It is a few such conditions as these, so it occurs to me, as I said, that furnish good reason for holding our organization together, but it must be plain to you that the officers are powerless to act in your behalf without the support of the members. It is useless for a man

in the United States to say that he is indifferent to tariff legislation, for whether he does business in New York, Boston, San Francisco, Chicago or St. Louis, he is bound to be effected by the result of tariff or no tariff. Many have expressed themselves that it made no difference in their locality, but the argument is weak and will not hold water. If by foreign invasion my brother Kreisher, for instance, is forced to reduce his prices in New York and vicinity, is he not obliged to push farther West for a market? Here he meets the local manufacturer who by the competition is forced again West, and thus like the falling ten pins does one upset the other, and when the last one receives the blow, it suddenly occurs to the inert mind that there may be something in the "Foreign competition" after all.

The social system of organizations counts for more than is always judged. No member of this Association meets here in a social way without leaving a good impression on his neighbor although he may be a competitor. On account of my perfect friendship with my neighbor Winslow or Newton, enhanced by the shaking of hands once at least each year upon these occasions, are they not more willing, and are they not more considerate in listening to any thought or scheme that may occur to me, and if it is a matter of mutual benefit to us to accomplish certain results, we easier come together and make certain allowances, than could we had we the feeling of strangers. Now, gentlemen, my paper has been made long enough, and here I will end. I have intended this as an appeal to the generous consideration of you all. If I have failed to convey my thoughts intelligently, lay it to my inability to do so, but I assure you my heart yearns to see the members of the National Association of Fire Brick Manufacturers prove themselves by their faith, their ability, their actions, to be capable of accomplishing the desired results.

WHAT'S THE USE?

What's the use in grieving.

Moping day by day;

When the world we're leaving

Sings along its way?

Life, they say's "a bubble:"

What's the use to frown?

Kiss your hand to trouble—

. Laugh, and live it down!

—Atlanta Constitution.

A NEW BRICK FIRM.

The brickmaking industry of Philadelphia will receive its largest addition in several years with the opening next season. The new firm of Webster, Gillespie & Co., composed of Mr. H. C. Webster, formerly president of the Jarden Brick Co., Mr. Wm. H. Gillespie, Thomas Gillespie, Jr., Edmund H. Gillespie, all thorough business men and practical brickmakers, will put into operation an immense new brick works, which will be located on on Passyunk Ave., extending west from 21st to 24th St., and back nearly to Snyder Ave., the plot containing 18 acres, and is considered the best piece of brick land remaining in that section. Exclusive of hand-made brick, the yard will have a capacity of 30,000,000 brick annually. Work has already been started on the buildings necessary to carry on the work, and they will be pushed to completion as rapidly as possible. The works will be equipped with eight ten-arch kilns, for the erection of which Mr. Henry James, one of the best kiln builders ever produced, has been awarded the contract. There will also be four Standard Dryers, and the Martin Machine Co. will put up two of the largest machines which they have ever built; capacity 40,000 each. Employment will be given to 200 men.

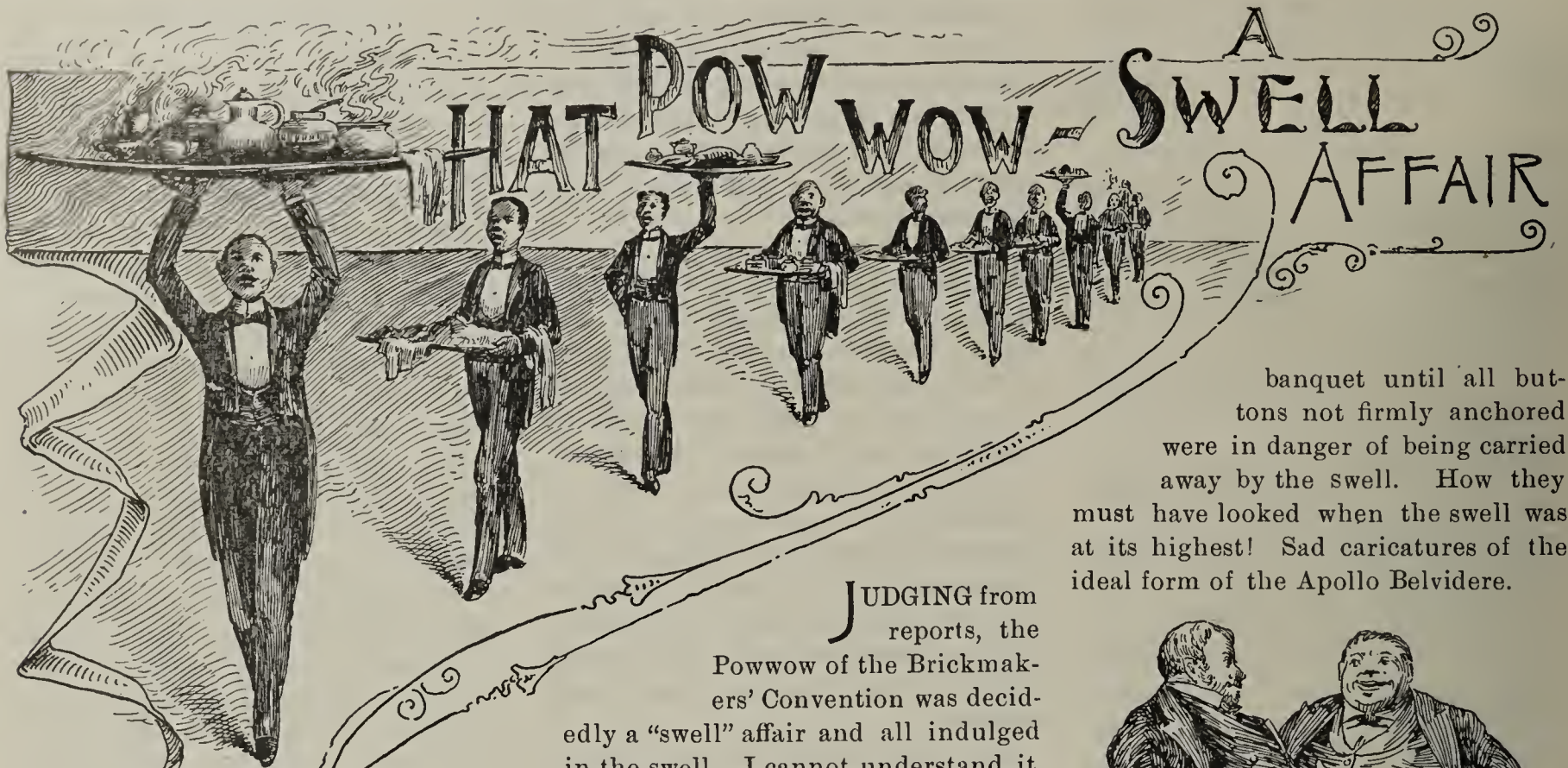


THE ACME OF BLISS.

FRAYED FAGIN—Yes; der Judge sint me up to der Work House for six months. When I gits dere I wouldn't work, and den dey put me in a strait-jacket.

DUSTY RHODES (*sympathetically*)—Dat muster bin tough.

FRAYED FAGIN (*enthusiastically*)—Tough? Not much! Why, say, Dusty; a feller couldn't move in one o'dem strait-jackets if he wanted to!—Puck.



banquet until all buttons not firmly anchored were in danger of being carried away by the swell. How they must have looked when the swell was at its highest! Sad caricatures of the ideal form of the Apollo Belvidere.

JUDGING from reports, the Powwow of the Brickmakers' Convention was decidedly a "swell" affair and all indulged in the swell. I cannot understand it. Such lank fellows as McHose, Gates, Fletcher, Simpson, and others that might be mentioned, might be pardoned for feeding up, but just think of such well fed men as Eudaly, Pike, Adams, Weckler and McGraw getting together and hunting in packs, like wolves, and making raids upon stores of food, at a time when there are so very many unfed poor in the city. I call that an act of unpre-

cedented selfishness and meanness for these men who were in comfortable circumstances at home.

It would have been more in keeping with the times if they had hibernated at home, and, like the polar bear, sucked their paws and lived upon their store of fat during the winter rather than hunt and destroy the food gathered to feed the unemployed of Chicago.

Again, these are men of high social standing. How could they so far forget themselves as to gormandize at a "swell"



A pair of "Swells".

If it was simply for the "swell" sensation that the party hungered, I would recommend that at their next session they adopt a two course repast. The first course to be

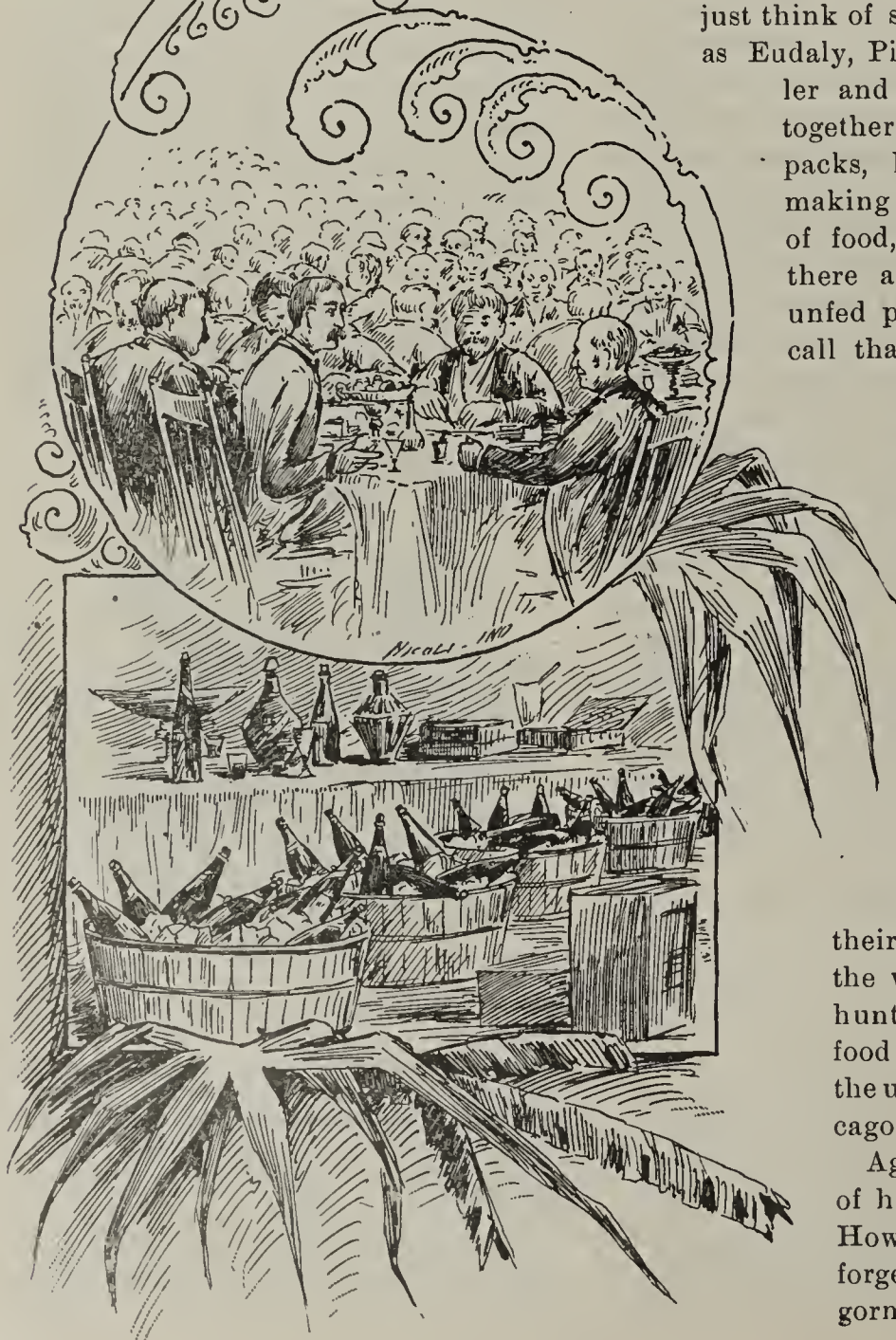
DRIED APPLES

and the second warm water. Satisfaction guaranteed or money refunded. Goods sent on trial to be returned if not satisfactory. We challenge all competitors to a public competitive trial. Send for list of testimonials from our many grateful friends. Upon application we will send catalogue giving illustrations of patrons before and after taking.

Caution. Beware of unscrupulous dealers who try to induce you to buy worthless imitations, by saying, "It is just as good." Insist upon having the genuine. None genuine unless it bears

our signature ^{His} X. Trial package sent ^{mark} upon receipt of one dollar. Please mention this paper when you write.

But in all seriousness, the knowledge



of this deplorable occurrence has gone out to the world and we must find some excuse for their actions to save the craft from the degradation to which it has fallen.

There is one possible explanation that is suggested to my mind; I will offer it. Scientists teach that all forms of animal life are influenced by the law of inheritance, and that this is often manifested in cases of reversion, as it is called.

That is, a characteristic sometimes manifests itself in an individual after being latent for several generations. Now it is possible that this unusual manifestation of a disposition to "swell" or gormandize at the powwow by so many individuals at once, is only a case of reversion, in which the selfishness of the animal, in trying to eat all from the others, manifested itself after being latent or dormant since the disappearance of

DARWIN'S MISSING LINK.

Still, this does not seem reasonable, and I cannot accept it as a satisfactory explanation of the actions of all.



The disappearance of Darwin's link.

It may be that reversion to the missing link will explain a part, but we must seek elsewhere for the motives that prompted the others. Upon weighing the matter carefully and considering the circumstances I think

I HAVE A THEORY

that will conform to and explain all the facts in the case.

In order that I may be thoroughly understood it will be necessary to make some preliminary explanations. With all of man's superior intellect, aided by the accumulated knowledge of the ages, the sciences of astronomy and meteorology, and the delicate instruments known to the officers of the signal service he cannot predict what a season

will be, but "God hath chosen the foolish things of the world to confound the wise." Nature comes to our aid and suggests a solution of the abstruse phenomenon which we are striving to understand.



When the "Swell" was at its highest!

The unlettered student of nature in the fields finds in the growth of certain plants infallible predictions of a hard winter. As a single instance, I will mention a heavy growth of husks adhering closely to the ears of corn. Animals instinctively foresee and prepare for winters of unusual severity. These natural indications are abundant this year. Now to make the application.

The leaders in the study of anthropology concur with the biblical divisions of man into material and immaterial. Some leaders in psychical research have attributed to man a double consciousness, and they explain some of his unusual actions by saying, that his ordinary consciousness is dormant and that his secondary consciousness controls his actions.

Somnambulism may be mentioned as an illustration. I think

INSANITY, INTOXICATION, HYPNOTISM and kindred phenomena may be more easily understood by supposing the primary consciousness to be latent, while the sub-consciousness is active.

Doubtless the remarkable actions of the guests at the powwow were due to the fact that a hard winter was approaching. This occult influence in nature that guides plants and animals in preparing for a hard winter acted upon the material natures of the guests and led them, instinctively, may I say, to prepare for the coming severe winter, by laying up an abundant store of provisions while occasion offered. This same force, in all probability, hypnotized, as it were, the guests, to such an extent, that their sub-consciousness ruled, and the primary consciousness was dormant during the accumulation or growth of the "swell." In accordance with this theory we may understand that, since the ordinary consciousness was latent, the guests were not wholly responsible for their actions, and were not conscious that they were committing any acts that were breaches of propriety, or that they were guilty of selfishness to an extent that would be considered uncharitable by civilized people.

Imagine, if you can, the pangs of remorse that would torment these children of nature should the spell be broken while yet the "swell" was at its height. Having been reared in good families and schooled in the best of society they would be dragged into the depths of humility should it become known that they had failed to reach that high degree of greatness attributed to him that "ruleth his spirit."

D. W. STOOKEY.

Cedar Rapids, Iowa.



Written for the CLAY-WORKER.

HINTS ON BRICKMAKING.

No. 84.

BY R. BRICK.

SYSTEMATIC MANAGEMENT OF FACTORY AND OFFICE.

WHILE the writer does not believe in wasting time and money in unnecessary attention to the determining of just how many pounds of coal it requires per thousand bricks for power, for drying and for burning, and to a fraction of a cent the cost of each item of expense, yet he believes in systematic management and arrangement of the details of the business of brickmaking.

In a brick manufacturing plant of any magnitude, there should be a manager, who has entire control of the plant, and he should be assisted by the foremen of the different departments. There should be no friction between the manager and his assistants, and there should be harmony between the foremen of the different departments. No one plan of management will apply to all plants. A plan must be made in detail to suit each particular plant. We will offer our plan, which may be of some value to some one. The division of the work into departments, as follows:

1. Clay department.
2. Machine department.
3. Drying department.
4. Kiln department.
5. Firemen department.
6. Repress department.
7. Loading department.
8. Roustabout department.
9. Repair department.

The number of departments may be increased or decreased as the requirements of the case may demand.

The clay department includes mining, loading, and delivering clay to the machine. This may require a superintendent or foreman, or neither, dependent upon the amount of labor required.

The second, or machine department, makes the brick, and puts them on the drying floor or cars.

The third, or drying department, care for the bricks while drying. If a tunnel dryer is used, the men in this department put the cars into the dryer, and take them to the kiln when dried. If they are dried in sheds or open yard, they edge and hake the bricks, protect them from rain, etc.

4. The kiln department takes the

bricks from drying floor or yard or sheds, and sets them in kiln ready for burning. Where tunnel dryer and cars are used, they have only to take brick from cars and set them.

5. Firemen's department. This includes firemen at boilers, dryers and kilns, both night and day men.

6. Repress department. Where pressed brick are made. This department represses the bricks and places them on the drying floor or cars.

7. Loading department. Takes bricks from kilns and loads them for shipment on cars or wagons, or boat.

8. Roustabout department. This includes all outside and extra work, preparing kilns for filling and burning, keeping the plant neat, and anything outside of the regular work included in other departments.

9. Repair department. This covers all labor of repairing machines, dryers or kilns, or anything about the works.

Where the plant is large enough to justify it, there may be a man in charge of each department and held responsible for its proper management. Where plants are smaller, one man may be able to look after two or more of these departments. The time keeper keeps the time of the men in each department distinct, and gets the time morning and evening from the foremen in charge of the several departments. When the pay rolls are made out, the paymaster calls the departments one at a time, and pays the men in each. This prevents any crowding, as only those wanted come to the pay window. Each department is footed separate on the pay sheet. The manager or proprietor can take up the list, and, in a few minutes, see just what each department has cost for the week or month, as the case may be. In connection with this pay sheet should be a report of the manager for the time covered by the pay roll. If it is weekly, it should be manager's report for week ending Jan. 15, 1894, as follows:

| | |
|---------------------------|---------|
| No. bricks made..... | 100,000 |
| " " set in kiln..... | 110,000 |
| " " loaded for shipment.. | 125,000 |

By dividing the cost of machine department by number of thousands of brick made, you get actual cost per thousand for making. The same can be done with clay department. Divide cost of kiln department by number of thousands of bricks and you have cost of setting in kiln per thousand for same period. Cost per thousand for loading can be determined in like manner.

It is not possible to get the exact cost of the bricks altogether at each pay, as you may make more than you set in kiln, or you may ship more than you make, or vice versa. You can, however, take the monthly report, and, by dividing the total cost by the number of thousands made and shipped you can get pretty close to the cost. At the end of the year, however, you can figure up the grand total of thousands made and shipped, and divide the total pay roll by the number of thousands and get the exact cost per thousand of pay roll.

These monthly reports are valuable. By a careful analysis of these, any unusual expense or extravagance or irregularity on the part of the management, can readily be detected.

In addition to the pay roll, the fuel account must be carefully kept and reported. For instance, fuel report for the month:

| | |
|---------------------------------|----------|
| Am't of fuel on hands 1st inst. | No. tons |
| " " " receiv'd during mo. | " " |
| " " " on hand last day of | " " |

This will show the amount used during the month. The other report shows amount of bricks manufactured.

From this data it is simply a matter of division, to ascertain what the bricks have cost per thousand, for fuel, for power, drying and burning the bricks. The book keeper, or time keeper at the works should have a receiving book and enter in it everything received for the use of the plant. This includes fuel of all kinds, oil, machinery, either new or to replace a broken piece, in fact everything that is received at the factory. He also should keep a shipping book, in which he enters everything that is shipped from the plant. This only includes cost of pay roll, and fuel and repair. To get the total cost we must add salary, account, office expenses, insurance, and deduct from the product a per cent. sufficient to cover all waste we may have in drying, burning and handling.

We will continue the discussion of this subject in another article.

LOOKING AHEAD.

Old Gentleman—"What would you like to be when you are grown up?"

Boy—"I'd like to be a bricklayer."

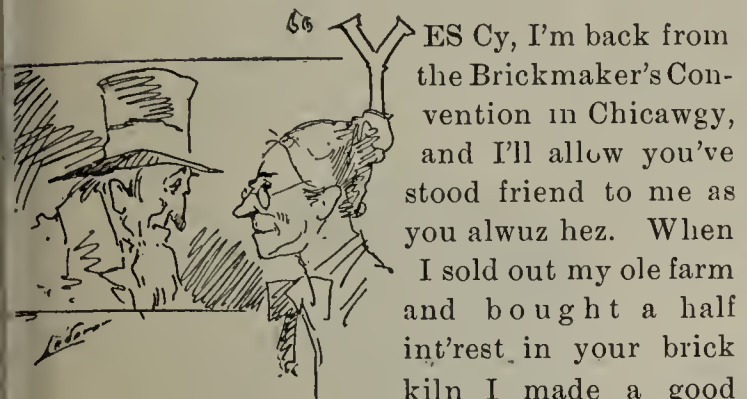
Old Gentleman—"That's a commendable ambition. Why would you like to be a bricklayer?"

Boy—"Cause there's so many days when bricklayers can't work."—*Tid Bits.*

Written for the CLAY-WORKER.

A HAZY NARRATIVE.

Being the Confession of Rufus Balwin of Clay Corners, Ind., to His Friend and Partner, Cyrus Beal.



YES Cy, I'm back from the Brickmaker's Convention in Chicawgy, and I'll allow you've stood friend to me as you alwuz hez. When I sold out my ole farm and bought a half int'rest in your brick kiln I made a good thing outen it and I'm satisfied. But you can go as del'gate to the nex' meetin' of them Naysh'nal Brickmakers. Associanates. I have hed a hull lot o' enough of it. I didn't get my ole nose inside of no Convention, but I have saw Chicawgy, and I've no consarn to see it agin'. I'm jist gittin' so I kin look M'ria in the face when I come home nowadays.

"I haint told a livin' scul but you, Cy. An' I'll not forgit your sendin'



me the money when I tellingraphed for it from Chicawgy, Cy, and it come mighty prompt too. By gum, I needed it.

"I was a del'gate, but I wos'nt goin' to throw no money away on that ercount, Cy. Ez my uncle Rube useter to say, 'A penny saved is a penny earnt.' Wall, I saw a man with boards in front and behint of him, tellin' of a nice, cheap



He fondled the old mans whiskers

hot'l. I didn't take no bus, you see, thet would'er been fifty cents, but when I wuz crosin' some of them big jammed



He said I looked jaded."

streets I wisht I hed. I kem near bein run overseventimes. Well, I couldn't find the Bulgaria Hotel, but I ast a nice, genteel lookin' young man, and he seemed to take an interest in me right away, though he did fondle my old whiskers in a kin' of too familyer sort of way, but he seemed to mean well, and mought be young and giddy kinder. So then when I told him I was a delegate to the N. B. M. A., he said he was Mr. Purington's son, Willy, and that he'd liketo entertain me as his private guest at his rooms, and that it wouldn't cost me a cent. So he took me in tow and treated me to some awfully nice drinks — not like hard likker at all — he called them Menhatting Coat-tails, I think. They was very invigger-ating. Then he tuk me to his room, and I must say they was'nt very Before the ball was over inviting and such as I would expeck a son of Mr. Purington to have, but he sed he wuz very independent and wouldn't live off'n the old man—as he called his pap—which I thought was showin' a proper spurit.

"Well, the young feller he had a flask of bitters in his room and he advised me to take a snifter, fer he said I looked jaded after my long journey, though I was feeling mighty comfortable after them Menhatting Coattails.

"Arter that he took me to gorjis place for dinner, and I seen when he guv the waiter a five dollar bill he didn't git back but a dollar and thirty-five cents, and he guv the waiter all the change. I remarked that I didn't think his



Been havin' yer skates on, eh?"



The judge fined him fifty dollars.

father would approve of sich extravagunce, but he only laughed and allowed the gov'nur didn't expect him to stint himself in making it pleasant for men in the brick business.

"After that things was a little hazy. I kinder felt thet the young man was sorter inclined to be wild and thet it behooved an ole man like me to look after a young un like him.

"I don't recollect much after that. I kin remember goin' to a very lively ball where the men danced with their hats on and drinkin' some yallerish an' awfully fizzy kine of sody water, and then play'in at a queer sorter game which I didn't sorter understand, though the young feller did, and we wuz both awfully unlucky, and I lent the young feller seventy-five dollars outer what I had left outer the two hundred I tuk with me. I must er had a stroke after that, for I woke up when some town constables whacked me on the soles of me butes, and I kin remember goin' somewheres with them in an open blue wagon with brass rails to it.

"The next morning they took me outer ther jail—fur, Cy, I must ecknowledge I wuz took to jail—and a awful mean looking jedge fined me fifty dollars for d'sord'ly conduct. I didn't have a dime in my pockets, and my watch was gone. I said thet thet young Mr. Purington would pay my fine, but the jedge only smiled, and the constable said he had heard that I had been towed around by Shortcard Jimmy. An' he wus'nt any relation even of Mr. Purington.

"However, I giv my coat for security



He called the "Hurry Wagon"

to the jailer, who teligraphed to you fur the money, and then I went an' got shaved and come home. One funny thing I can't understand even now is, and thet is, what ther barber meant when he said, "Been havin' yer skates on, eh?"—and I can't rekolleck going skatin' nohow." CHARLES LEDERER.

Written for the CLAY-WORKER.
BRICKLAYING.

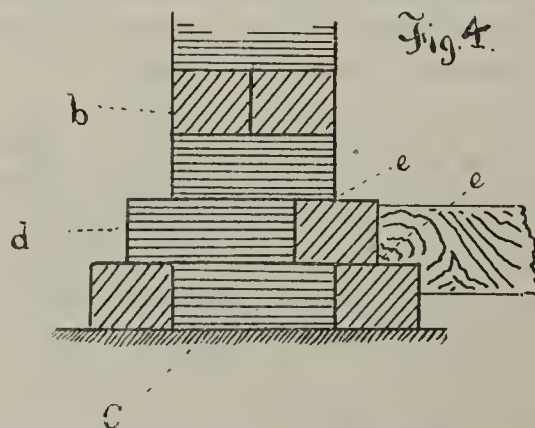
Third Paper.

SO FAR, we have been giving a few of the more technical and elementary details of the bricklayers art, and with these well in hand, it will be much easier to give a practical exemplification of the best forms of actual construction. Walls are made of a varying thickness and in them are utilized the several forms of bond, with a due consideration of the fitness of things. We will take up the Flemish bond first, and speak of its use in plain walls.

As has already been said, these walls are of a varying thickness and range from one to three brick. The one brick wall is usually known as the "Nine-inch wall," as that is the length of one brick. It is the wall usually adopted in inferior constructions, as in very cheap houses. Almost all of the larger cities have laws regulating the use of this wall to a certain height above which it cannot be carried. These are useful measures, as the strength of the wall is limited, and beyond a certain height is apt to come tumbling down about the ears of the builders. And in a damp climate it is rather thin for use, unless the bricks are so disposed as to form a hollow within the wall. This can be done easily without expending more bricks than in the solid wall, and when so laid, the walls are known as "Eleven-inch walls." Walls that are a brick and a half in the thickness, are termed "Fourteen-inch walls." This latter thickness is the one chosen in ordinary construction of house walls where the height is not too much. As has been already stated, all walls are erected in a series of layers of bricks on bed, each of the layers being termed a course. It makes no difference how high the wall is, there are but two kinds of courses used in the construction. These are repeated alternately from the first one or the bottom course, until the last one is in place.

The first course rests upon the

ground, although as a matter of fact, it is only in cheaper work that the first course of the wall actually rests upon the soil, either at the surface or in a trench. Almost always, a foundation is necessary to secure permanency of superstructure. If the foundation happens to be of rock, and firm in nature, these latter are "Benched out," as it is termed; that is, cut into terrace shaped parts to secure a proper level for every part of the wall. This is important, that the strain may be placed evenly. But in the great majority of cases, the nature of the soil is such, that an artificial foundation is necessary. A trench is dug in order to place the bottom of the wall beneath the surface of the adjacent ground, this being a great preventive of moisture in the lower courses of the structure. In practice, the foundation is but the lower part of the wall, being constructed of the self same materials. It is, however, much wider than the wall itself. This increased width is se-



cured by a series of step like projections which are termed "offsets" and which are shown in Fig. 4. They are placed one upon the other in such a manner as make each projection equal to half a brick, or sometimes a quarter of a brick, although this latter form is unusual. It is also not a very good form and should not be practiced, for the object of a foundation is to secure a large bearing surface, and this is more rapidly secured where the offsets are as great as can be made.

In the figure, *b* indicates the wall proper, and *c* the part that is properly termed the foundation. Between these is one course that is called in technical phraseology, the "Footing" or "Footings" of the wall, and is marked *d*. It is a little above the level of the soil, and it is customary to build in a damp proof course. This is of many materials, according to the fancy of the builder. Oftentimes a layer of slate is utilized, and by some a coat of tar placed upon the surface of the brick course is deemed sufficient.

In cheap classes of work, the offset in the wall is made to do duty as a support for the joists or flooring beams, they resting upon the upper surface of the offset as shown at *e*. But this is certainly not a very good custom, as the timber support is inadequate for any great weight. It is therefore much better to build little piers upon the offsets as a foundation for each joist, thus distributing the weight.

Of these piers we will go into greater detail in the next issue. "NIMBUS."

CHEMICAL ANALYSIS.

THE "National Method" of expressing the composition of a sample of clay, determined by chemical analysis, as shown by Mr. Edward Orton, Jr., in his valuable paper which appeared in the January issue of the CLAY-WORKER, is without doubt a very clear and instructive way of interpreting an analysis of clay. I beg to refer to the latter part of his paper, immediately following the heading, "Why Chemical Analysis May Mislead," in which he has apparently confounded the two terms *report* and *interpretation* of chemical analysis. I think that Mr. O. will find that while many people would approve of his manner of interpreting an analysis, they would be quite as particular that the chemist should report upon each constituent of the clay found, in the exact form and manner in which they had been chemically determined.

Any mathematical deductions can be made or the analysis may be converted into several different forms, but still the chemist's analytical methods and fundamental results remain the same. It is true that there is no absolute and certain analytical method for separating chemically quartz or free silica from combined silica in clay. If this be true, and a chemist determines the *total* silica in a sample of clay, let him report it as such, then in the same report let him show how he has determined by rough mechanical or chemical separation the combined and free silica, or by applying the formulas which Mr. Orton, Jr., mentions.

It is misleading to let a chemist report anything but the absolute results his analytical work affords, while people may suggest various ways of interpreting the many analysis which have been made of clays. In the past, the reports as they stand are just as instructive and valuable as they would be in any new form.

CHARLES FERRY.

A NEW BOOK FOR CLAYWORKERS.

THE Pottery and Porcelain of the United States, is the title of a new book for clayworkers that will well repay careful persual. A hasty glance through its four hundred and forty odd pages shows it to be an unusually handsome publication. The illustrations are numerous and attractive. Among them are a number of



quaint subjects. The accompanying cut of the "Toby Ale Jug," being an example of the grotesque in pottery.

There are many other queer things pictured and described in the book, which is published by G. P. Putnam's Sons, New York City. Price, \$5.00.

A REJOINDER.

CHICAGO, ILL., Feb. 6th, 1894.

To Brickmakers:

IN the January issue of the CLAY-WORKER there appeared an "open letter" signed by Chisholm, Boyd & White. This letter would receive its just deserts if it were entirely ignored, but for the benefit of the brickmaking public, we deem it best to publish a reply.

We have always endeavored to do business with a dignity that would entitle us to the respect of the trade and believed our competitors were possessed of a like spirit. We consider the unscrupulous letter of the Boyd Company as merely an untimely exposition of jealousy over the inevitable "survival of the fittest."

Contrary to the statement of the Boyd Company, our claim is not a "wilful falsehood," but the *unqualified truth*. Mr.

W. C. Lemert, of Bucyrus, Ohio, was the *only authorized judge on brick machinery* at the World's Columbian Exposition, and we herewith give a copy of a letter from him in defense of our claims:

BUCYRUS, O., Jan. 27th, 1894.

THE SIMPSON BRICK PRESS Co.,
Chicago, Ill.,

GENTLEMEN:—I was appointed by John Boyd Thatcher, Chairman of the Awards Committee in World's Columbian Exposition as juror, and assigned to duty as sole and special judge on brick machinery in Machinery Hall. It was my duty to examine into the merits of the different machines on exhibition in that building and make a report on the same together with such recommendations for awards as would be considered proper and right.

I examined the exhibit of the Waterous Engine Works Co., Brantford, Canada, showing a Simpson Press, and also the exhibit of Goldie & McCulloch, Galt, Canada, showing a Boyd Press. On August 30th, 1893, I submitted these two reports to the Committee of the Whole appointed on exhibits in Machinery Hall and it was *approved* of by them.

An examination into the merits of the two presses revealed that the Simpson Press showed points of advancement in dry press brick machinery, and I therefore *reported in its favor and recommended an award*. In my report on the exhibit of Goldie & McCulloch, showing the Boyd Press, *no award was recommended*. My report recommending an award for the Simpson Press was signed by John H. Roche, Ex-Mayor of Chicago, as President, and P. J. McMahon, as Secretary of the committee of the Whole, and the following is an excerpt from the minutes of the jurors attested to by P. J. McMahon as a true copy:

DEPARTMENTAL COMMITTEE ON AWARDS,
MACHINERY HALL,

August, 30th, 1893.

The following jurors responded to the roll call: Barrus, Capehart, Denton, James, Kinsey, Lemert, Margedant, McMahon, Roche, Smith, Sweet, Diefenbach, Kirpicheff, Gatzook, Iberatta and Cowan.

The report of the Waterous Engine Works Co., and Goldie & McCulloch were *read and approved*.

A. True Copy

P. J. McMahon
Secretary

Subsequently on September 23rd, 1893, after I had finished my work and severed my connection with the committee, a reconsideration was asked for and a sub-committee, to whom the matter was referred, reported that both the competing machines were of United States manufacture and being exhibited by Canadian firms were considered ineligible for receiving a medal. This proceeding was entirely improper, as my report was not appealed, and therefore the award to the Simpson Press was *perfectly legitimate and regular*.

W. C. Lemert

Special Judge on Brick Machinery in World's Columbian Exposition.

We trust that the foregoing letter will convince the readers of the CLAY-WORKER of the absurdity of the Boyd Company's claim. By thoroughly honorable business methods we have achieved a glorious record, and we would be foolish, indeed, to publish anything tending to deceive the brick-making public. In this case we are entirely on the defensive, but we are not so modest as not to stand up for our rights. Let it be thoroughly understood that we will maintain our present position in this matter to the end.

The Boyd Company are very careful to conceal the fact from the public that the award they publish was obtained on a small model of their press exhibited in the Mining Building, where the judges were selected entirely because of their knowledge of minerals. Their exhibit was the only one of its kind in the building.

In Machinery Hall, Chisholm, Boyd & White and ourselves exhibited full-sized machines and an examination by the judges resulted in a decision in our favor on all points claimed, as the above letter from Mr. Lemert shows.

THE SIMPSON BRICK PRESS Co.,
Chicago, Ills.

WORDS OF WISDOM.

Advertisers make a great mistake to curtail their advertising in a dull season, and because business is quiet.

No better opportunity comes your way for reaching the people; for the very fact that your short-sighted competitors drop out of the newspapers gives you a chance at greater prominence.

When people in general are less busy, they have more time to read what you have to say to them.—*Profitable Advertising*.

DAMAGES RECOVERABLE BY A JOBBER FOR FAILURE TO FURNISH BRICK.

THE Supreme Court of Minnesota has recently rendered a very interesting and important decision in the case of the Hewson-Herzog Supply Company, v. Minnesota Brick Company. This was an action brought by a supply company, engaged as a jobber in buying and selling brick, to recover damages for the breach of a contract to manufacture and deliver to it, on board cars at the place of manufacture, with specified freight charges to St. Paul or Minneapolis, during a season, not less than three million brick of a specified quality.

The company which was to manufacture and furnish the brick made various attempts to manufacture them, but did not succeed, and was unable to

was entered into, and which would likely result from a breach thereof; for the familiar rule may be applied here "That the intention of the parties is to be ascertained from the whole contract, considered in connection with the surrounding circumstances known to both parties."

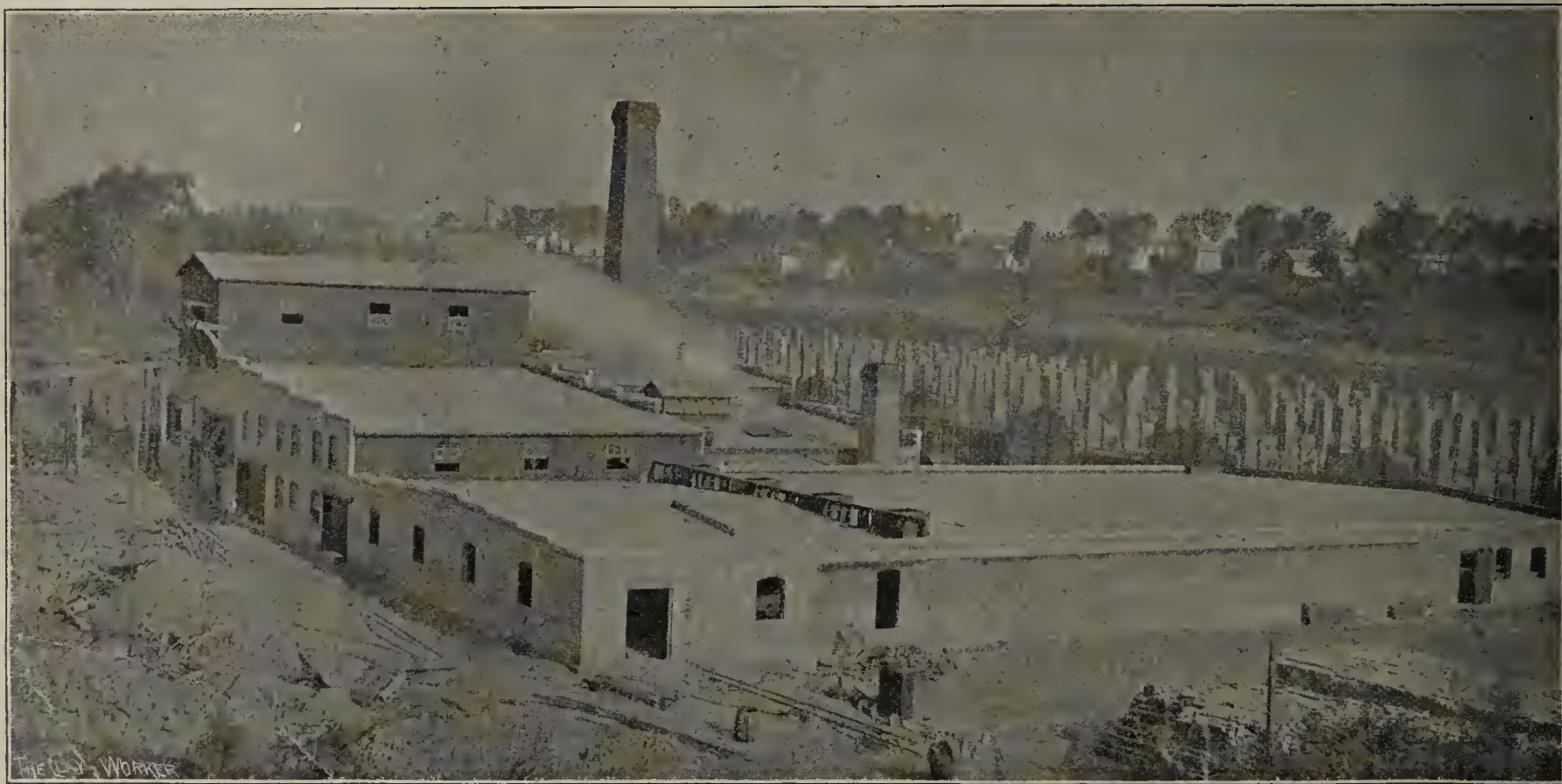
The true measure of damages would, therefore, be the difference between the contract price of brick furnished in the quantities and at the periods mentioned in the contract, and the market value of the brick at those places, which the supply company, as a jobber, would have to pay for brick of a similar kind, and in the quantities which and at the periods when it was entitled to receive them under its contract. It could not recover damages for such breach of contract in one lump sum, but only such damages as accrued at the different

if a party who is entitled to the benefits of a contract receives notice from the other party that he cannot perform its conditions, then it is the duty of such party to save the party in default, so far as it is in his power to do so, all further damages, though the performance of this duty may call for affirmative action; and, where all the facts and surrounding circumstances are sufficient to fully satisfy the party not in default, that the other party cannot and will not perform the conditions of contract, he should also use reasonable exertions to save the party in default from further damages.

BRICKYARD SKETCHES.

A GREAT PAVING BRICK CENTER.

HEADQUARTERS for paving brick in Illinois is at Galesburg, the county seat of Knox, on the C., B. & Q. R. R., 165 miles south of Chicago,



PURINGTON PAVING BRICK CO.'S WORKS, GALESBURG, ILL.—Randall Town in the Distance.

furnish more than a few thousand brick on the contract.

The court below held the measure of damages recoverable to be the difference between the contract price of the brick delivered at St. Paul or Minneapolis, and the price which the supply company, as a jobber or middleman, would charge, or sell the brick for, to builders and contractors.

This the supreme court holds to be incorrect. It says that in cases of this kind no more damages can be recovered than such as were within the contemplation of the parties when the contract

times of the manufacturer's default in not furnishing brick of the kind, and in the quantities, which it was also entitled to receive under the terms of the contract.

When a party is injured by non-performance of a contract, especially of the kind existing in this case, the other party, if he has it in his power, is bound to lessen the damages if he can do so by reasonable exertions, and, if he is necessarily compelled to perform more labor or put to greater expense, these are matters which are properly chargeable against the party in default; and,

and 182 miles north of St. Louis.

A decade ago a small brick plant, the Galesburg Brick and Tile Co., was established and followed soon after by the Galesburg Brick, and Terra Cotta Co., the plants being on opposite sides of the same road running east some three miles from the then thrifty village. For several years a moderate business was transacted, the brick attracting attention by reason of their strength and toughness. In 1890, the growing interest in brick roadways induced Mr. D. V. Purington to investigate the subject carefully. After visit-

ing various clay deposits he determined to erect works at Galesburg, and with his characteristic energy immediately set about it.

In May, 1890, his brother, W. S. Purington, who had formerly been connected with the St. Paul and Milwaukee

at first, but now better and safer methods prevail.

It is dug by a Marion Steam Shovel with as much ease, apparently, as any ordinary plastic clay. The dipper is swung into position, its steel tusks dig into the bottom of the bank and slowly, but

car and off the train goes to a point where a cable is attached, and steam-power once more moves it forward and upward to the clay house. As the cars reach the foot of the incline leading to the hoist they are automatically coupled without the aid of a hand, and when unloaded are uncoupled by another ingenious device, thus saving at least one man.

The cars are arranged to dump from opposite sides, one into a chute leading toward a Chambers Brick Machine running parallel to the right, and the other dumping to another to the left. The cars are dumped easily by the man in charge of the hoisting apparatus, and are then righted and the gates closed and they are started back down the incline ready for another load, all by the same hands—one man thus managing the delivery of clay for nearly 200,000 brick a day. In connection with this branch of the work, there are many little ingenious devices that save time and labor—all the invention of "Will."

From the cars the clay goes in great chunks to two immense dry pans made by the Frost Engine Co., of Galesburg. It is quickly ground to fine powder and deposited on a rubber belt that elevates it above and drops it into an iron pug mill where water is added. Then it goes into the machine, from which it is



THE PURINGTON PAVING BRICK CO'S WORKS—At Top of Incline.

Pressed Brick Co., with works at Menominee, Wis., took up his residence at Galesburg, and began the construction of the Purington Paving Brick plant as Vice-President and General Manager, and in October following they began to make brick, having erected what they then considered the largest and best paving brick works in the country, with a capacity of 75,000 a day. Since then one improvement after another has been added, until now with two plants they have a total capacity of nearly 350,000 a day.

On the 18th of November, 1893, in company with good Anthony Ittner, of St. Louis, ex-President of the N. B. M. A., we visited Galesburg, and by the courtesy of Mr. Will Purington, inspected these plants, finding many very interesting features.

DIGGING SHALE BY STEAM POWER.

"Galesburg shale" is now a familiar expression to all who are in any way interested in paving brick. The deposits are seemingly inexhaustible in extent. At the oldest of the Purington works they have now reached a depth of 60 feet and have bored and tested the clay 50 feet lower with the most satisfactory results. To look at the great rock-like rifts that they have already made in the hills, one would little think that it could be downed and handled with anything less forceful than dynamite. This was the way it was managed

steadily it crawls upward, like a huge monster endowed with life, taking a mouthful of stone-like material, then wheels about and deposits a yard and a half of clay weighing more than a ton in a side dump car standing on a track beside it; another move and a second dipperful is deposited, and the car



THE PURINGTON PAVING BRICK CO'S WORKS—Emptying a Kiln.

is filled. The operation is repeated and another car attached to the first is filled. The track for a short distance runs on a light down grade, and should the cars not move off after the fourth and last mouthful is dropped, the dipper, as it is about to swing back, bumps the

forced in a single stream at a rate that enables them to make 80,000 or more a day on each machine. In fact, in one day of ten hours they made 114,000 on one machine alone. The brick are cut into brick lengths automatically edged and carried on 50 feet. Boys pick them

off quickly and pile on iron cars holding 480. Thence they go to the dryer. For each machine they have 16 double track tunnels about 120 feet long. These are heated by oil burners placed

The selling price of the brick is \$8.50 per M, f. o. b. cars at yard for No. 1, and \$6.50 for No. 2.

RAPID WORK.

Four men set all the brick in kiln, a



PURINGTON PAVING BRICK CO'S WORKS—A Eudaly Kiln under Fire.

at the opposite end. A draft is created by exhaust fans.

The brick are dried in 24 hours, and go from driers to square down-draft kilns. On the oldest plant, Eudaly kilns are used, and on the other, the Graves kiln of similar character.

Oil is the exclusive fuel about these works, the only exception being the steam shovel.

The green brick are $8\frac{3}{4} \times 2\frac{1}{2} \times 4$ 5-16 and when burned are $7\frac{1}{4} \times 2\frac{3}{8} \times 3\frac{7}{8}$. They burn in 7 days. The burn can be made in 6 days, including drying off, but the brick are better if not hurried. After closing up, the kilns stand three days, and then are gradually opened and in another three days, may be trucked on to the cars and sent on their mission.

THE OLD PLANT BURNED.

On May 17th, 1893, the old works were burned. The fire caught near the dry pans in an unaccountable manner about 8:30 p. m., and by midnight nothing was left but the office, engine and boiler house. The driers went up like tinder, and the machinery and belting was a total loss. The work of clearing away the wreck was begun the next day, and 36 days afterward, the work of rebuilding was so nearly completed that one machine was started again, and a week later the works were once more in full operation—turning out the usual quota of 160,000 or more brick a day—a record that could hardly be accomplished anywhere very far from Chicago.

remarkable performance made possible by the fact that they are paid by the thousand. Think of it, ye tenderfoot! Two men set on an average 80,000 brick a day. Does it seem incredible? If so, shut your eyes. On one occasion, two men set 114,000 in ten hours. They



THE GALESBURG PAVING BRICK CO'S WORKS.

handle five brick at a time and do not handle them like eggs, either.

From the kilns the brick go to the cars on trucks, or in slack times are stacked in piles on an open space.

THE GALESBURG PAVING BRICK CO.

have a plant near these works that now stands an idle monument to some one's folly; or, at least, as an awful example of extravagant investment and wasteful experiment. The proprietors were men of experience in the manufacture of brick from Galesburg shale, and set about to establish a plant that would excel all others. The work was carried on carefully and the most substantial buildings erected, regardless of cost. The engine room is elegantly fitted up with every possible convenience; the same with the boilers, and a good dryer was constructed and then, the crowning glory, the feature that was to outshine all others, and revolutionize the paving brick business—a continuous kiln—was built. It cost from \$50,000 to \$60,000, and had two splendid stacks (round), 125 and 100 feet high, respectively, nearly 20 feet square at the base, and there they stand, works of art but of no utility. No smoke now curls from their lofty tops, for no brick of a merchantable quality have ever been produced.

What few brick they did make were made at a disadvantage for the plan of the works contemplated the running of two machines. But one was operated, so that a part of the plant must have

been run at a loss, even if the brick had proved first quality. For instance, the cars for hauling the clay from bank to pulverizer, were double-sided dumping affairs, each one intended to carry a

double load, to be dumped in opposite directions, one for each machine. As but one side of the car could be used a load of logs was anchored in the other side to balance the car, reminding one of the old time method of carrying grist to mill in a bag, one end filled with grain the other with stone.

Galesburg has now 15 miles of brick pavement, most all of which has been put down within the last three years. A few blocks have been down for ten years, and the pavement is still in good condition. We are inclined to the opinion that none now living will ever see these pavements worn out, but that these same brick will do service for several generations to come, for they now appear to be wear-proof. Annealed paving brick have come to stay.

GLAZED AND ENAMELED BRICKS.

In the nature of things the able papers on this subject by Mr. Miller and Mr. Engle and the discussions which followed them were prominent features of the recent annual Convention of the National Brick Manufacturers' Association. The clayworkers of America are only just now taking their first steps in the manufacture of glazed and enameled brick. They have been manufactured successfully in moderate quantities for several years, but there has not been a general movement looking to their extensive production. At this time, however, a large number of the clayworking fraternity are in a receptive state of mind, and it is of particular interest and of great importance that the craft should have exactly the light thrown upon this subject which was given in the papers referred to. The difficulties of glazing and enameling brick were clearly set forth and in general terms the pathway to success, was made known. The difficulties of any new undertaking are always great. There is always reluctance on the part of many to undertake the manufacture of an article involving the complications which surrounds this one. It is known, however, that there is a strong demand and a growing one for a good quality of glazed and enameled brick. Despite any difficulties which may appear on the surface at this time these brick must be manufactured, and in a short time these difficulties which now seem great will be as a tale that is told.

In the English and Scotch cities one sees glazed brick on every hand. This

is largely because the brick is readily obtained. Within a few years we predict that brick of this general kind will be in very common use in all of the cities and towns of this country. The high sanitary merit of this material, aside from its beauty and lasting qualities, must, in the nature of things, lead to a large and profitable market for these brick. The uses to which they may be put were very clearly and forcibly brought to the attention of the convention. This, in itself, will have the effect of increasing the demand for them.

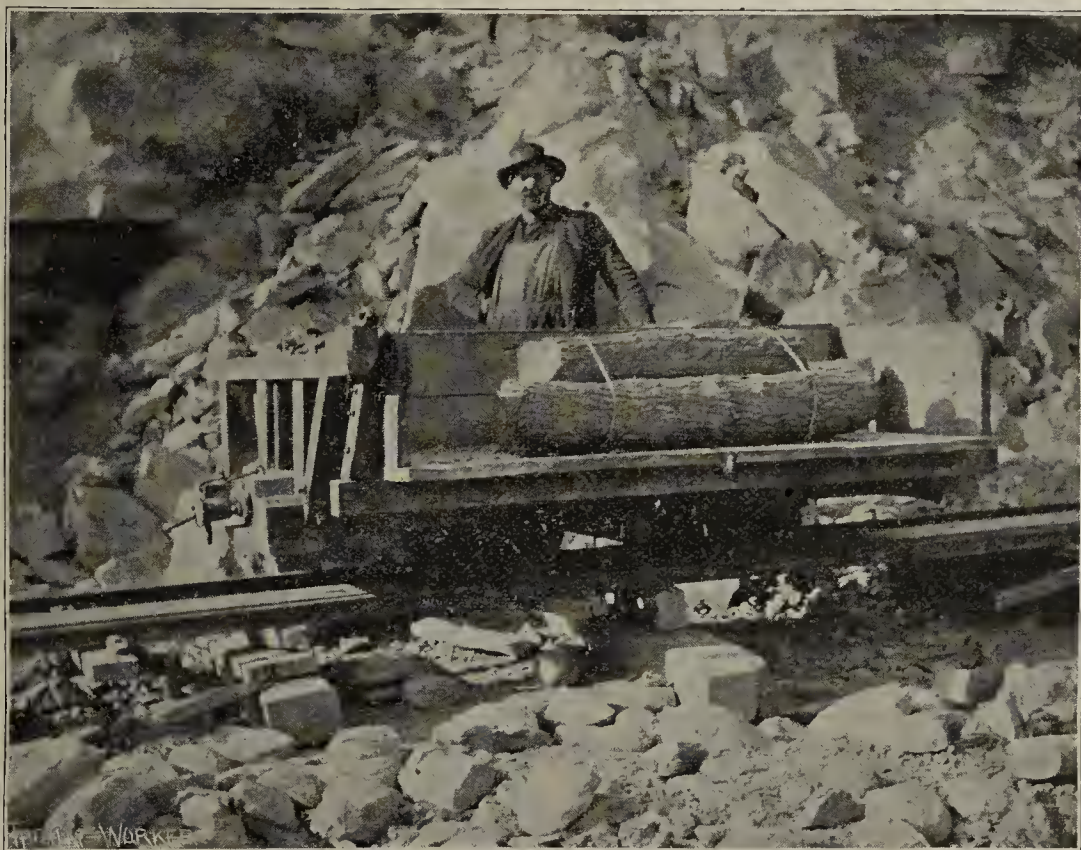
We insist that a glazed brick, even if the color is not uniform, but with a common glazed surface, would be found welcome to many of our architects and

THREE NEW SPECIALTIES.

THE Wellington Machine Company, of Wellington, Ohio, wish to call particular attention to three of their specialties.

1st—DRYER CARS. Last season they made over 1,000 of these cars, and made a special study of making them economically, putting in special machinery for doing the highest class of work on them, but at the same time doing it very rapidly, and hence at a low cost.

The result is that they are able to sell these cars at a lower price than has heretofore been done by anyone making them, and anyone putting in a dryer, no matter of what make, should first get their prices.



THE GALESBURG PAVING BRICK CO'S CLAY BANK.

builders, for structures of moderate cost. The ease with which they may be cleaned, the fact that they are impervious to moisture and possess high sanitary virtues would lead to the commercial success of such a product, and at once open up a market for this, a relatively new material.

In Mr. Miller's paper is to be found some valuable matter outlining the difference between glazed and enameled brick. At this juncture definitions are important in order to avoid confusion.

A CURE FOR HARD TIMES.

Confidence inspires confidence. Stop croaking and go to work. Then business will be lively and times good.

We have no use for croakers.—*Ex.*

2nd — MOULD SANDING MACHINES. They have also perfected, and now have ready for market, a new mould-sanding machine, which they claim has all the good points of all the others, but is simpler, having no chains or belts, and having a positive action, and at the same time being much simpler. On account of its simplicity, the cost of manufacture is much less than that of any of the other sanders on the market. It is not experimental, having been used all of last season.

3rd — DOUBLE-DECK PALLET TRUCKS. They have brought out a new one for this season's trade, overcoming the faults of the others, and which they state is simpler, handier, and more convenient than any others.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Button Hole Talks.

Editor Clay-Worker:

Why don't you open a column in the CLAY-WORKER for "Button Hole Talks." We have always been trying to get the good of these and it occurs to me as just possible that if each of us would exert himself a little, such a column might be very interesting. Some might give results derived from some of these talks and thereby get what we never can on the convention floor, for there is no question but what some of the smartest members lack the confidence to take the floor in convention and indeed those of us who run to "gab" give them little chance. Now let these run in some information under this head. Ask questions and answer questions or go into fiction and describe some supposititious conversation and we will have something of real value. I think it was just after the discussion regarding "Setting Brick" that I ran across one good brother who had something on his mind which he had not unloaded on the Convention but which I got out of him through the button hole route. He had acknowledged that he could not speak in public but, said he, "I really did wish I could for I would have liked to have said something in that discussion. I have tried a heap of experiments in setting brick. Have had lots of trouble in setting and lots, too, in my settle, but nowhere near so much in that as have my creditors," and he looked at me so solemn that I didn't dare snicker.

"I have an idea" he continued, "that I would have liked to have thrown out for these new amateurs to wrestle with, an idea relative to setting brick, but I couldn't do it. I couldn't stand up there like you do with your cheek, if I was paid for it, and besides I had something to say and you didn't. But never mind, old boy, I kind o' like your gall, and as I know you have to get your information second-hand and then pretend it's yours I am going to give you this: Just you tell them fancy fellers, with their fancy fixings, to try setting their bricks with a nice, round, bright silver dollar under each end. It'll be cleaner and prettier, and jest as sure to kill as some of the ways they are trying now." And looking me square in the eye, he shook my hand, and was gone. I refer this, without comment, to the amateurs.

GATES.

Setting and Burning Brick.

Editor Clay-Worker:

I received my copy of the Special Convention Number this A. M., and I have read it pretty carefully, and expect to read it and digest it again and again.

On page 136 you will find the following, by Mr. Crafts: "It seems to me, that our friend McAvoy started wrong in the first place, by making a brick out of proportion, and then corrected it by drawing his brick in the setting. If he had made his brick the right size in the first place, he would not have been stuck."

On page 161, under the title, "Waste of Fuel in Drying and Burning," and immediately under the Captain's kindly, genial countenance, as if to give emphasis to it, you will find the following, in Capt. Craft's own words: "Until we increased the thickness of our brick, and paying \$4.15 per gross ton for coal, the cost was 50 cents per thousand; since increasing the size, the cost has been more, varying from 53 to 62 cents per thousand. The increase in cost has been larger than the increase in size, as the

heat is held down by the thicker brick, burning the benches too hard, at the expense of the top."

Capt. Crafts said we made a mistake in making our brick out of proportion. I acknowledged the mistake, and told how we corrected it. He did not appear to think, that his making the brick too thick was a mistake, on his part, for he passes it by, without any mention at all.

It was to help, in just such cases, as the Captain's, that I stood up before 300 brickmakers, and admitted our mistake, and then told, how to correct it. The Captain does not appear to think it worth while correcting it, in his case, for he pays no attention to it, more than to say "the heat is held down by the thicker brick, burning the benches too hard, at the expense of the top."

Now, if the Captain will excuse me, I would suggest, that he set the brick in the kiln as we do. He will not "burn the benches too hard, at the expense of the top." And thus, his trip to Chicago will have paid him.

He says we made a mistake in making our brick out of proportion. I think he made a greater mistake than we did. He made his thicker, but did not reduce the size any other way, thus increasing the expense of burning. When we made ours thicker, we changed the brick otherwise, so that we do not put any more clay in them than previous to the change. In this way, we do not increase the cost of the burning.

And, now, I think is a good time, and a good place to repeat an assertion, made by Mr. Thos. B. McAvoy, and reasserted by myself, a dozen different times, at each convention, and that is the following, viz., "That nine-tenths of all the brick destroyed in the United States is by too much heat. By that, I mean, confined heat."

We go on, day after day, setting up our bricks in the old way, and ever and anon, adding a little to the size of our brick, thus gradually closing up the draft in the kiln, and preventing the heat from getting out of the arches, or benches. The heat being confined there, we get all the settle, or shrinkage in the arch brick, at the expense of the top, which turns out to be lighter and softer than expected.

When the kilns are opened, we are disappointed. We go to the burners, and read them a lecture, on the advisability of waiting until the top of the kiln, is thoroughly hot before commencing to settle, telling them, "A hot top and a cool arch, and you can't help but get it right." Well, they know that—knew it before you told them. But the trouble is, they cannot get the top hot, nor keep the arch cool, because the draft has been shut off, by reason of your making the thicker brick, and packing them in the kiln like sardines in a box. The thing keeps on getting worse, because you have thrown your burners off their regular way of handling your clay, and the next you know, you have made a change of burners, saying: "Oh, well, I guess they were old, and, maybe their eye sight is not as good as it was." And when the changing of burners commences, then the fun begins. And, it is not long before the burners are all rattled; the superintendent or manager gets rattled, and then the boss, himself, if he is not rattled before this time.

I am one of the "youngsters," but, in my short career, many, many times have I seen this occur. I can now count, at least, a half dozen cases, in our own city, here, where this continual friction, between the burners and bosses is on top.

The first down-draft kilns, I ever saw burned, gave no better results than our up-draft Dutch kiln, simply because the brick were packed in the same way they had been packed in the up-draft kilns, on the same yards. But, when I visited works that were noted for excellent burns I saw the difference. The brick were set with a view to a good draft. In some cases the

first kiln set and burned, under direction of patentee, were up to guarantee. When he left, the trouble had commenced. The owner thought he could get ten or fifteen thousand more brick in kiln—result, overburned top, light bottom. Cussed the kiln, cussed the patentee, cussed the burner, and everybody, in general. Never thought of cussing himself, for ruling the best thing about his kiln—the draft, as arranged for, by the proper setting of the brick in the kiln.

And now to set myself right on that question of overburned arches and light tops. It seems that I gave the impression that when we commenced to make machine brick, we were troubled with overburned arches, and, consequently, had light tops, and that this led to our experimenting with the setting the brick in the kiln. This was not so. We had, if anything, better results with the burning when we changed to machine brick. We claim, that this was owing to the fact that we took young men off the yard and taught them to burn, as we thought it should be done. With one exception, our setters are young men that we taught ourselves, and now, having four (4) burners and four (4) setters taught to set and burn the brick as we think it should be done, we have no trouble in getting the results that we think our experience and close attention to that part of the business warrants us in getting.

From the time we changed to machinery, until two years ago, we were getting as good results as the average brickmakers in the burning, but the demand for hard brick had increased, especially selected hard brick, for pliers, arches, etc., in large buildings, sewers, outside work, etc., that something had to be done to increase the percentage of selected hard brick. Down draft kilns and continuous kilns were talked of by many brickmakers. After investigation, we concluded that, that would be largely experimental, and that we had better experiment with what we had, and not blow in a small fortune on new kilns. The result is, that we can, without any trouble, get 90 per cent. of hard brick in a kiln, and the percentage of selected hard brick has been increased more in proportion. We have, with a judicious use of coal dust, succeeded in reaching almost 95 per cent. of hard brick in dozens of kilns, that have been burned with all conditions—weather, clay, coal, etc., favorable.

FRANK B. McAVOY.

From the West, Traveling East.

Editor Clay-Worker:

After the Convention, returning homeward from Chicago over the Michigan Central Railroad, I found myself to be the only passenger in the car between Detroit and Niagara Falls. Sitting alone, with only the snow covered plain to gaze upon, my mind naturally reverted to the persons and subjects which had occupied our thoughts during the past week in Chicago.

From the meeting of so many kind friends with their cheering words of good will and instruction, from the frequent grasp of the hand and the hearty greeting, to the solitude of an empty railroad car for eight hours was a great contrast. In all previous returns from the Convention I have had the society of New England and Pennsylvania members, whose pleasant company has relieved the tedium of mid-winter journeying. Being thus solitary I was led to think of those who had not had the pleasure and profit of the meeting at this Convention, and thought it might be well to give them through our trade journal a little of our enjoyment.

Our Eighth Annual gathering is over. That meeting for mutual counsel, instruction, and fraternal hospitality to which we have been looking forwards for months, with feelings of

hope and expectancy, has gone into the past. It has become the concluding chapter of the records of our work for the year 1893, and it was an appropriate *Finis*.

Its lessons have completed the volume of our experiences for the past year, and from that volume with its records of successes and failures, we must subtract the knowledge with which to wisely guide our business life during the new year entered upon. Good-bye 1893, welcome 1894.

For the benefit of those of your readers who did not attend the National Brick Manufacturers Convention, let me mention some of the incidents of that meeting and the place.

Chicago, the Wizard City, the place of the White City. Oh! that they could make Chicago white, with a blue sky over-head; for then she would be beautiful and grand upon the shores of Lake Michigan.

The brickmakers of Chicago gave us a generous invitation, and nobly they fulfilled their promise of providing for us, it was a royal hospitality. The place of assembly was at once a hotel, convention hall, exhibition room, theatre and banquet chamber, all under one roof. No other city could have furnished such comprehensive accommodations as we had in the vast Auditorium Hotel of Chicago.

The official announcement said, "In case of inclement weather the delegates will not have to brave the elements at all, as it will not be necessary for them to leave the hotel unless they wish to." This proved to be a reality; Chicago is bound to get the best of everything. She had her Auditorium, and by her relation with the windy monarch, she induced him to send his favorite son, surnamed Snow Blizzard, to guard the outer walls, so that we might realize fully the advantages of our asylum.

It was a grand success, the sessions were well attended, the subjects important, the discussions interesting, and the results instructive. The exhibition was very good; several fine working models of dry press brick machines were in operation, also several oil burners for clay burning, together with many other clay-working appliances. There were also many excellent specimens of building and paving brick exhibited from all over our broad land.

The blizzard which prevented our out-going could not however chill our spirits; many informal sessions were held in the parlors and lobbies of the hotel, at which very many matters of individual interest were discussed, and mutual instruction given. Take it all in all it was a right good time, and we are all, without doubt, the better for it. If the exterior was cheerless and cold, the interior was certainly full of the energy of life, and bright with the light of counsel and the goodwill and friendship.

The arrivals were prompt and early, many arriving on Sunday. President Anthony Ittner of St. Louis, and Secretary Theo. A. Randall with his popular assistants were on time. Our silent friend Eudaly of Ohio, Boehnke the continuous from California, Morrison the up-draft from Georgia and Alsip the up and down of Illinois, took care of the kilns. Crafts from North Haven, ballasted with New England Stone, decorated with popular Stiles, toned with sober Gray from Saco, Maine, arrived in good order. The Philadelphians came as usual with a "Flood Tide" and their gay "Dingee," but we were sorry to see the flags at half mast; two of our esteemed friends, C. P. Merwin of Berlin, and C. E. Siner of Philadelphia having passed away in death since our meeting in Louisville.

The glazed or euameled brick class were well represented, the best exhibits being by our genial, ex-president J. C. Adams, of Indianapolis, and New Discovery Pike of Illinois, at least that was what Capt. S. P. Crafts said, and surely he ought to know. We missed the jocu-

lar Blaffer of New Orleans, but he sent a substitute, his son A. S. Blaffer who was duly elected Third Vice-President.

President Wm. H. Alsip and Master of Ceremonies D. V. Purington, both of Chicago, certainly deserve all the credit they will get, and far more too. The vast amount of work they performed, and the liberal manner in which they labored for the comfort and welfare of the visiting members of the Association is beyond praise. We shall never forget their kindness, even when we have forgiven them for fixing the weather so roughly.

The routine business is published in the Official records, therefore we will only briefly mention the conclusions which were apparently accepted by the members present.

1st. *Brickyard Ethics*. That brickmakers ought to give sound practical advice according to facts; not regarding either the hopes of the enquirer, nor the desires of the machine salesman, even at the risk of creating a competitor. We ought to rely upon the operation of the laws which regulate the survival of the fittest.

2d. *The Year's Record*. That the brickmaking industry has shown that it is upon a firm foundation. Notwithstanding the hard times of the last six months, and the stringency of the money market, no established brickmaker has failed or suspended payment.

3rd. *Glazed and Enameled Brick*. That the one fire process was the best. That bricks slipped with clay colors and a transparent glaze, were better than those with opaque enamels.

4th. *The Brickmaker*. That any true brickmaker can make a good brick with an inferior plant. That the most perfect appliances would not make a good brickmaker. The man not the machine is the chief element of success. That good tools do help a competent man.

5th. *Profit in Brickmaking*. That correct records and sound business methods must direct the selling and delivering of the products and the collection of the proceeds. That brickmakers should co-operate. That strict economy must control both the mercantile and the mechanical departments of every successful brickyard.

6th. *Setting Brick in Kilns*. That the continuous kiln was steadily growing more popular, but was not as yet perfectly successful. That correct setting in any kiln was the great element of successful burning and making of good brick.

7th. *Oil as Fuel*. That oil is a good fuel for brick burning. That there are several good methods. That the use of air and oil gives the best results. That each brickmaker must determine from his surrounding conditions, what system would best serve his purpose.

8th. *Vitrified Paving Brick*. It was again decided that the term vitrified was a mis-nomer; the more correct word being "annealed," because the term was used to describe a "very hard tough material" (not a glass block) especially adapted for paving roads. That a thoroughly annealed paving brick showing a dull fracture was the correct standard. That wherever paving brick had been used in comparison with stone it had always fully demonstrated its superiority, both in regard to wear and foothold for horses.

These were the principal themes which engaged the attention of the Association. Many points were explained by those who had had practical experience, so that much information was obtained by all those who were interested.

Thursday evening closed the convention. Once again the National Association of brickmakers lingered at one of the cross roads of life. A fraternal assembly was about to separate. Who could tell how many would answer at the next roll call. Many friendships have

grown out of these conventions. No wonder if there was just a little sadness in some of the good-byes. But hope tempered the "God-speed" and found expression in heartfelt resolutions to meet again again next year, God willing.

May our Association prosper.

JAMES TAYLOR.

The New York Brick Market.

Editor Clay-Worker:

It is safe to suppose that you and all the members of the National Brick Manufacturers' Association on your return from the Windy City are so full of ail of the good prophecies made by the different speakers connected with that body, and the good fellowship that prevailed that you have no thought for poor 'us' in this end of the country.

Probably some of the sections represented there may have felt the touch of the depression in prices and demand, as well as the manufacturers of this section, but not to the extent that it has been felt here. Simply stated, it is a case of all eggs in one basket—there is sure to be a loss if things do not move along smoothly.

The New York market is the objective point for all brick that come in by water and some that come by rail, and the time has been when the demand was so great that brick from the Erie canal have been placed on the market.

The production is so excessive in proportion to the demand that it is a wonder that the rates hold as well as they do. The survival of the fittest is often heard of. The large concerns think they will outlast the smaller. The individual may think he will be in it when the large firms are a thing of the past.

In the past there have been those in the trade who have had a severe attack of the big head, and just as night follows day, they have failed. A season when money is made always follows one when no money has been made, and all yards that have been idle are running, for there are always some that are ready to take hold for the money there is in it.

History repeats itself. For the past few years there was great rivalry between Peck & Martin and Candee & Kane for the control of the market in New York City and Brooklyn. Finally, Peck & Martin went under. The little fellows moved along all right. Candee & Kane was still after the entire control, and as a result, they, too, went under last summer. This going at a devil-may-care-rate, if done to make the public think they have an unlimited capital, won't go.

I join friend Crary in the views set forth last month and am pleased with the manner in which you placed them before the readers of the CLAY-WORKER.

It is just so in this vicinity. I know of but one yard that has adhered to the same production yearly. No matter if the price is high or low, the demand slow or active, they go along with just the same output. Others, again, seem to rush along, just as the plungers in the race track, and meet the same fate; they build more yards, and when seasons like those of the past two years come, they make just as many, and even think of enlarging, but still they put out as many as they possibly can and send them along to the market. This method is only likened to the ostrich who buries his head in the sand and thinks his body is covered. They seem to forget that there is a County Clerk's office where all can see the record, and those conversant with the business look for the bubble to burst.

The concentration of capital or business if done to make the holder richer, and the consumer or public poorer, is to be condemned.

QUANTITY MADE.

As one looks over the figures of the number

of the brick made each year, it is amazing to think how they use them all. All that are shipped do not return; they are sold for some price and are laid up in the walls of some building:

| | |
|-------------------|---------------------|
| 1882, 600,000,000 | 1888, 900,000,000 |
| 1883, 650,000,000 | 1889, 1,000,000,000 |
| 1884, 600,000,000 | 1890, 1,200,000,000 |
| 1885, 850,000,000 | 1891, 1,100,000,000 |
| 1886, 962,000,000 | 1892, 900,000,000 |
| 1887, 960,000,000 | 1893, 900,000,000 |

In nine years, the amount of production trebled from those already in the trade enlarging their yards, and by the erection of new yards. No combination to force up prices and thereby stimulate manufacture, but just the increase in demand. The year 1885 shows an increase of two hundred million or more over the preceding year, with a good, uniform average in price. On July 1st, \$6.50, and the lowest, October 1st, \$5.75, with sale of last cargo before close of navigation for \$8 per M. These prices stimulated and increased output the next season, but not so excessive but that the rates were good. The first cargo of brick was sold in May at \$7, with the lowest rate in July, \$6.25, and the last shipment brought \$7. The next season the supply and demand about equal with remunerative prices. In 1888, there was a change of administration which was to send prices away up. The prices did not materialize but ranged below the preceding years with the largest output in the trade at that time. 1890 was the banner year for the number made, as the McKinley bill was going to make all lines of trade hum. As for the brick trade, it was a failure, for the prices received through the year were low comparatively with its predecessor, and it has been a steady drop from year to year. With a production this year but a trifle more than in 1885 with its rate of \$6.50, \$5.75 and \$8. The rate of the past year commenced in March with brick selling as low as \$4.25; in August they sold for a short time as high as \$5.50, and then dropped to spring prices, and continued so until the Haverstraw manufacturers put a price on their stock with some selling for \$6.

COMPARATIVE PRICES, JANUARY 1ST.

| | 1893. | 1894. |
|------------------|-------------------|-------------------|
| Pale..... | \$2.25 and \$3.00 | \$2.00 and \$2.25 |
| New Jersey..... | 5.00 and 5.50 | 4.50 and 5.50 |
| North River..... | 5.25 and 6.00 | 5.50 and 6.00 |

Just after the holidays there were in the market 120 barges waiting for buyers. Hackensack was represented by several cargoes looking, as I said in the January letter, for that \$6 rate, but they are looking for something afar off. Two of the barges have disposed of their cargo—well, \$5.25 was top, and in one case, after discharging one hundred thousand, they knocked them off, and the barge laid about a week, and was finally resold to the same party for less money.

Another barge from here has been on the market for about two months, the owner holding for that fancy price. There will have to be a very decided change in the weather and demand if he gets it, as the Hudson is still open, and there are manufacturers outside of Haverstraw and some in that place will sell for less than the set figure.

STOCK JANUARY 1ST.

| | 1893. | 1894. |
|----------------------------|-------------|-------------|
| Haverstraw Bay..... | 119,000,000 | 100,000,000 |
| Other points on N. River.. | 90,000,000 | 118,000,000 |
| New Jersey..... | 46,000,000 | 56,000,000 |
| Long Island..... | 7,000,000 | 4,500,000 |
| Staten Island..... | 4,200,000 | 4,500,000 |
| On barges..... | | 20,000,000 |
| Total..... | 266,200,000 | 303,000,000 |

Thirty-seven million more than at the same date last year. It is a surprise to many that there were not many million more. Some must have run their stock in during the run of low prices.

New Jersey has ten million more than last

year. The increase must be credited to South Jersey, as Hackensack is four millions short of last year. Figures are hard things to combat, and with three hundred million of stock available means for every working day from the first of February to the first of next June that three millions of brick can be ready for consumption without any new stock being put on the market. If the weather is good in March, there will be some moulding, and April will see new brick ready for shipment. There is political "Hari Kari," and if some of the manufacturers continue to make brick there will be another kind of "Hari Kari" to report.

OUTLOOK FOR USE OF BRICK.

It is usually expected that the first three months of the year will furnish the majority of the plans for the building of the coming season. January, 1894, is behind the previous season. The number of filed plans for four weeks in 1893 was 163, to cost \$3,958,097. The four weeks for 1894 show 116 plans to cost \$2,351,300. A difference of over one and a half million of dollars in New York City.

Brooklyn seems to be at a stand still. The first four weeks of 1893, 272 permits were issued to cost \$1,002,005. For the same period of 1894, 164 permits were issued to cost \$466,585, which goes to show that if all the plans that are filed are built there will still be a decided shrinkage.

In times past, easy money has stimulated building. If such were the case at present, building should have a boom, as never in their history have banks had so much money on hand. The statement of the Associated Banks of New York City on January 27th, showed over \$109,000,000 over the legal requirement of 25 per cent. With all the inducements offered for speculative building, it still lingers.

HOW TO DISPOSE OF PALE BRICK

Is going to be a question the coming season, and in the future. New masters, new laws, prevail. The political cyclone that struck Brooklyn last fall has resulted in a new commissioner of buildings, who has drafted a new set of laws, in part a counterpart of those that exist in New York City. They will not allow the use of pale brick within the city limits. For a long time past Brooklyn has been a pale brick market. The Commissioner says he is not going to allow all the rubbish that is made to be used in Brooklyn.

WILL THEY SUCCEED?

I made mention last month of the combination of the Haverstraw manufacturers to secure higher prices. As the Irishman remarked, it was unanimous—"all" but two firms. If boycott or drastic measures should be used against at least one of the firms, it would not be wondered at.

The members of the firm in question are the presidents of the two banks in that town, with the cashier of one of them, and the other stockholders in the estate of one who had been president of one of the banks. It is not at all likely that there is a similar case in all the U. S. Where all the business of banking is done in town, with the officers engaged in some other line of trade and refuse to join in a movement to help their customers as well as themselves, is a curiosity of the nineteenth century. What the outcome may be is hard to tell. If it does not cause the others to get together and form another bank, thereby giving the members of the present institutions more time to attend to the methods and means of selling their stock for less than their neighbors, it will be strange. That active measure should be taken in the case, is the opinion of the majority. If nothing is done, it will be a case of seasickness of a large number of the sailors that embarked with such eclat at the beginning of the year.

MARKET.

Practically none of the stock from Haverstraw that has been covered and held for the

fixed figure of \$6 or \$5.75 is taken, when anything else can be obtained. If the Haverstraw should close, say, for two weeks, Long Island and South Jersey would rush stock in knowing that when navigation opened, there would be large shipments and they would be left.

The Up River manufacturers do not seem inclined to join their Haverstraw brethren.

John J. Jova, who died recently, had his life insured for \$40,000. His sons will continue the yard.

Hackensack, N. Y.

A. N. OLDTIMER.

Philadelphia News.

Editor Clay-Worker:

The brickmakers think they are going to have a good year. There is confidence in this. They give proof of it that is tangible. The early part of February is a dull time usually but there are signs even now that are safe to go by, and they point to big work. The tariff agitation has a more unsettling effect here than farther west, but as soon as it is over and manufacturers and everybody else can know where they surely stand, there will be some improvement. People will then do what they see they can do. So far they have done nothing. The money scare has completely died out. Manufacturing establishments are resuming. Investors are planning, and are anxious to get their money to work. Reference has been made to our trolley lines; they will help business a great deal by inducing builders to build farther out of town where land is cheaper. A trolley line is to be built from here straight north 30 miles to Trenton, N. J., and from thence to New York.

The Perklomen Steam Brick Works at Perkiomen Junction are undergoing extensive operations and manufacturing facilities will be enlarged considerably.

The Griffen Enamel Brick Company are also enlarging their plant at the same place.

Schaffer & Bro., in anticipation of a busy season have leased a tract of clay in the same locality where they will set up their machines.

Among the frequent wages reductions which are so sadly familiar to employees, is a 10 per cent. cut by the Wick Bros., at Kittennany, and the works are temporarily closed while the men are thinking over it.

The Brick Manufacturers' Exchange has renewed the following schedule of rates per M. for 1894: Salmon, \$5.75; hard, \$8; stretcher, hard and machine \$11 to \$14; Pressed Brick, best quality, \$20; second quality, \$18. Some of the members attended the National Association of Brick Manufacturers at Chicago and were much pleased.

The Excelsior Press Brick Manufacturing Co., have been granted a dissolution. It appears that the company's only liability was, or is a mortgage of \$28,500 held by the Fidelity Insurance, Trust and Safe Deposit Company.

John H. Webster a once prominent brick-maker of Frankford died last week in his eighty-first year.

The Trenton potters have refused to accept the 10 per cent. reduction offered them and the strike is on.

Several schemes are on hand looking to the starting of new brick yards near the city. There is no serious overproduction and the entire stock manufactured is cleaned up each season. There is a steady increase in the demand for fine brick and corresponding activity in the production of them. Builders are looking anxiously for the opening of spring work—now not very remote. Some of the leading builders have their financial arrangements already made for big work. There is no hesitancy among moneyed men to push the builders along, a good deal of land is being offered and as a consequence cheap sites are being obtained. Labor and material being low, things will take a start and we will probably get through the season without obstruction.

The demand for fire brick has fallen off. Brickmaking machinery has been quiet, but we learn here and there big orders are expected.

The great industry in this State is iron and steel making and it is pleasing to note an improvement of small proportions has set in. We are over the scare and ready for work. Mills are starting up and more will follow. Within six weeks there will be a general transformations. By that time twenty or thirty miles of trolley lines will be under way. ANON.

OHIO VALLEY NEWS.

The sewer pipe and fire brick works in this region are running steadily and are having no difficulty in getting a market for their products. The mild winter weather has had the effect of continuing sewer work, coupled with the fact that so many cities are finding work for their unemployed, principally in street improvement and drainage, thus causing a good demand for both sewer pipe and brick. There is no class of workmen, in this region, at least, who have felt the hard times as little as the clayworkers.

The long threatened sewer pipe manufacturers' combination is, as yet, a corporation in name only. January 1st, the date when it was to go into effect, has come and gone, and yet each firm in the consolidation is quietly conducting its own business independent of all others, and a sharp competition still continues. The proceedings of the meetings of this company are as secret as a Masonic communication. Inquiry of any of the members usually brings the reply that he can report "progress." The latest difficulty, it is rumored, is that they are not a unit on one very important point; some advocate a general shut down of their plants for a couple of months until the spring business opens, while others desire to to run and accumulate a stock. The general impression seems to be that before the first of the month everything will be satisfactorily arranged, and twenty-four immense sewer pipe plants will lose their individuality in the one large consolidation, with headquarters in Steubenville, Ohio.

Wm. Wallace, having sold his stock in the Markle Fire Clay Company, of Markle, Ohio, retires from the presidency of the company. D. A. Sloane was elected President, O. Y. Crawford Secretary and H. Montgomery Treas. This works is the "Baby" sewer pipe works in the great Toronto district, and is a model plant of large capacity.

The John Porter Company, of New Cumberland, W. Va., controlling more brick works, and whose daily output

of paving brick is the largest of any one concern in the world, has changed its name. This corporation will hereafter be known as the Mack Manufacturing Co. John M. Mack is President, Thos. McConville Sec'y. and G. B. Boren Treas. and Gen'l. Manager. Their headquarters will be in Pittsburg, instead of New Cumberland. This change was brought about on account of John Porter, the founder of this company and the pioneer brick manufacturer of this valley, again engaging in the brick business. Mr. Porter was president of this company until about two years ago, he severed his connection with it and began the erection of a paving brick plant at Hamiltontown, a short distance above New Cumberland, on the Ohio River. John Porter a short time ago, went on the market again with "John Porter Brick," a product of his new plant. These two concerns on account of the similarity of names, at once began to have trouble, and after several lawsuits over contracts, in order to avoid confusion in the future, decided to make the change as recorded above.

BUCKEYE.

AN IMPROVED BUILDING TILE.

THIS is a very cheap building material, of which the parts may easily be moulded and rapidly laid. patented by Mr. John Stewart, Jr., of Somersworth, N. H. Fig. 1 shows the improved tiles in place in a wall, a portion of which is filled with concrete. Fig. 2, corner; Fig. 3, side piece; Fig. 4, half tile; Fig. 5, cross partition brace. The walls are intended to be built 12 inches thick. From cellar wall to first floor, filled solid with concrete from first floor up, a 3-inch air space is left which takes away all dampness. The inside of the wall can be glazed, roughed for plaster, or left plain terra cotta, as the builder may prefer. No studding or lathing required. The outside may be made very ornamental. The tile now in use are 8x12 inches; they are quickly put in place and look handsome. The cost to burn is much less than brick—a much larger amount can be put in the kiln. They cost less than brick to lay, being

so much larger. The saving in studding and lathing is a large item in expense. Can be built as cheap or cheaper than good frame houses; cost but little for repairs, and light insurance. It is the coming material. License and State rights to manufacture for sale. For further particulars, write to Mr. Stewart.

GREER TO JENKINS CORRECTED.

Editor Clay-Worker:

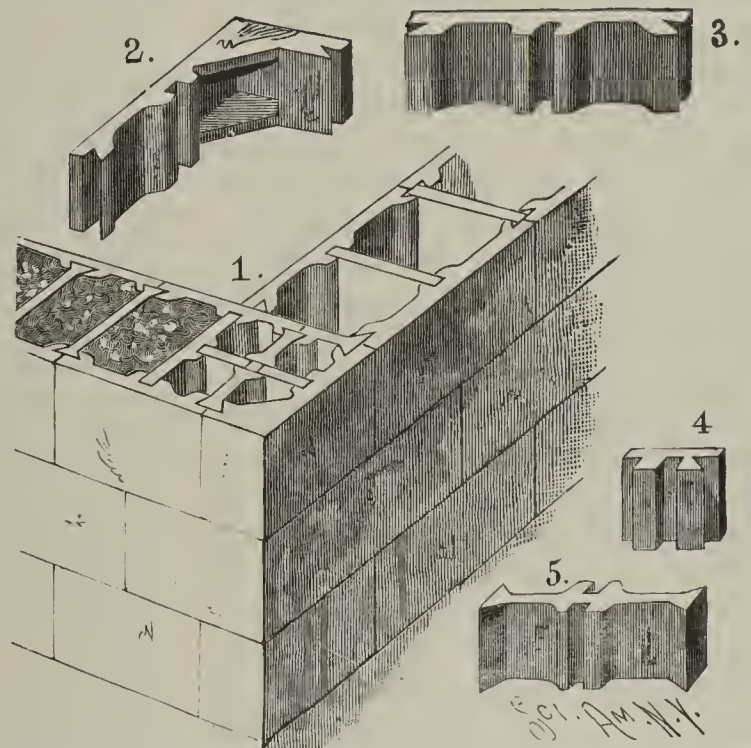
In January issue, in letter "Greer to Jenkins," I am made to say: "In my opinion the bricks are checked in the last stage of the burning if perfectly dry before being set in the kiln. This can be found out by rapping them smartly together." What I intended to say was, "In my opinion the bricks are checked in the last stage of *drying*. If perfectly dry before being set in the kiln this can be found out by rapping them smartly together."

I do not know whether the compositor or I am to blame for the error, but would feel obliged if you would have it corrected if you consider the matter worthy of further notice.

R. M. GREER.

IMITATIONS.

We have a very conspicuous example in our city of the folly of undertaking to cover up poor brick work with an



imitation substance lined off in a way to make it appear like good brick work. Imitation in building work never succeeds. In the nature of things such structures are at best but makeshifts; indeed imitations in all branches of industrial life are good things to avoid.

Written for the CLAY-WORKER.

CHEMISTRY FOR CLAYWORKERS.

No. 19.

CONTINUING the brief history of the thermometer, commenced in the Jan. issue of the CLAY-WORKER:

"Finally, in the latter part of the seventeenth century, the physicist Renaldini, of Pisa, a professor of Padua, proposed that all thermometers should take the freezing degree of water as a fixed point, and, as a second fixed point, that to which alcohol rises in a tube dipped in melted butter, the intervening space to be divided into equal parts. From this epoch, then, dates the present thermometer, and the first instrument due to this innovation dates back to 1701. This was constructed by Newton, and was the first thermometer giving comparable readings that had been devised. The liquid that he adopted was linseed oil, which is capable of supporting a higher temperature than alcohol without boiling, and his fixed point of graduation for the upper limit was the heat of the human body, and for the lower, the point at which the oil stops at the moment of congelation.

A search soon began to be made for a thermometric agent other than oil (which was too feebly expanded by heat, and which congeals at but a slightly elevated* temperature), and, in 1715, Gabriel Fahrenheit, of Dantritz, almost completely solved the problem, in the construction of the thermometer that now bears his name. This was immediately adopted in Germany and England (where it is still employed), and was introduced into France. But, along about 1730, scientists gave preference to the one that Reaumur had just devised. Finally, in 1741, Celsius, a professor at Upsal, constructed the instrument called the Centigrade thermometer. The three last named instruments are the ones most commonly used, and differ only in the graduation of each." Such, then, is the brief history of the development of the thermometer. Now, bearing in mind that only *intensity* is measured by this instrument, not *quantity*. To illustrate this let us take for example and comparison the fine fibre of bamboo in the incandescent lamp, and a railroad car-axle, both at what we are pleased to call a welding heat, call it 3,000°. This is the intensity measure of them both, or rather of each.

*Depressed temperature makes it clearer, I think.—W. W.

Now, assuming the fibre to measure the one two-hundredth of an inch in diameter, and the car axle to measure five inches in diameter, assuming also that iron and bamboo fibre have the same capacity for heat; then, although the intensities of each are the same, the *quantity* of heat they contain are as 1,000,000 to 1.

This introduces us to another measure of heat, viz.; Measuring the quantity of heat. To accomplish this we have recourse to a pair of scales and weights, in addition to the thermometer, and it will be necessary to fix upon a standard, or unit of measure and weight; for, in describing a clay bank if I were to say it has a face 1,000 feet long, this would only give you an idea of its *length*. The description would be very incomplete even when I told you it had a depth of fifteen feet; but when I tell you it extends back for a quarter of a mile, averaging the same all through, you can approximate the millions there are in it.

Now as length, depth, and width are the necessary factors of the quantity of clay in the bank, so are weight of fuel and intensity of same necessary in calculating the quantity of heat.

The temperature of the bamboo fibre mentioned above is far higher than the melting point of steel, but, how much steel would it melt? Taking this case right home, let us reduce the area of fire surface in a brick kiln say to one-fourth its present area, and with this restricted grate surface try to burn a kiln of brick; the result you can easily surmise, and you can readily assign a reason for it, viz: The fires were not large enough to heat the kiln thoroughly. Now this is a case of *lack of quantity, but not of intensity*, for the small fires could easily be maintained at the same temperature as the large ones, or even at a higher temperature, with very little change in the resulting failure to burn the brick.

Per Contra. If 2,000° of heat be the intensity required to burn brick thoroughly, and fires with even four times the ordinary grate surface be maintained at 1,700° or 1,800° the brick will never be thoroughly burnt. This is a case of *lack of intensity, but not of quantity*.

Every intelligent burner—and here I do not refer to book intelligence—could confirm what is said above, and state it too, in his own way.

It is absolutely necessary for everyday work at the kiln, and elsewhere, to

have clear and distinct ideas of quantity and intensity; great blunders are daily made for want of such distinction. Millions of brick are fired into useless scoria by an excessive intensity, while millions more of salmon are produced by wasting tons of fuel in generating a *surplus quantity of low intensity heat*.

The study of heat, and its proper application, is of immense benefit both to the head and pocket of the brick manufacturer, and large users of fuel generally. Good practical, hard sense, cannot be ignored in the clay industries, but it ought to be supplemented by as much science as can be acquired. By all means avoid being ultra practical, and do not heap contumely on the head of the scientific explorer, or, "theorist" as you are pleased to call him. I can well remember when we used to consider 10 or 12 inches from the firegrate, to the crown sheet of the boiler quite sufficient, "good, common, hard sense" teaching us that the nearer the fire was to the boiler the better she would steam, and to use two lines from Burns:

"This past for certain, undisputed;
It ne'er cam i' our heads to doubt it."

Till one of these detestable "theoretical men" came along, and told us *our theory* was wrong, that we were wasting coal by not giving it sufficient room to burn, sending it up the smoke-stack unconsumed, that if we would lower the grate until it was double that distance from the boiler she would steam quite as well, with less firing and fuel. We received this advice with much doubt and misgiving, but coming from one who was looked upon as an authority on many scientific subjects, and, besides being one of the members of the firm, his suggestions could not very well be ignored. The alteration of one boiler verified his theory, and when I took measurements some eight or ten years ago, forty inches was the height from grates to boiler, and it was reported none too high. Soft coal was the fuel used. *En passant*; are the arches in the Dutch kiln, and the furnaces of kilns in general provided with space enough, to burn coal properly, especially soft or bituminous coal. Experiments in this direction could easily and cheaply be made in the Dutch kiln. I must leave this suggestion for some intelligent, painstaking burner, or manager to pick up, assuring them that flame from fuel must have *room to develop* otherwise fuel is most certainly wasted.

To return to the standard of heat *quantity* then: we will take a pound of water at 32° F. and by applying heat to it, raise it to 33° F. The amount or quantity of heat that will raise this pound of water one degree, is called a *unit* of heat, without any consideration of the quantity of fuel consumed, or how the heat is applied. Ninety-nine units may have been wasted in using the one unit, but the wasted ones do not count in this case.

There are two other standards or units of heat, first of these is that quantity that will raise one pound of water from 0°C. to 1°C., or one degree centigrade. The next is, that quantity of heat will raise one kilogramme of water 1°C. Now these three different units of heat amount to exactly the same thing when the weight of water heated, and the length, or size of degree is accurately taken into account.

It used to perplex me to see in one book that a certain fuel carried 62,000 heat units, and in another book to read of the same fuel containing only 33,000 units, and I cannot say that I am yet reconciled to varying standards of weight, measure, etc.

The French standard is the one adopted by scientists, that is, the kilogramme of weight, to the centigrade degree.

As the pound weight and the Fahrenheit degree are much more familiar to the general reader I shall give them the preference in these papers.

WM. WAPLINGTON.

Written for the CLAY-WORKER.

DRYING BRICK.

BY S. GREEN.

LOW TEMPERATURE IS EFFECTIVE.

AS HEATED air is capable of carrying more moisture, and enclosed artificial dryers, with but little current passing through them, may easily maintain high temperature, these means seem to have been suggested in operating the artificial dryers in general use.

Much intelligent attention has been devoted to the subject, and yet brick-makers are asking for a satisfactory means of drying building brick.

Is it not possible that, though "economy is wealth," there may have been too strong a desire to save the heat that has been necessarily generated at much cost to evaporate the large quantity of water contained in the brick?

It requires much heat to carry a large quantity of moisture up a chimney by what is termed a natural draft; and if it is not used, the accumulation of it, especially at the mid-length of the dryer, tends to check the draft and retard the drying where it is most desirable; and yet, if it is used, it must be to carry a large quantity of heavily charged air (that may soften or cause the bricks to lose their shape or "squat"), lest the sharp draft of hot, dry air injure or cause the fresh made bricks to "check" as they enter the dryer close to the chimney.

The limit of effectiveness appears to be prescribed in the deprivation of a liberal supply of air.

If a fan be used to exhaust the air from the end of a dryer as something of a substitute for a chimney, the expenditure in power is great in proportion to the influence upon the body of air to be moved from "away back," and the rapid current or sharp draft right at the fan where the bricks enter tends to injure them and throw off much heat to waste, and somewhat the same results occur as with the sharp draft up the chimney.

In using a fan to force the air into a dryer it may first be drawn or forced through heated pipes close to it, and thus secure fair radiation; yet the supply of air must needs be limited, as the excessive heat and current combined, may injure the drying material, and the confined passage ways to restrain the air under the necessary concentration of current requires the employment of an air motor, necessarily costly in power proportionate to the amount of air put in motion, and considerable loss occurs in friction to the passage of the air before it reaches the place where it is designed to do the most good.

Increased temperature surely enables the air to carry more moisture; yet, as ordinarily employed, this air is compelled to carry very much of it, and were we allowed to use a figure of speech, had it any back, it might be liable to ache or break.

It is certainly a heavy weight of moisture that must be carried, and it may have loaded down the attempts at artificial drying to such a serious extent as to possibly be one of, if not the principal, cause of brick drying, or facilities for caring for the brick, being so far behind both making and burning, and the chief requirement and demand of the manufacturers seems to be for some

satisfactory artificial means of drying.

There is room, evidently, for devotion of attention to some means other than those chiefly in operation, and no doubt efforts resulting in success will be appreciated and rewarded.

Let us suppose that it may be possible to just "stumble" into a train of thought that may lead up to better results. May it not be possible to find an interesting field for reflection in the direction of taking a rather contrary course and try the use of more air at the natural accompanying low temperatures?

We are all well aware that very good, and under peculiarly favorable conditions quick and "solid" results may be obtained from drying outside, and is it not really more satisfactory, in its season, than the artificial means generally adopted?

"Summer heat" is of lower temperature than that of most dryers and less than at the outlet where the excessive heat goes to waste, it may be, and surely it is not high enough to burn the brick boards.

There may be no harm in seeking a remedy, and since we may have appeared to somewhat complain of existing appliances, it being easy to complain; and yet, there is sometimes room for it, and he who cannot hit a barn door, or strike something in firing at as broad a mark as *all-out-of-doors* for comparison and possible profit, may not be regarded as much of a marksman, and it may have become something of a self-imposed duty to strive to furnish something better.

Now, brother brickmakers! The writer having been engaged for several years in the business and made a few million bricks, feels that he may so address you with propriety, yet disclaiming any accumulation for the purpose of firing them at the heads of other clay men, or even dryer men, and in speaking of men using clay in the prosecution of so honorable a vocation as that of brickmaking, it is not to be inferred that they are of the clayey character or condition to be burned into bricks, though many of them be "specimen bricks" in the best sense, and yet it is just possible that not a few of them have been—again figuratively speaking—somewhat "burned" in using dryers with such high temperature, that they may feel like coming "down on them"—those who "sold" them (the dryers I mean)—like "a thousand of bricks," and they

have millions of them, and I hope they may have many more and be dried by some satisfactory artificial means.

Let us look at the outside drying for awhile with a view of trying to see what may be "the peculiarly favorable conditions" when such satisfactory results are secured that we may wish that they could be continued inside, for steady and reliable use. We are impressed with the fact that nature has most generously furnished a supply of air, and so abundantly that it neither requires high temperature (nor enclosure), and it drops or parts with its moisture easier in condensation.

We observe how quickly the clayey roads are dried by the strong spring winds, though at lower temperature than even "summer heat," and in mid-summer we know that at times but very slow drying occurs when there is but little or no air stirring, though it may be ever so hot. Of course, other conditions being equal, with the same current of equally dry air, quicker drying may be secured with increase of temperature, but then it is not so necessary when there is wind and if heated air accompanied a strong current, a very dry condition may occur, which would be liable to "check" the bricks; for, even in "outside" drying it is not always secured satisfactorily, as we know, and the entire danger does not by any means consist in too highly "watered stock."

Now, let us put the bricks out "on the yard (and I do not compare with those on racks, as the circulation is somewhat obstructed, and the distribution and supply of air is not as complete as it may be made by certain artificial means), when there may be a good, stiff breeze, and the air happens to be just so fully charged with moisture as to wet the bricks, but still permit them to keep their shape. Certainly no "checking" at the surface can occur when they are so moistened, or quite as much as at the interior. If the wind continues to blow, and then the bricks can bear all the current that they can ever be properly subjected to while the surfaces are so protected and the fairly low temperature exists, the moisture will come readily to the surface as it is carried off rapidly in the air a little dryer than the bricks are, and so long as the surface is kept about as moist as the interior, no checking need be seriously apprehended, even from quite a stiff wind,

and the inside soon becomes about as dry as the outside by this means of increasing the capillary attraction.

We know that low temperature causes condensation, and this insures really the effective drying when the moisture can be properly disposed of in thus being removed from the air or the bricks, yet, of this we may write further in connection with, later to be described artificial means of drying.

Should the air gradually become dryer and warmer and it is very liable to, these conditions in the natural course of things (unless the supply of moisture be "backed up" by a storm, especially from the sea, and it is said that "Fore-caster Dunn" has no jurisdiction out there), the interior of the bricks will soon become prepared for it, and very quick and safe drying, when the same strong current of air continues till it is dry and hot and it will not require many hours to dry brick well, under such circumstances, but the description of how to fairly reproduce similar conditions and results in an economical manner within an enclosure, must needs be deferred for another article.

Written for the CLAY-WORKER.

SETTING BRICK IN KILN—UP DRAFT AND DOWN DRAFT.

BY J. W. CRARY, JR.

I HAVE just ended a series of articles in December CLAY-WORKER on "Setting and Burning Brick," and did not think it necessary for the present, to say any more on the subject. But several writers in the CLAY-WORKER have criticised and disputed some things said in my articles above mentioned, and it is proper and perhaps best that I should notice, in a general way, the objections to some things I have said on "Brick Setting and Burning."

I see nothing new in the argument of my good friends against my way of setting and burning brick. They only assert that their way is better than my way. They do not point out the defects in my way of setting and burning brick. They give no reasons why their way of setting and burning is better than my way, but go on to repeat their assertions that their way is the better, and only true way to set and burn brick, and the only admissible proof they offer is, that they have improved on their old way, assuming, of course, that my way is just the same as all the old ways.

THEIR PREMISES ARE FALSE, AND THEREFORE THEIR CONCLUSIONS.

An excellent writer in a late CLAY-

WORKER says in substance: "Men may talk all they want to about the natural way for heat being to ascend, and that the down draft is an unnatural draft, etc., but the fact remains that in the down draft kiln, the bricks that are compelled to stand the high heat for the longest time are on the top, and have the least weight on them, while in the up draft kiln the reverse is true." Now, what up draft does the writer mean? Of course, he means such kilns as he has seen in his travels, (for I do not think that he is a practical brick setter and burner.) Have these specialists for down draft ever seen or tried a kiln, such as I have described in my writings? Have they ever studied the difference between the old way of setting and burning brick, and the way that I advise and direct, and practiced with entire success many years past? No; they have never seen, studied, or tried to practice anything but the old way of up draft and the new way of down draft.

THE FALLACY OF THEIR ARGUMENTS IS SHOWN

By their assumptions that they "know all that is worth knowing" about up draft brick kilns, and that they have found that they can burn brick better by down draft than by up draft. The trouble with all radical inventors is, that they have not the talent or genius to deal with causes instead of effects. An old thing may be inherently good, but the use of it practically bad. If we intelligently seek the proper use of it, we may avoid the risk and expense of its disuse. We shall always study principles before practice; "Principles follow their concomitants," says the law. If you have the principle, the effect is in sight, if properly applied.

DOWN DRAFT SCIENTIFICALLY A MISNOMER.

Theoretically, there can be no down draft from the combustion of fuel, the gas evolved is lighter than the atmosphere, and must ascend. It may go up and down a dozen times, but the flue through which it passes must be much higher at its outlet than at its inlet. We may say down draft kiln with up draft heat.

ONE OF THE FALLACIES OF THE DOWN DRAFT MEN

Is, that when a kiln is at a settling heat, the brick are soft and if the draft is up, the kiln is hottest at the bottom, and the hottest being the softest, they are crushed or warped by the great weight of the kiln above. Now this is true, if

the kiln has been set too close at the bottom, so that a free uniform draft is prevented, but if the benches and overhangers are set lose, skintling and regular, about $\frac{3}{4}$ -inch apart, and the whole kiln set in like manner, and then plated with brick on the flat, about one inch apart, the draft up through the kiln will be so strong that no concentrated heat at the bottom will be possible.

THE PHILOSOPHY OF DRAFT AND HEAT
WELL UNDERSTOOD,

Teaches us that heat evolved from any common furnace is strongest where the draft flue is most contracted, so that a brick kiln set in the common way with much less draft space in the arches than in the main body of the kiln, the heat cannot escape as fast as generated, and must act directly and strongest on the arch brick.

If a brick kiln be rightly and properly set and burned, as I have directed, the greatest heat will be found nearest the top, so that the argument for down draft to prevent the crushing of hottest brick at bottom of kiln, is without reason or force. But the theory of the down draft kiln advocates that they avoid the danger of crushing hot brick at bottom of kilns, will be good against them in the watersmoking process of their kilns, and only a moments thought will certify this fact. If the draft of heat be from the top of the kiln to the bottom, all the watersmoke must pass through the bottom brick, and they being softened by the steam, will easily crush by the weight of the upper part of the kiln. It takes twice longer to watersmoke a down draft kiln than it takes to watersmoke an up draft, and the only way to overcome this defect in down draft kilns is to watersmoke them from the bottom. I believe this improvement has been made by some of the down draft inventors.

WATERSMOKING, AS WELL AS HEATING, IS
MOST NATURAL,

And best accomplished by the up draft process. No one will even pretend that watersmoking can be well done by down draft, and as to heating, not a single good argument has been made for the down draft principles. The only good reason given in favor of down draft kilns is, that the men who use them turn out better brick or more hard brick than they could do in using up draft kilns. This proves nothing, only that the men who went from up draft kilns to down draft, did not know,

and failed to learn the best and proper use of up draft kilns.

Will anyone say that a down draft kiln will turn out a harder and better brick than an up draft kiln? But, they say, that a greater percentage of hard brick can be had by a down draft. If this be true in their case, it only proves that they do not know how to use the up draft.

THE ONLY WAY TO FINALLY SETTLE THE
DRAFT QUESTION

Is by full, fair, equal intelligent tests by a competitive arrangement. Let the best down draft expert and the best up draft expert compete under the most favorable and the same conditions. If it results in favor of the down draft theory, no *old foggy* up draft will be so stupid and obstinate as to refuse to surrender. But until this be done, it is all mere assumption and dogmatism to claim great perfection in down draft and great imperfection in up draft.

I have no fight with down draft men, I am only on the defensive. I have fully set forth in my various articles the kind of a brick kiln I prefer. It is not in competition with any patentee or concern in the brick business. In fact, it is my interest and the interest of all who think as I do about down draft kilns, to have them as popular as possible.

Down draft kilns can never be built and used as cheap as up draft, and as they cannot excel in quantity, quality or cost of brick, the balance is in favor of the up draft in the items of construction, repairs, etc. Down draft men help to keep up the price of brick. God bless all of them that want to do right.

ANSWERING QUESTIONS ABOUT MY WAY OF
SETTING AND BURNING BRICK.

Although I have tried to make my writings plain and sufficiently explicit about building kilns and setting and burning, yet many persons write me for some special information, which I think they could get in my writings, if they would pursue them with more thought and attention. I do not object to answering any fair question, that will aid anyone in getting a full understanding of anything I have written about, and I take pleasure in doing anything to help a good brickmaker. One question asked of me is, "How long can the kiln you recommend in your book, be built?" Answer—If you want to use the cross or transverse arches, the size I give in diagram is long enough, but if you

don't use the cross arches, you can extend your kiln to any length. Another asks, "Do you cover all around a 'cold spot' in a burning kiln?" Answer—You will find your question fully answered in my book on "Brickmaking and Burning," but I will say here, that as soon as your kiln is well burned and settled all around a "cold spot," be sure to cover the burned places with fine damp clay; this forces the draft of heat into the "cold spot." All around the edges of it, cover the margin as fast as it is burnt, and thus you force the heat to the centre of the "cold spot." Follow my directions in book, and you cannot fail to make a good burn.

OBITUARY.

Charles Gladding, senior partner of Gladding, McBean & Co., terra cotta manufacturers, San Francisco, died suddenly at Rome, Italy, recently.

Charles Gladding was a New York boy, but his life during manhood was spent in the West. For over twenty years his labors were identified with Chicago. In 1875 he went to California and became a pioneer clayworker on the Pacific Coast. His works, located near San Francisco, have long been well known, and have produced some very good work, both architectural and horticultural.

Mr. Garret Benjamin, the senior member of the firm of Benjamin, Cooper & Co., brick manufacturers of Hackensack, N. J., died at his home in that city on the 6th inst., the sickness, which terminated in his death, being the only one he had ever known. He began brickmaking when a boy, and when twenty years of age had charge of his first kiln. When foreman his method of conducting a kiln was equaled by few and excelled by none. He had a thorough knowledge of all that pertained to the manufacture of brick, having followed no other occupation during his life.

Frederick W. Clark, a brick manufacturer of Portland, Me., died at his home in that city on the 28th ult. in his eighty-eighth year.

TOLD IN BRIEF.

"Ad" brings "biz,"
"Biz" Brings "Gold,"
"Gold" brings "friends,"
My story's told.

—P. W. H., in *Fame*.

THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK
MANUFACTURERS' ASSOCIATION OF THE
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Correspondence on all subjects of interest
to Clayworkers is solicited. Communications
from practical men will always be welcome.
Address all communications to

T. A. RANDALL & CO.,
5 Monument Place. INDIANAPOLIS, IND.

CONVENTION ECHOES

Of a very pleasant character come to us from many quarters in the shape of complimentary notices of our Special Convention number, thus indicating that the craft generally appreciates the high character of the convention proceedings as well as the attractive form of the report itself. When the clayworkers have had time to reread and fully digest the meaty matter comprising the convention report they will be still more impressed with the fact that the 1894 convention marks a long step forward in the line of progress.

ARBITRATION.

A new court is to be found in arbitration. On the other hand, there is a weakness to be guarded against in a settlement by this means. Ordinarily an arbitrating committee has no means of enforcing its decision, and if one of the contestants is dissatisfied with the result he can go to court and develop bad blood and often bad justice. One means of overcoming this difficulty is a bond equal to the amount of money is dispute given by each one of the contestants that they will abide by the decision of the arbitrator. This puts the whole question in a business shape and is certain to keep the original controversy out of court.

IS IT A BRICK TRUST.

There are some rumors afloat that a great brick trust is to be formed in the vicinity of New York. It may include many of the principal brick yards of the Hudson river, Long Island and New Jersey shores.

Meetings are being held at Fishkill to seek such organization. It is proposed to lease the yards for a term of years and purchase all the improvements that are existing at present. It is stated that New York capitalists are willing to advance all the funds required by the syndicate.

Will such a combination benefit the practical brickmakers or will they become merely servitors for capitalists and lawyers, is the question now before the Eastern brickmakers.

NEW CLAY PRODUCTS.

There is a tendency on the part of clayworkers to extend their industry to make a new product and to enter new fields. The last few years have been fruitful in this respect. Paving brick is a relatively new product, and one which is gaining ground every day. With the extension of local rapid transit, and the spreading out of cities, there is relatively more surface to be paved than formerly in proportion to population. The cost of asphalt necessarily gives it a limited use. Macadam, while it makes a good street, if well cared for, is very expensive of maintenance. Stone blocks are expensive and far from satisfactory. The brick paved street comes as near the ideal, when viewed from an economic standpoint, as any surface covering now known. The field of paving brick is widening every day.

Another opening for business, which is not being filled so rapidly, is that which has to do with tile roofing. The difficulties of manufacturing, the supposition that certain forms are covered by patents, has deterred our clayworkers from entering this field. There can be no question about the demand for the product. Every architect knows that the supply is not equal to the demand. The field for tile roofing is larger than the present field for slate roofing.

Fire-proofing is taking to itself wider ground every day. Generally speaking, it is more difficult to invest money. Rates of interest are lower as time moves on. People wish to make their investments sure and solid. This had its in-

fluence on fire-proofing as well as other clay products. Building blocks which take the place of brick, stone, or other external surfaces, are now in full movement of advance into the field of the world's best building material. The glazed brick or enamel brick of which we have spoken before, has been recognized as a valuable material for many years, but it is now forcing itself into the ordinary building operations of people of moderate means, and for which reason it is now a product for which there is a great demand. These products, together with that of colored brick, moulded brick, and other forms, measurably represent the new creations of recent years. All are not absolutely new to us excepting in a commercial sense. It is not long since that we were making nothing more than the ordinary brick for general use. In a commercial way there has been an enormous increase in the building field for clay products. Everything points to a still greater growth. The clay world is moving.

ANNUAL CONVENTION OF BUILDERS.

The National Association of Builders has just closed its eighth annual session in Boston, its birthplace. It is not at all surprising therefore that the meeting was such a pronounced success in every way. The National Association of Builders is somewhat different in its organization and methods from the N. B. M. A. The former is essentially a delegate body, and its external relations with architects and others with whom its members do business, is more specific and tangible than is the case with the clayworkers. Furthermore, its work is not of that technical character which affords such a distinguishing quality in our association. It deals more particularly with business methods, local organization and affairs of that general nature. To say that the association has done a good work in introducing the uniform contract, systematizing methods of arbitration, and in a broad way making the business of building a better, safer and more satisfactory one, is stating what everyone acquainted with the history of this association already knows. It is a wonderful exemplification of the power of trade and business organization. The social features of this meeting were unique and eminently satisfactory. The Master Builders' Association of Boston, under the direction of its able President E.

Noyes Whitcomb, and the omnipotent Secretary, William H. Sayward, formed a committee of the whole, whose sole and only duty it was to see that every wish of each individual visitor was anticipated and gratified. As entertainers the Master Builders of Boston are unequaled.

TO TEST BUILDING MATERIALS.

The government, through the agency of its experts at the arsenal at Watertown, Mass., is about to begin a series of tests of the strength of building material. A call has been distributed among those interested, indicating the general scheme which these experts have in mind.

It is planned that those interested may send material of different kinds, which the government will take in hand, carefully analyze and test and make report.

To clayworkers this should be of special interest, and in the next number of the Clay-worker we will outline the scheme of the government in connection with this work.

ARE YOU ORGANIZED?

There is nothing like organization. In the slow old times of yore great stress was laid on nimble pennies, and quick sales at small profits; and much was said about competition being the life of business, but there is nothing of that now. In competition and nimble pennies the slow coaches always got left, so that in sheer self-defense the slow coaches invented the modern fad known as organization. Now organization in many cases is not to quicken the paces of the laggards, but to slacken the speed of those who are inclined to go ahead—a kind of a check-rain, as it were, to keep the nimble young horse from going faster than suits the convenience of the slow horse by his side. By it, for instance, in organized labor every degree of skill is reduced to a dead level, so that the skillful and apt mechanic who could earn five dollars a day is *organized* down to two or three dollars. Receiving only *organized* wages he soon learns to plod along and to do no more than an *organized* day's work, and he is content to accommodate himself to the level to which *organization* had brought him; in other words he slows down to the pace of laggards, all because he is *organized*. While unchecked competition was sure death to

slow coaches, it was the making of those who were endowed with a goodly quantum of what we Americans call hustle.

On large scales this organizing fad is called a trust or combine, as the sugar trust, the whisky trust and the like, while on smaller scales it strikes the corner grocery and even the undertakers and the bootblack. It is not enough that while living we must eat organized meat and organized bread, but we must be carried to the grave in organized hearses, attended by organized carriages.

Among the most successful schemes of organized this or that to keep the whole organization of mankind on a dead level, is the control they seek to have over methods of business. Nothing has proved so unvarying a means of success as judicious advertising whenever one has something to sell worth advertising, and experience has demonstrated that the way to advertise is to advertise. The merchant who grudgingly sticks a few lines into the "want column" of his daily paper, of course reaps no great harvest from it, while the hustler who has a good cigar to sell finds it pays him to display his goods to the tune of half pages and sometimes more. There is no science more deserving of study than the science of advertising, and there is nothing which so moves—perhaps we had better say so stirs—a laggard as the conclusion that money saved by not advertising vigorously is worse than lost.

To the slow coach the very thought of bestirring himself so as to keep up with men who advertise vigorously is painful. Find a man by the roadside comatose from cold and he will resent every effort to arouse him and to induce him to put forth efforts necessary to his recovery. He would a great deal rather "organize" on the basis of every one sleeping as he wants to sleep—just to be let alone to die. It is a great mistake to suppose that the only purpose of organization is to dictate prices. In many cases it includes methods of business and hours of work, and in some organizations the style of advertising; in short the individual is swallowed in the organization, so that the question we start out with is not irrelevant. Are you organized? If you are a slow coach you should by all means get up an organization for the purpose of curbing those go-ahead fellows who are hustling along and pushing things, although it may be well to

remark that not a few of those who have been under the restraints of organizations which are designed to limit their energies are becoming restive under unnatural restraints, and are breaking away from them. Some people are *organized* to death.

We have nothing but words of commendation for all organizations which are calculated to create a fraternity of feeling, and to shed light upon the best processes and to lift up, but when an organization attempts to restrict the output, or to dictate methods so as to level the more prosperous down to the level of the slow and indolent by saying how many and what kind of employes may be worked, and at what wages and for how many hours, and whether the owner of an exceptionally good thing shall be restricted in his making that known, we protest. Such organizations are an evil by so much as they hamper the more progressive and energetic workers, reducing them to the level of the easy-going. Organize! but organize up, not down.

STEEL AND CLAY.

The January number of the Brick Builder of Boston, a journal of high artistic and practical merit, contains an article on steel and terra cotta building in Chicago, than which nothing can more clearly emphasize the permanent progress which has been made in the useful employment of clay in structural work. Steel and clay naturally go together. Without clay as a protecting cover, steel could not occupy the prominent position that it does in the new American architecture. Clay lends at once the fireproof element and the artistic excellence to the splendid new structures of modern times.

THE APPRENTICE SYSTEM.

One great drawback in the advancement of all mechanical arts is the decadence of the apprentice system. We do not yearn for the return of the good old times when a boy went to live in his master's family and was graciously allowed to do stable work, and to stand up and be thrashed for a period of a year, paying for the privilege in order that he might learn to lay brick, to cut stone or to do other mechanical work. The cow stable does not promote a knowledge of a mechanical art. That old time, with its good and its bad, has passed. We do yearn, however, for

the inauguration of a proper, equitable apprentice system. It is due to the public, it is due to the contractor, it is due to the workman of the present day and the apprentice himself, that some proper system should be developed. It should unite the practice and the study, it should develop manual dexterity and as well mental aptitude. The old apprentice system is a back number. The apprentice system for this time will be more rational, more humane, more intelligent and effective. For it there is a crying need.

TRADE LITERATURE.

THE BIG FOUR GAZETTE Annual for 1894 has been received and is a charming production of the printers' art though an advertisement. It does not pertain to the Big Four of Philadelphia, so popular with the members of the N. B. M. A., but tells in an interesting way the adventures of a party of pleasure seekers journeying over the Big Four railway system. It is filled with fine illustrations of prominent buildings and things of interest in Chicago, Cincinnati, St. Louis, Indianapolis and other great cities connected by the Big Four's rails of steel. A copy can be obtained by addressing H. M. Bronson, A. G. P. A. Big Four route, Indianapolis.

THE BONNOT COMPANY, Canton, O., have out a new catalogue of clayworking machinery; also a pretty novelty in the form of folder representing their revolving screen. A postal card addressed to them will bring you both, if you want them.

C. W. RAYMOND & Co., Dayton, O., are sending out their new 1894 catalogue, which, in addition to the well known Columbian represses and a full line of brick yard supplies, also shows their new stiff clay brick machines. If you have not already received a copy drop them a card for one.

THE SIMPSON BRICK PRESS COMPANY, Chicago, have ready for distribution a new and attractive little pamphlet that tells of the triumph of the Simpson brick press at the World's Fair. They will be pleased to send a copy of it to any of our readers who will take the trouble to write them for it.

CHANDLER & TAYLOR COMPANY, Indianapolis, have favored us with a copy of their Engine and Boiler catalogue—series C. Their engines are peculiarly

adapted to the needs of the brick and tile manufacturer. Having for a number of years made clayworking machinery, this firm knows just what is required to run that class of machinery. For full particulars write them direct.

THE BALL-BEARING Car Wheel and Manufacturing Company, Cleveland, O., will gladly send a new and handy catalogue of their all steel Brick Dryer Cars to any one interested in that line. They make a large variety of steel cars, for which they claim superior wearing qualities and other advantages. Write them for a copy.

STEWART BROS., Mt. Victory, O., have issued a descriptive circular of their Diurnal Kiln, which they think will prove very profitable reading to brick and tile makers looking for information on the burning question. A copy will be mailed free to all who write them for it.

THE HENRY MARTIN Brick Machine Manufacturing Company, Lancaster, Pa., are mailing their new 1894 illustrated catalogue of soft clay brick machinery and yard supplies, of which they manufacture a large variety. If you want anything from a brick mold to a steam engine write them for prices, etc.

J. W. PENFIELD & SON, Willoughby, O., have favored us with copies of three handsome new catalogues—one devoted exclusively to their Dry Press Brick machinery and another to their Sewer Pipe machinery, while the third is a condensed catalogue for busy brick-makers, and gives briefly a descriptive list of their extensive line of clayworking machinery, which embraces almost every character of appliance known to the up-to-date clayworker. Any or all of their pamphlets can be had for the asking.

A new brick exchange has been formed at Canton, O., under the name of the "Granite Paving Brick Exchange." W. B. Dager is General Manager and C. J. Deckman is Secretary and Treasurer. The factories include the Canton and Malvern Fire Brick Paving Company, the Malvern Clay Company, and the Carrollton Granite Brick Company. Mr. Dager, the General manager, is a man of wide experience in the business, and will make the enterprise a success if it is within the range of possibilities.

EDITORIAL NOTES and CLIPPINGS.

Three new specialties. Page 251.

A vitrified brick plant will be established at Coffeyville, Kan.

The Belmont (Ohio) Brick and Tile Co. will put in a new brick press.

The Jos. Soisson Fire Brick Co., Connersville, Pa., has been incorporated.

Mr. McCorkle will operate the Guthrie (Mo.) brick plant the coming season.

Fell & Roberts' brickyard at Trenton, N. J., was slightly damaged by fire recently.

Another new Mould-Sander comes on to the market this season. See page 251.

Chas. E. Dow will operate the brick yard at North Yarmouth, Me., the coming season.

An immense brick plant is to be erected at Auburn, Schuylkill Co., Pa., by Judge Ryan.

H. W. Ellington, of Colfax, Ill., has sold his tile factory to J. I. Bunn, who will operate it.

The Barnett Brick Co's. Plant, St. Louis, Mo., was damaged to the extent of \$1,500 by fire.

J. W. Gray, brick manufacturer of Keithsburg, Ill., wants to purchase dumping wagons.

The Badger Lumber Company, Kansas City, Mo., want to purchase a dry press brick machine.

The National Kaolin Co., of Elam, Pa., have in contemplation the erection of a brick plant at that place.

The Mansfield Brick and Tile Co. has been incorporated at Champaign, Ill., with a capital stock of \$7,000.

Ferdinand Boucher has purchased land near East Brookfield, Mass., and will open up a brick yard in the spring.

The kiln sheds of the Union Brick and Stone Company's plant, McKeesport, Pa., were damaged by fire the 16th inst.

A paving brick plant, with a daily capacity of 50,000 brick, is being erected at Sciotoville, O., by the Scioto Fire Brick Company.

Robert J. Eisenhauer, Walnutsport, Pa., writes that he has leased the Lehigh brick plant at that place formerly
[CONTINUED ON PAGE 268.]

BY-AND-BY.

HERE'S a little mischief-maker
That is stealing half our bliss,
Sketching pictures in a dream-land
That are never seen in this;
Dashing from our lips the pleasure
Of the present while we sigh;
You may know this mischief-maker,
For his name is "By-and-By."

He is sitting by our hearthstones,
With his shy bewitching glance,
Whispering of the coming morrow
As the social hours advance;
Loitering mid our calm reflections,
Hiding forms of beauty nigh—
He's a smooth, deceitful fellow,
This enchanter, "By-and-By."

You may know him by his wincing,
By his sporting, careless air;
By his silly obstructive presence,
That is straying everywhere;
By the trophies that he gathers
Where his somber victims lie;
For a bold, determined fellow
Is this conqueror, "By-and-By."

When the call of duty haunts us,
And the present seems to be
All the time that ever mortals
Snatch from dark eternity,
Then a fairy hand seems painting
Pictures in a distant sky;
For a cunning little artist
Is the fairy, "By-and-By."

"By-and-By" the wind is singing;
"By-and-By," the heart replies;
But the phantom just above us,
Ere we grasp it, ever flies.
Listen not to idle charmer;
Scorn the very spacious lie;
Only to the fancy liveth
This deceiver, "By-and-By."

NO HOUSE SHOULD BE WITHOUT ONE.

I'M not a common peddler, chasin' round like them you see,
Givin' parlor suits away with every pound of tea;
Or swearin' that a cake of soap, such as they tug about,
Will beautify a feller's face an' make his whiskers sprout.
The article I recommend is one I guarantee;
'Taint no fake nor bunko snap, nor sawdust swindle, see?
No house should be without one.

It's the wonderfulest invention that a feller ever struck,
It kin make the meanest dig of fate look like a streak of luck.
If you're sunk down in the dismal it kin cuddle round your heart,
An' make you mosey up a bit an' take another start,
It kin preach the strongest sermon—hit the nail plumb on the head,
Yet it doesn't know a single word a preacher ever said.
No house should be without one.

It kin make a worn an' fagged-out wife laugh like a strappin' girl;
It kin set your feet a-dancin'—put your senses in a whirl.
If the wolf should push the door in, or the Sheriff take the farm,
You feel so blarsted happy that you wouldn't give a darn;
I tell you, boys, I've been there, an' I know a thing or two—
But there's no use tryin' to tell you what this great cure-all can do.
No house should be without one.

Ourn is 2 years old to-day, an' wife's that proud an' vain,
She wonders how we fooled ourselves an' lived before he came.
We thought we was contented, but then we didn't know
The difference twix' empty love an' heaven here below.
I'm sure he's not a common kid, he seems so plagued wise,
But I s'pose every feller thinks his dropped down from the skies.
No house should be without one.

Lillian Mack in the Boston Globe.

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J. W. Crary, Sr., \$2.50

"TABLE OF ANALYSES OF CLAYS,"

Alfred Crossley, \$1.00

"DURABILITY OF BRICK PAVEMENTS,"

Prof. I. O. Baker, \$.25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address T. A. Randall & Co., Indianapolis, Ind.

ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and Belleville, Ill.

ESTABLISHED 1859.

RED Pressed and Ornamental Brick of unsurpassed quality a specialty and can be furnished in any desired quantity. Builders who desire the finest pressed brick at reasonable prices, are requested to write for illustrated catalogue and price list.

Rock-faced and Roman brick, red and brown, granite, mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

ANTHONY ITTNER, Telephone Building, ST. LOUIS, MO.

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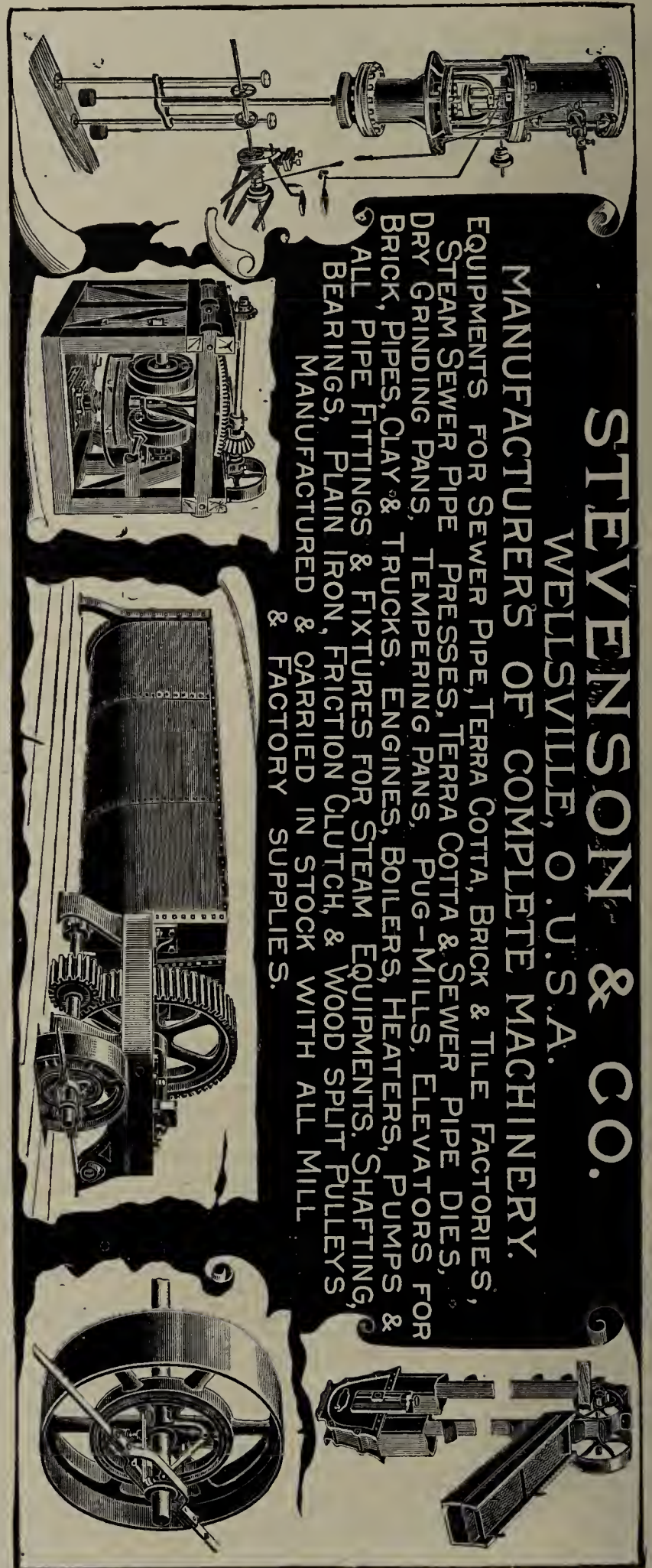
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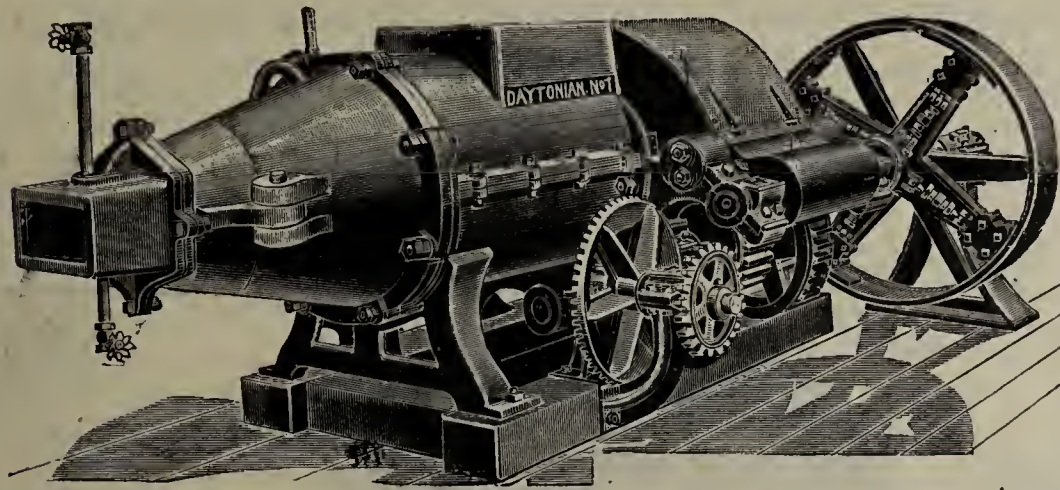


STEVENSON & CO.
WELLSVILLE, O. U.S.A.

MANUFACTURERS OF COMPLETE MACHINERY.

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES, STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES, DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS & ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFING, BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS, MANUFACTURED & CARRIED IN STOCK WITH ALL MILL & FACTORY SUPPLIES.

❖ RAYMOND'S ❖

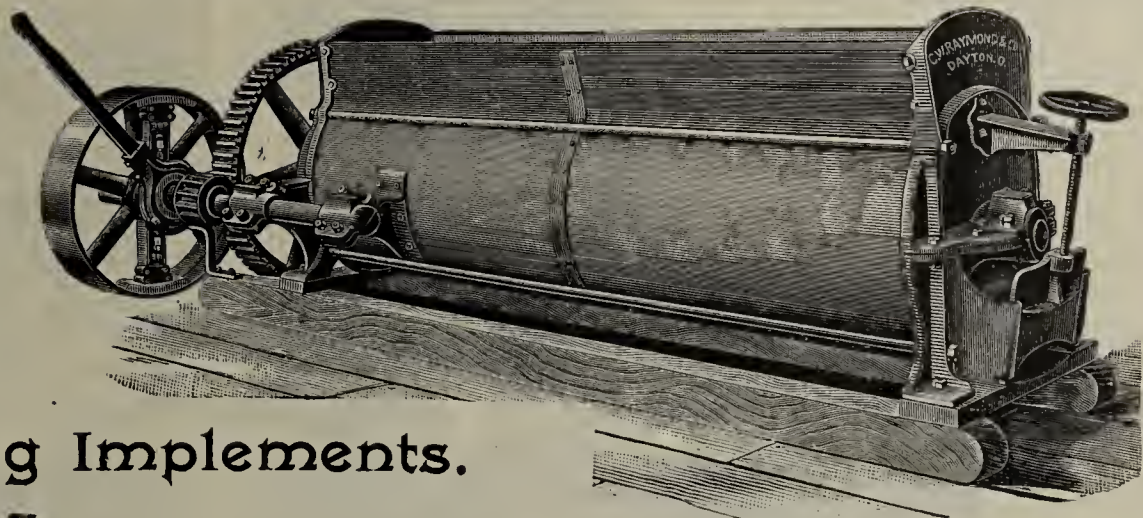


BRICK

Brick Machines:

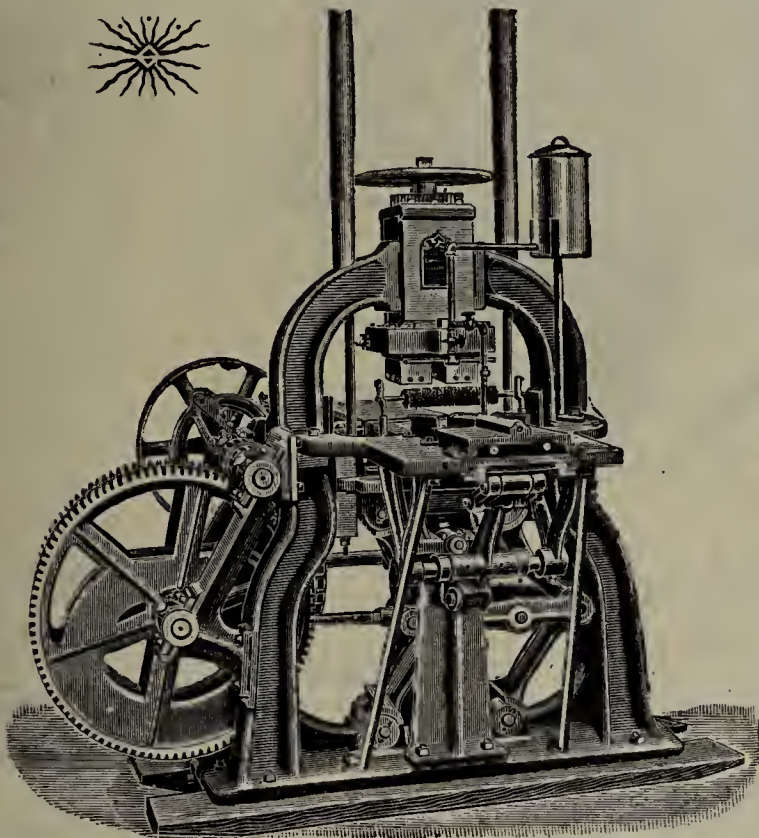
Cutting Tables,
Pug Mills,
Revolving Screens,
Roller Crushers,
Disintegrators,
Dry Pans, &c.,

MACHINERY



A COMPLETE LINE OF

Clay Working Implements.



The Columbian Special Re-Press.

*Re-Presses for Red Brick,
Re-Presses for Fire Brick,
Re-Presses for Paving Brick,
Re-Presses for Ornamental Brick,
Re-Presses for Roofing Tile,
Re-Presses for Sidewalk Tile.*



THE LARGEST LINE OF
RE-PRESSES
IN THE WORLD.



C. W. Raymond & Co

DAYTON, OHIO.

... SEND FOR CATALOGUE ...

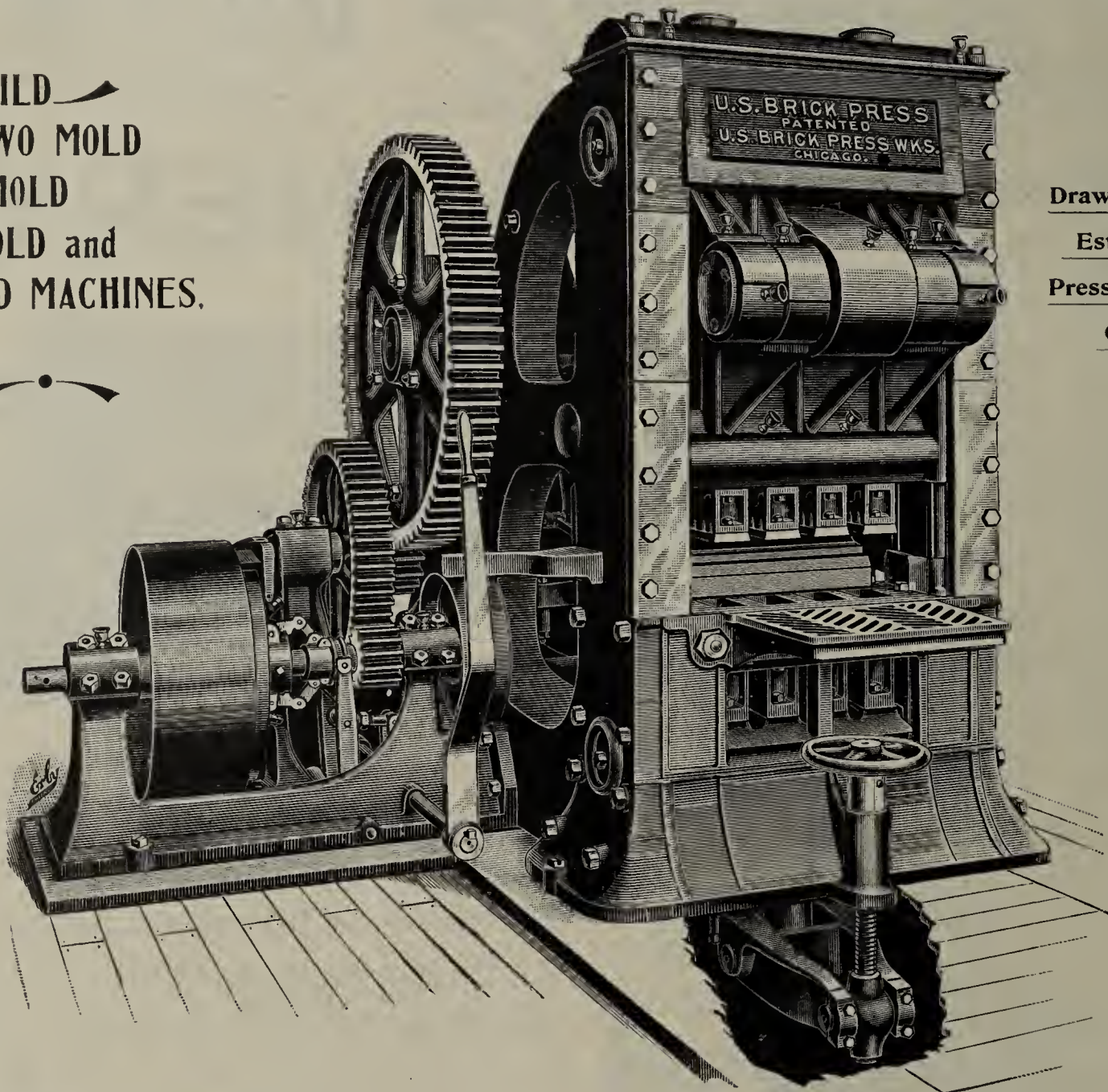
⇨ OUR AWARD ⇩

*Comes not from the World's Fair Judge on Brick Machinery,
because we did not Exhibit.*

OUR AWARD

Comes from practical and successful brickmakers, who
are making and selling a good brick at a good price.

WE BUILD
TWO MOLD
THREE MOLD
FOUR MOLD and
SIX MOLD MACHINES.



Drawings and
Estimates for Entire
Pressed Brick Plants
Gladly Furnished.

NOTICE

The U. S. Brick Press is the most simple and compact in design ; exerts greater, and longer pressure on both top and bottom of the brick ; the adjustments are the most convenient ; operates with the least power and is adapted to a great variety of Plain, Ornamental, and Roman or Pompeian brick.

All parts are built to standard gauge, and of the best material and workmanship.
For further information, please address

U. S. BRICK PRESS WORKS,

OSWALD KUTSCHE, Proprietor,

Unity Bldg., 79 Dearborn St., Suite 1111 and 1113,

CHICAGO, ILL.

JUDGE PINE BLUFF

Renders Verdict in Favor of Plaintiff.

{ MALVERN
VS.
{ MEMPHIS, HOT SPRINGS, ET AL.

THE MALVERN VITRIFIED BRICK.

THE difference in the durability of the vitrified brick used in paving the streets of Pine Bluff, is beginning to attract attention, as the greatest contrast is already apparent. That portion of Main street which is paved with the white, or Malvern brick, is as smooth, perfect and unworn as the day on which it was put down, while the brick which was made in Fort Smith and Memphis, is beginning to wear fearfully, even on East Court street, where there is but little traffic and no heavy hauling. Many of the brick appear to be porous, and it seems that constant wetting is making them soft. The contrast will certainly decide our people on where to purchase brick when our other streets are to be paved.—[Pine Bluff Commercial.

THE above clipping is from the Pine Bluff (Ark.) Commercial and refers to Paving Brick made with the *Little Wonder Brick Machine* purchased by Mr. Thomas Atchison, Malvern, Ark., in the spring of 1888, and substantiates our claim that the brick made on the *Wonder Machines* are more dense, free from air puffs with less lamination and will wear on the street longer than brick made by other machines.

THE WALLACE MFG. CO.,
FRANKFORT, IND.

See ad. on page 313.

Editorial Notes and Clippings.

[CONTINUED FROM PAGE 262.]

managed by Samuel Roseberry, and expects to improve on its former management.

Michael Pepeik fell into the clay crusher at the Pardee Terra Cotta Works, at Perth Amboy, N. J., and was fatally injured.

The brick manufacturing firm of Smith & Mitchell, Greenfield, Mass., has been dissolved. Edward Mitchell will continue the business.

The brick plant of William A. Watson, Pittsburgh, Pa., was totally destroyed by fire on the 1st inst. Loss about \$7,000. No insurance.

J. H. Ward & Co., of Brenton, Pa., are erecting a brick plant of 20,000 daily capacity. The new works will probably be in operation within a month.

Berry & Wheatley, of Americus, Ga., have purchased the Ocmulgee Brick Works at Abbeville, Ga. Operations at the plant will be resumed at once.

The Pittsburgh (Kansas) Vitriified Brick Works, owned by Robert Nesch, was partly destroyed by fire on the 11th inst. The loss is entirely covered by insurance.

The Merchant Brick and Building Company has been incorporated at Denver, Col., by Charles E., Mary E. and Benjamin F. Merchant, with a capital stock of \$30,000.

The Windham County Brick Co. has been incorporated at Putnam, Conn. Among the incorporators are Geo. H. Nichols, John Elliott, M. A. Shumway and Chas. J. Brush.

The Lafayette (Ind.) Brick and Mfg. Co. has been incorporated with a capital stock of \$21,000. The directors are Lambert Bertha, William F. Frey and Michael F. Thomas.

It looks as if some money could be saved to any one in the market for Dryer Cars from the statements made in the article of the Wellington Machine Company on page 251.

Our Philadelphia correspondent advises us that the Peerless Brick Company, Young & Milnamow, and the Albrecht Brick Company will erect a new yard near that city this spring.

Mr. Robert Caslick, of Newbridge, Ont., will start a brick plant at Culross,

Ont., in the spring. Mr. Caslick has had considerable experience in the business and there is no doubt but that he will be successful.

Mr. Chas. T. Young, Gen'l. Manager of the Toronto Fire Clay Mfg. Co., of Toronto, Ohio, has applied for a patent on an electric wire conduit. It is a clay product and is a combination of sewer and wire conduit.

G. B. Roller, Canton, Ill., renewing his subscription for 1894, says: "I consider the CLAY-WORKER by far the best journal of the kind published, and would not be without it." Now is the time to subscribe.

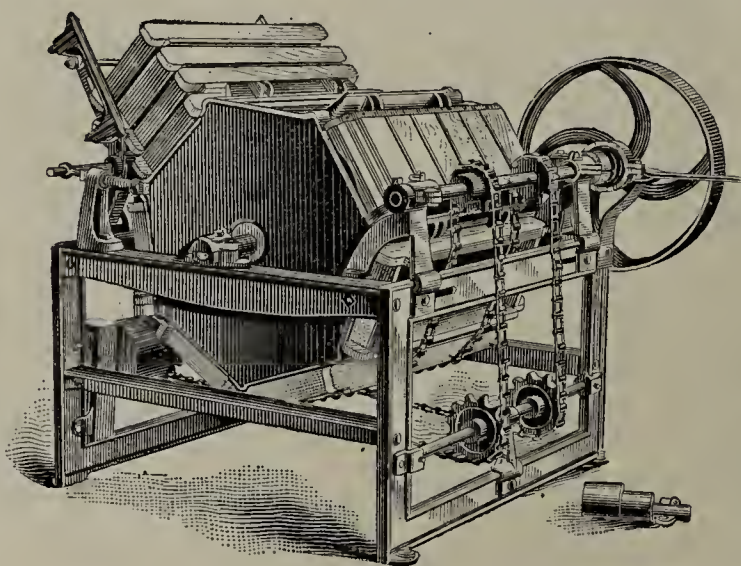
The Jeffery Manufacturing Company of Columbus, O., are among the favored ones judging from reports of recent sales and the continued demands for their chain belting and conveying machinery. They claim to manufacture the largest line of chains made by any

manufacturer, so that they can supply all wants in their line. Catalogues describing their chain specialties, wire cable conveying and mining machinery can be had upon request.

A land-slide occurred on the brickyard of Niles & Slingerland, at Coeymans, N. Y., on the 19th inst, which covered about half the yard with clay to a depth of from three to ten feet and crushed every building about the place.

Levi R. & Wm. Shaffer have commenced the erection of their new brick plant near Norristown, Pa. They expect to be manufacturing brick by the first of April. They will employ between thirty and forty men and have a daily capacity of 30,000.

The Hydraulic Press Brick Co., St. Louis, Mo., sustained a loss of \$60,000 by a fire, which destroyed their machinery building and clay shed. This fire throws 50 men out of employ.



CHAMPION Brick Mould

SANDING MACHINES.

This cut represents the latest improved Champion. No belts, apron or gearing. Simple, strong, and Serviceable.

A. H. NEWTON,

Manager and Sole Agent,
HAVERSTRAW, N. Y.

NOTICE To Brickmakers, Dealers and Others.....

Any person purchasing Champion machines from other than the above, render themselves liable to damages, as no other person has the right to manufacture said machines.

THE THURMAN FUEL OIL BURNER CO.,

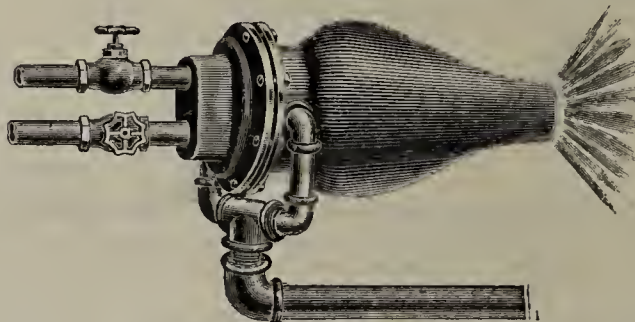
Designers, Contractors and Engineers, Fuel Oil Equipment,

GENERAL OFFICES: 35 and 36 Cordova Building,

JOHN S. THURMAN, Mech. Engineer.

INDIANAPOLIS, IND.

509 Monadnock Block, CHICAGO, ILL.



**We are not Connected with
any other Oil Burner Company.**

The only perfect Crude Oil Burner on the market. The cheapest and best. Absolutely smokeless. It is Economical. Reliable. Requires no expert to manage. Cheaper than Coal. It perfectly atomizes the oil with the air and steam.

**MAKES LESS NOISE THAN ANY OTHER
BURNER.**

For stationary Boilers, Brick Kilns, Locomotives and all Steam Plants. No soot. No Sparks. No Smoke. No Odor.

TRY OUR IMPROVED BURNER IN YOUR KILNS.

GENERAL
AGENTS

Red Seal Boiler Compound

For the removal and Prevention of
Scale in Steam Boilers.

Write for Prices.

Fire Brick

We make a special High Grade Fire Brick (all shapes) for Brick Kiln Construction.

NOT EXCELLED

By any. Our quotations will surprise you. We sell Fire Brick on their merits and

their use will prove **AN ECONOMY.**

GROUND CLAY IN
.....BULK OR SACKS.

We solicit your favors.

Manufacturers of.....

High Grade Fire Brick for Every Purpose.

THE AMERICAN FIRE BRICK & CLAY CO.,

MINERAL POINT, OHIO.

THE "AJAX" BRICK MACHINE

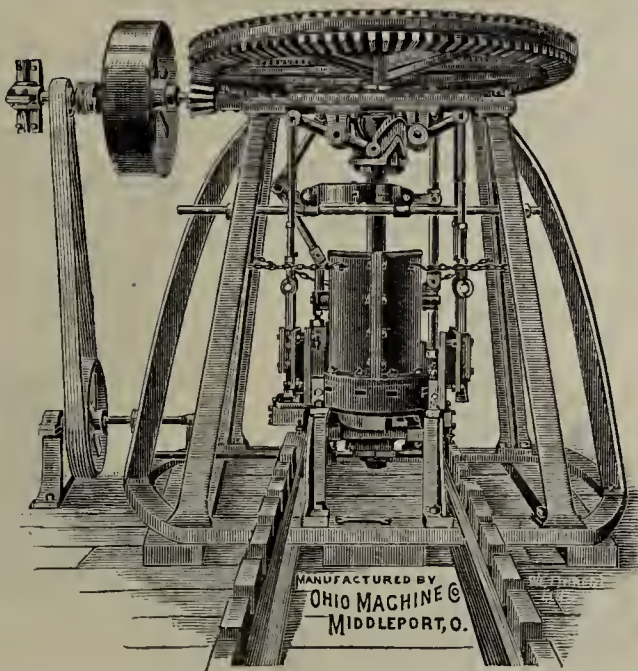
MANUFACTURED BY

Ohio Machine Co.,

Middleport, Ohio.

Under the very Latest Improved Grant-Murray Patent.

This machine is constructed with the object of giving to purchasers the very best results obtainable for the money invested. It is at once Simple, Durable, Convenient, and Easily operated. We claim these machines make the strongest brick in the market, a brick that is very superior for Street Paving and building purposes. Their superior quality as pavers may be ascertained by reference to some of the leading cities of Ohio and West Virginia. This machine works the clay very stiff, pressing all the clay into each brick that it will possibly contain, thus imparting the quality requisite to a No. 1 Paving Brick. We guarantee these machines to our customers, and solicit investigation as to their merits. For further particulars please correspond with



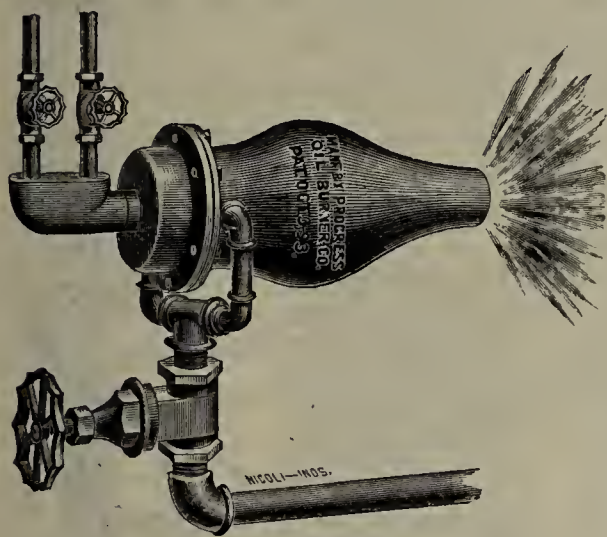
OHIO MACHINE CO.,

MANUFACTURERS.

We manufacture the Grant & Murray Patent Repress Brick Machine, pressing 4 brick each revolution and 40,000 per 10 hour day.

Middleport, Ohio

PROGRESS OIL BURNER.



Device ...For **Burning Hydro-Carbon Oils**

Applicable to all conditions where heat is used for burning clay, and to all manufactories where steam is used.

Any degree of heat desired.
Economy in steam and oils.
Full thermal value of the fuel obtained.

PROGRESS OIL BURNER CO

OFFICES:

18 & 20 W. Georgia St., INDIANAPOLIS, IND.
161 La Salle St., Room 76, CHICAGO, ILL

NOTE:—We own a seven-eighths interest in Patent No. 505,931 assigned to John S. Thurman, and are prepared to furnish Burner direct in any quantity.

MENTION THE CLAY-WORKER,

WHEN WRITING TO ADVERTISERS,

MENTION THE CLAY-WORKER.

ment for a short time only, as the works will probably be rebuilt at once.

At a meeting of the Utah Brick Association, at Salt Lake City, it was shown that the brick manufacturers have already received more orders for brick to be delivered the coming season that had ever been the case at this period of the year for more than two years past. The manufacturers are highly elated over the bright prospects for the coming season.

The Calumet Fire Clay Co., of Calumet, Ohio, and the Empire Fire Clay Co., of Empire, Ohio, both concerns being controlled by the same parties, will resume operations in a week, having made most extensive improvements, such as new boilers, thorough overhauling of all their machinery and the erection of several new kilns, thus largely increasing their capacity.

DOWN VS. UP DRAFT KILNS.

Editor Clay-Worker:

Enclosed find \$2.00 for the CLAY-WORKER, and allow me to ventilate my ideas in regard to burning brick. With 40 years experience, I ought to know a few things in the art.

Mr. J. W. Crary, Sr., is no doubt honest in his convictions in regard to his theory of burning a kiln of brick, by the only natural means we have at hand, viz., the up draft system, but he is wrong in some respects. Like all others, his way is the best, but the "Proof of the pudding is in the eating of it." I have burned in up draft, open top kilns ever since I commenced making and burning brick. I have set my kilns open enough at the bottom and dirted the top of the kiln at the proper time, and in fact have been learning some things all the time that were helps toward getting an even kiln of brick. It is necessary to have flues outside of a kiln, one way or another, for the purpose of getting the proper heat from the fuel used in burning. I am speaking now in regard to wood or coal as fuel.

This plan of Mr. Crary's is far ahead of settling one head at a time or alternating either, i. e., or burning on the shifts, as it is called. Mr. Crary's way is good, but there are kilns now in use that are preferable; they have advantages over the open top kilns, in many respects. They are better adapted for burning in the winter season, and in

fact at all times. It is not a very pleasant job to be on top of a hot, smoky kiln in hot weather or during a heavy thunder shower.

A good old sister once spoke in class-meeting, and said she had made many crooked steps during her pilgrimage here below, and she was honest in her confession, and desired the prayers of the church to help her on in that good old way. Bro. Crary has not expressed himself as standing in need of help from his brethren in the craft. My advice to him would be to visit around and see such kilns as the Eudaly, the Excelsior, or others too numerous to mention. I am not personally interested in any particular kiln, but I like to speak a good word for any kiln that meets my approval even if it is built on scientific principles. The cost of building a down draft kiln of any pattern is greater than a common up draft kiln, but not enough to cut much of a figure when it is considered that a good down draft kiln, such as I have mentioned may be built so as to admit of the use of the heat from cooling kiln, thereby saving a great deal of waste heat in drying off or watersmoking.

I am like the man we read of. One thing I know, that, whereas, I was blind, now I see. I know that a down draft kiln beats an open top every time. We will have to pray for Father Crary if he requests us. J. SLATER.

Thos. Yarwood will confer a favor by advising us of his post office address.

FOR SALE. Two second-hand Wiles Steam Brick Machines. Also three second-hand Martin Brick Machines. All in first-class repair. No reasonable offer refused. Can be seen at our yards near depot, North Haven, Conn.
I. L. STILES & SON,
21 d North Haven, Conn.

WANTED. Position as superintendent or foreman of brickyard. Twenty-three years' practical experience in making and burning. References, address
Box 34,
21 cm Tappan, N. Y.

FOR SALE. Quaker Brick Machine, good repair, \$175. Penfield No. 7 Machine, good repair, \$200. Nolan & Madden Auger Machine, \$150.
G. P. RAFFERTY,
21 c Oak Harbor, O.

FOR SALE CHEAP. Bucyrus Giant Brick Machine, Pug Mill, Crusher, Dump Cars, Etc. All in good condition. Cash, or time, if desired.
Address, FOSTORIA BRICK & PAVING CO.,
21 c Fostoria, O.

FOR SALE Very cheap. Two Clay Pulverizers in a No. 1 order. One set of Clay Rolls. One four-mould Dry Press. One Clay Elevator. Shafting and Pulleys. A great bargain, if sold together.
Address, M. F. W. & Co.
2 tfd Care "Clay Worker."

Mention the CLAY-WORKER,
When writing to Advertisers,
Always mention the CLAY-WORKER.

FIRE BRICK.

Below are analyses of the PLATT BRICK & FIRE PROOFING CO.'S Fire Clay Deposits.

| | No. 1. | No. 2. |
|----------------------------|--------|--------|
| Water of Constitution..... | 2.32 | 9.69 |
| Silica..... | 86.63 | 55.11 |
| Alumina..... | 10.92 | 26.71 |
| Oxide-iron..... | .10 | 4.29 |
| Sulphureous-acid..... | ... | 4.16 |
| Totals..... | 99.97 | 99.96 |

Analyses by W. S. Robinson, Chemist, Omaha, Neb.

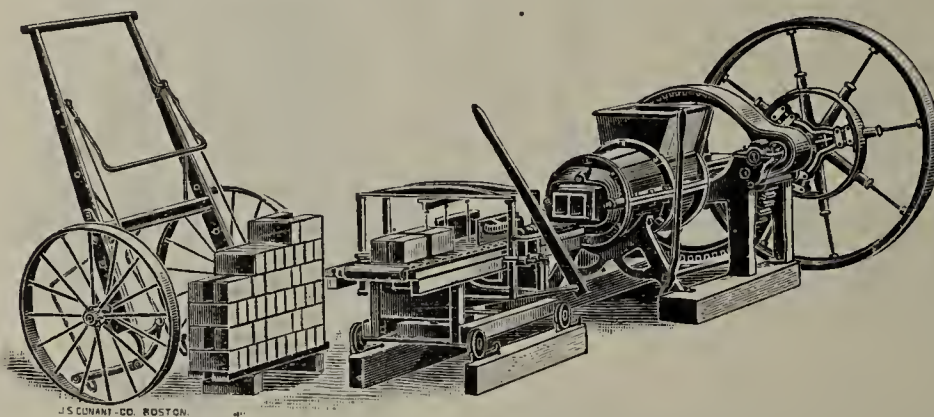
Brick are manufactured carefully on the best of machinery. Large capacity. Prompt shipment. Prepared fire-clay. Fine Pressed Brick. Paving Brick.

Address

PLATT PRESSED & FIRE BRICK CO.,
706 Youngerman Block, Des Moines, Iowa.

J. C. STEELE & SON, SOUTHERN MANUFACTURERSOF BRICK MACHINES

The Only Manufacturers of Steele's Celebrated BRICK TRUCK for Portable Hack.



Kiln Castings,
Pug Mills,
Winding Drums,
Clay Cars,
Switch and Frogs,
Friction Pullies,
Etc., Etc.

THIS cut represents our "One X" Machine, which makes 10,000 to 15,000 per day. But we have a large Double Geared Machine for side or end cut brick which makes 15,000 to 20,000 per day. Write for Catalogue and Prices, and mention the CLAY WORKER.

J. C. STEELE & SON, Statesville, N. C.

The Mock Portable Rack and Pallet System ^{FOR HANDLING BRICKS.}

The Most Expeditious, the Safest and Easiest Method of Handling Soft Clay Brick from Machine to Kiln.

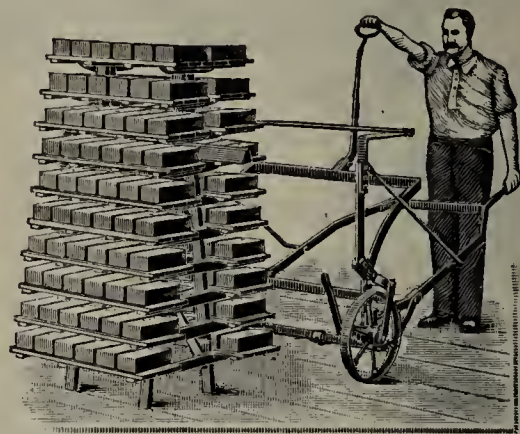
IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.

By this method the brick are not touched by hand till tossed to the setter, so that they go into the kiln in much better condition than is possible by the old time methods.

WHAT USERS SAY OF THE MOCK SYSTEM.

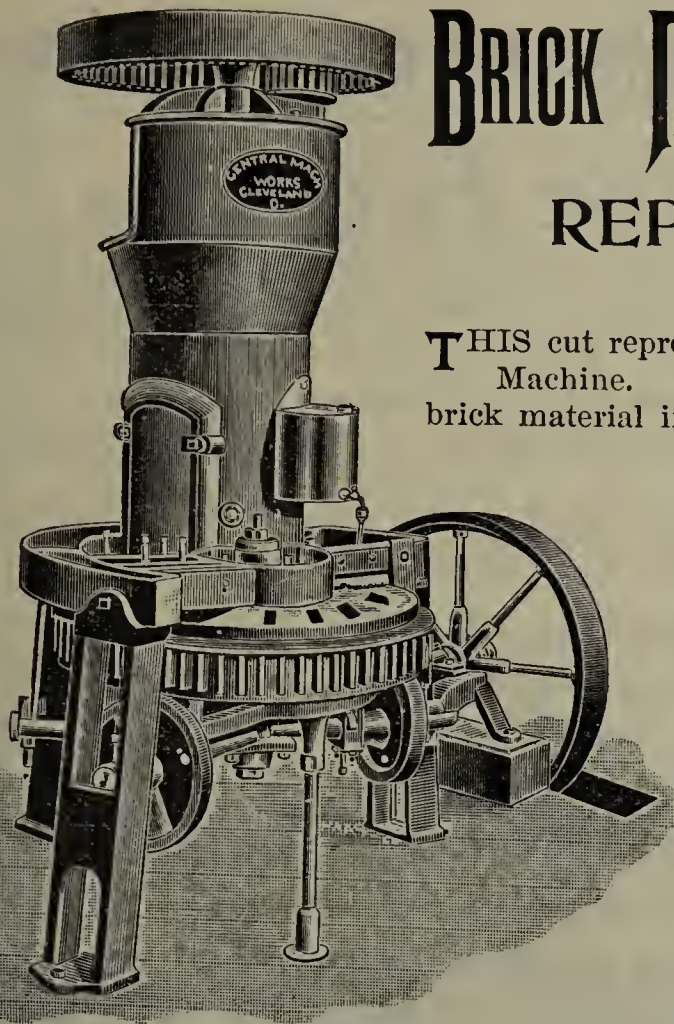
Mr. J. C. Adams, Indianapolis, President of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for two seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."

We are prepared to furnish complete plans and specifications for the erection of brick works of any desired capacity and solicit correspondence from those desiring further information relative to our system of handling brick.



**MOCK BROS.,
MUNCIE, IND.**

Mention the Clay-Worker.



BRICK MACHINES AND REPRESSES.

••••

THIS cut represents our Stiff Mud Brick Machine. It will work any kind of brick material including fire clay, shale or common clay right from bank without the use of a pug mill. Each brick is pressed separately and can be haked 7 or 8 high, or repressed right from machine.

Over 500 in operation.

Send for price and circulars

Manufactured by

**CENTRAL
MACHINE
WORKS,**

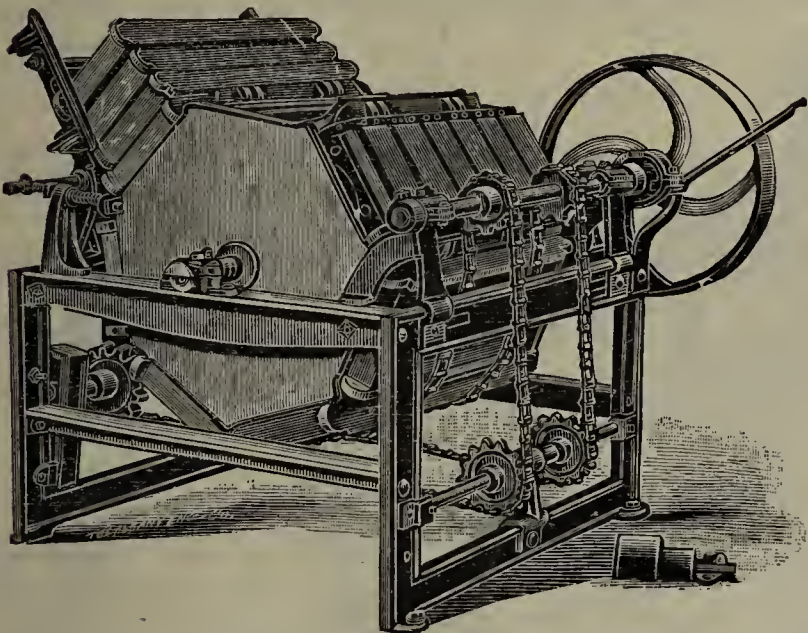
226-236 Abbey St.,

Cleveland, Ohio.

Buck's New Champion Brick Mold Sanding Machine.

J. A. Buck, the Inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton to letters patent for said machine.

The "New Champion" is a great improvement over the old "Champion," doing away with Belts and Gearing and being much more simple. It is the cheapest, best and most durable sanding machine made, in brief it is warranted to give satisfaction.



WHAT THE "NEW CHAMPION" IS DOING.

Mr. J. A. Buck:

DEAR SIR:—The five-mould sanding machines purchased of you last spring have given us entire satisfaction. No expense for repairs, or loss of time, as the machines have always been ready to work.

Yours respectfully,

HAVERSTRAW, N. Y., Oct. 26th. 1893.

DENTON FOWLER & SON.

~~~~~ Write For Prices ~~~~~

J. A. BUCK, 76 Oneida St., COHOES, N. Y., or CRESCENT, Saratoga Co., N. Y.

MENTION THE CLAY WORKER

When writing to advertisers

MENTION THE CLAY WORKER.

### FOR SALE, WANTED, ETC.

**FOR SALE.** Advertising rates in this column 25 cents a line, or 4 cent a word, each. insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

**FOR SALE.** One 9 foot dry pan, good as new. Will sell cheap on reasonable terms.  
Address COREY PRESSED BRICK CO.,  
22c Lehigh, Ia.

**FOR SALE.** One No. 2 Pott's Disintegrator, in use one month. One up-right Potter's Pug Mill. Address D. CULBERTSON & CO.,  
26d White Hall, Ill.

**WANTED.** Situation as superintendent of large brick works. Testimonials, etc., all o. k. Address Z, Care Clay-Worker.  
21d

**FOR SALE.** If sold in 60 days—one stiff clay brick machine. Capacity 30 M per day, the very best for paving brick. Steam engine and repress, all good as new. Price \$1,250.00. A great bargain. Warranted. Address C. O. L.  
21d Care Clay-Worker.

**FOR SALE.** 60 to 75 second-hand brick cars, 8 ft. 10 in. x 2 ft. 11 in., carrying 540 brick each. Also 2,000 feet ¾ in. steel rail for same. Apply to or address J. F. GRAHAM, Trustee,  
21d Memphis, Tenn.

**FOR SALE.** Brick plant at Sheldon, Iowa, a growing town of 3,000, three railroads, capacity 25,000 per day. Sales good, at \$8 to \$10 per M. Machinery, sheds and kilns in good order. Will take 200,000 brick at \$8 per M, and make terms easy. Parties owning plant not brickmakers and have other business. A bargain for some one.  
Address Box 505,  
21d Sheldon, Ia.

**WANTED.** Position as foreman or superintendent. Twenty-five years experience. Can build and equip sewer-pipe, drain tile and paving brick plants and manage them successfully, construct down draft kilns, burn the same, guaranteeing success. Best of references. Address J. W.  
21c Midvale, Tuscarawa Co., Ohio.

**WANTED.** Position as superintendent of brickyard by a practical brickmaker and burner. Have plans of my own to construct kilns for soft or dry clay, know how to manage men. Good reference. Address Box 1,  
21c Care Clay-Worker.

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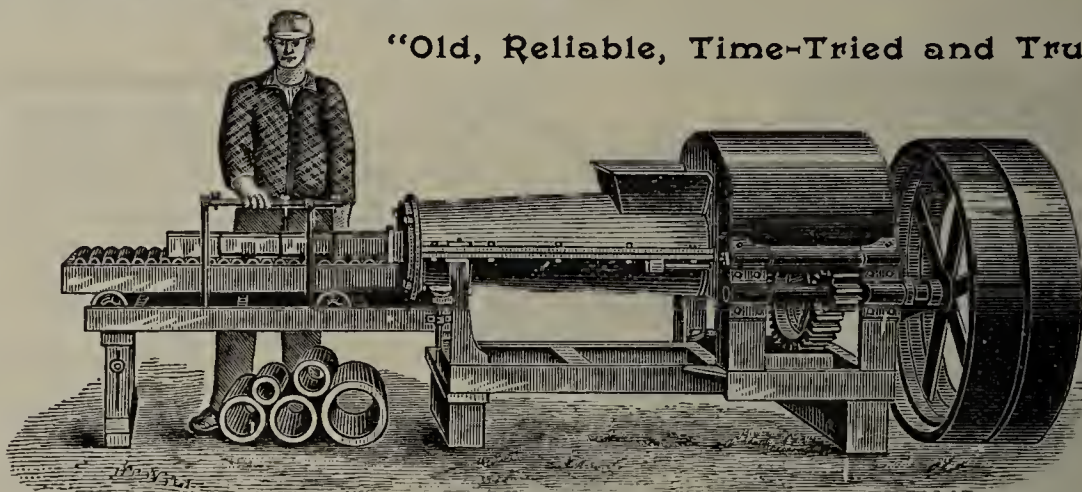
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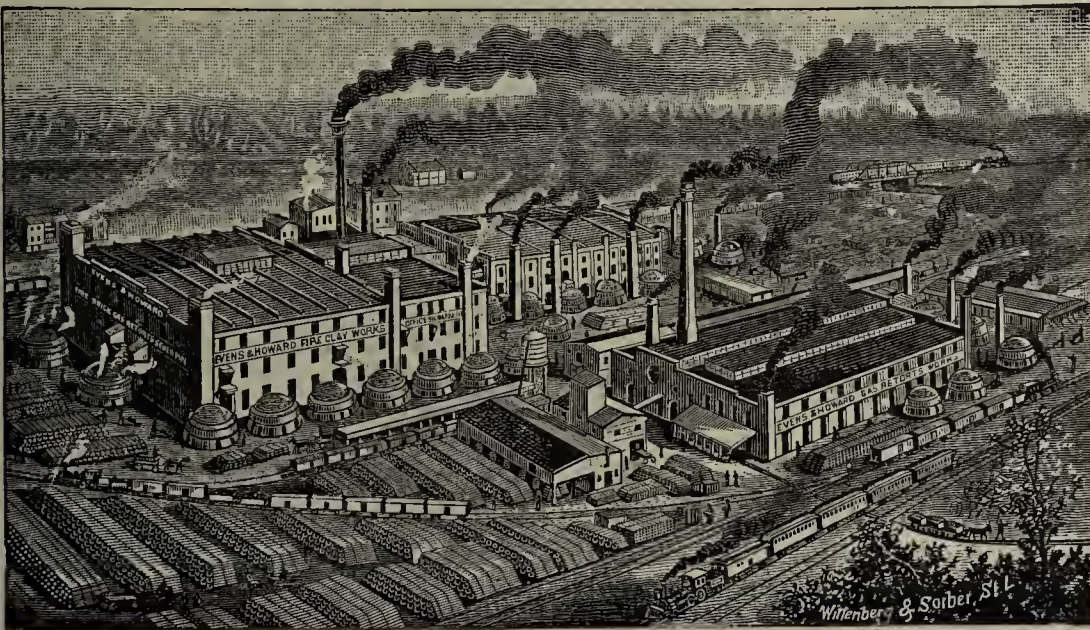




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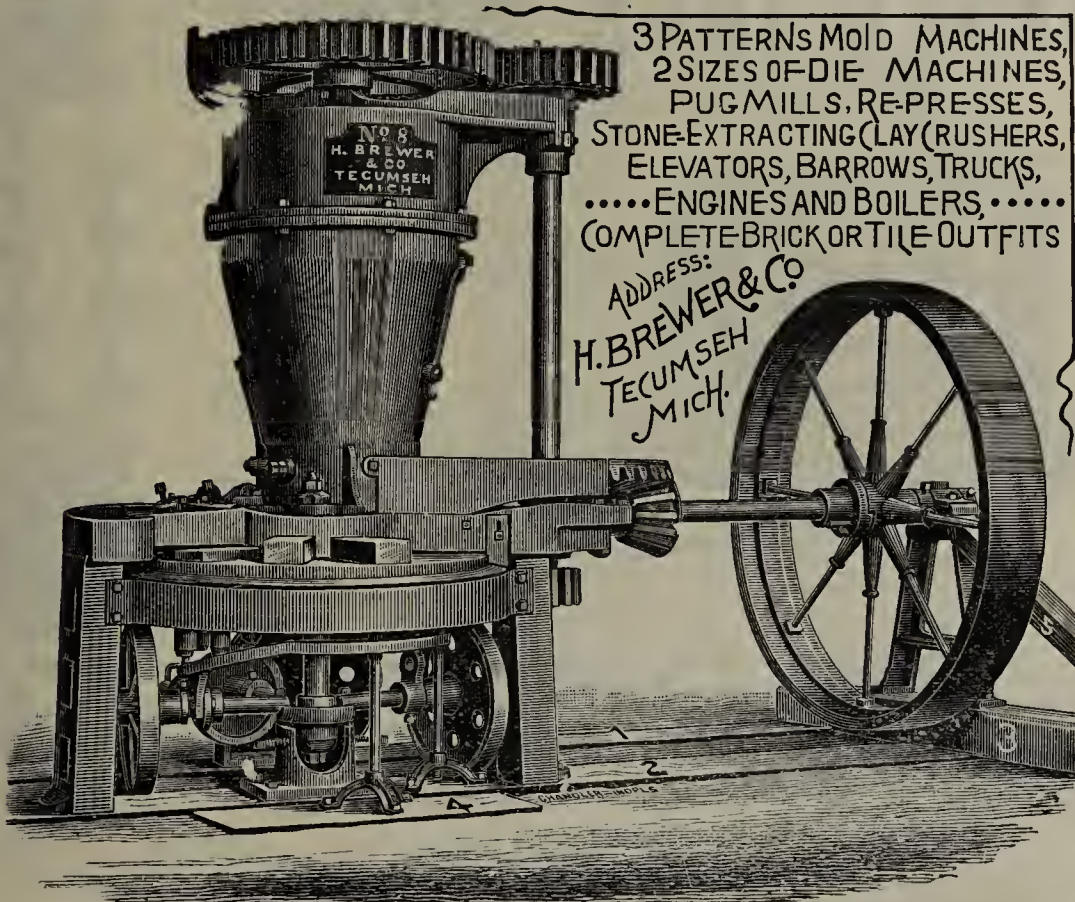
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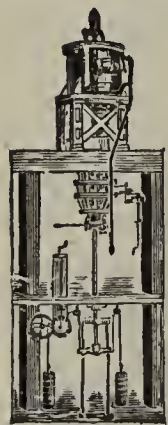
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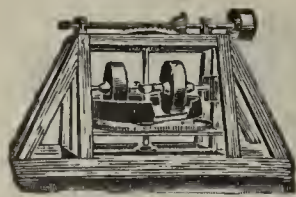
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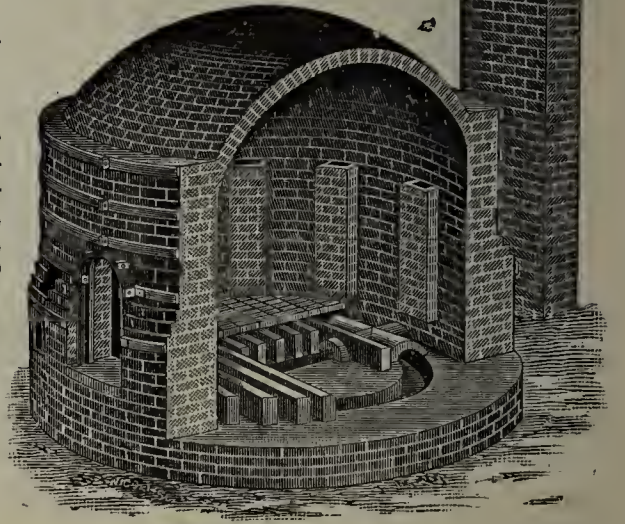
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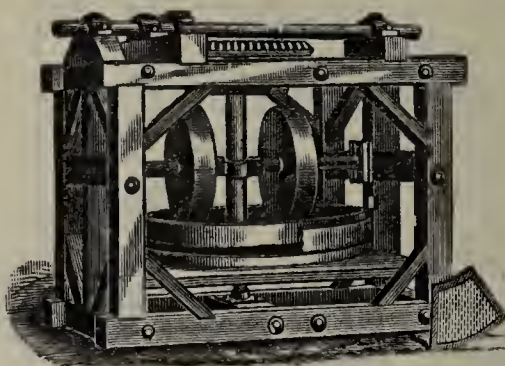
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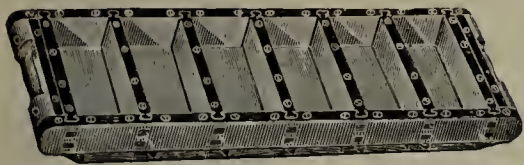
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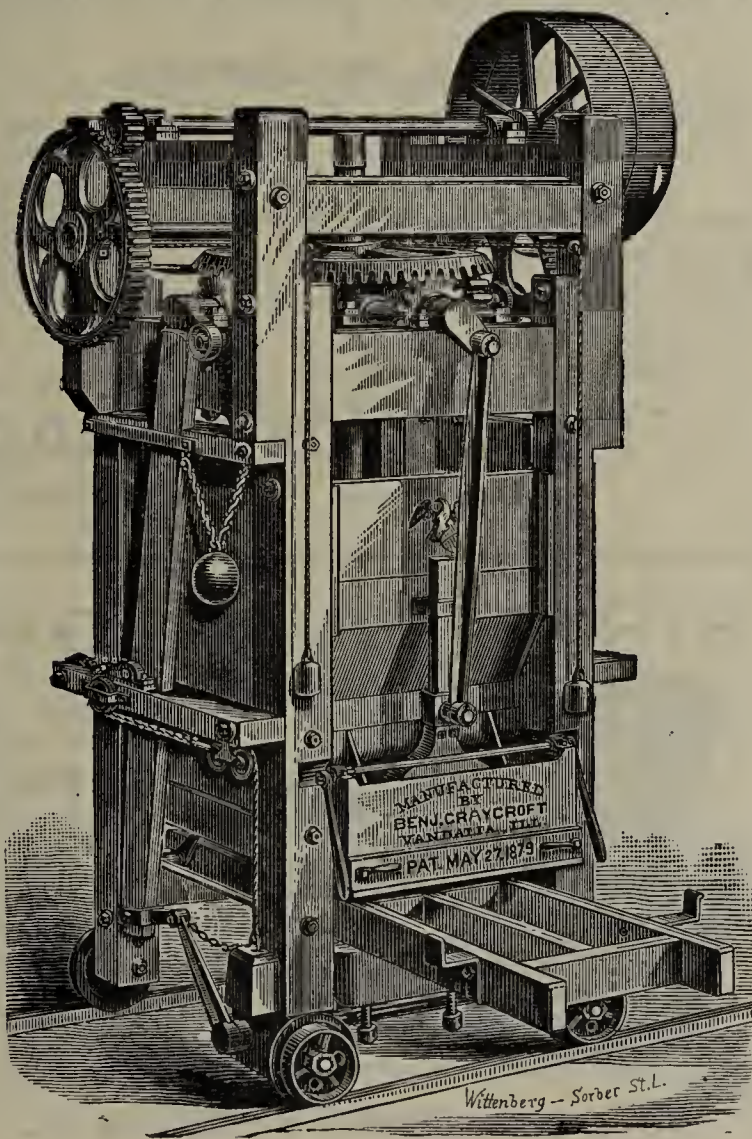
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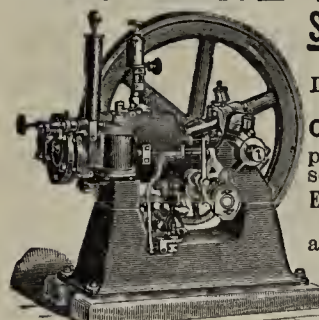
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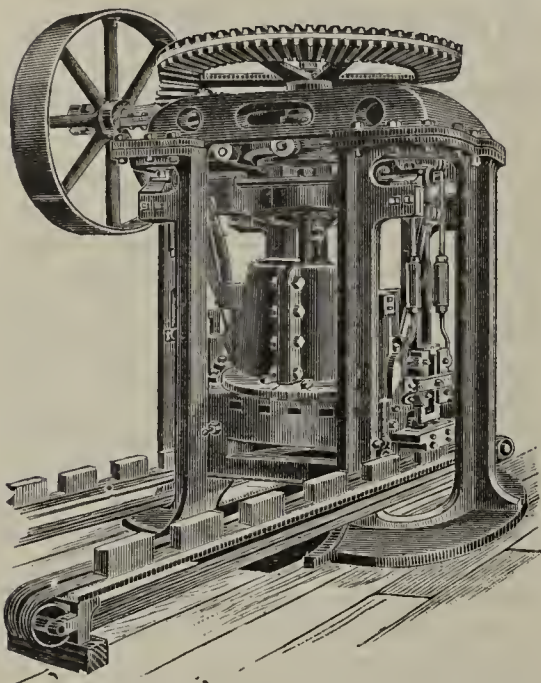




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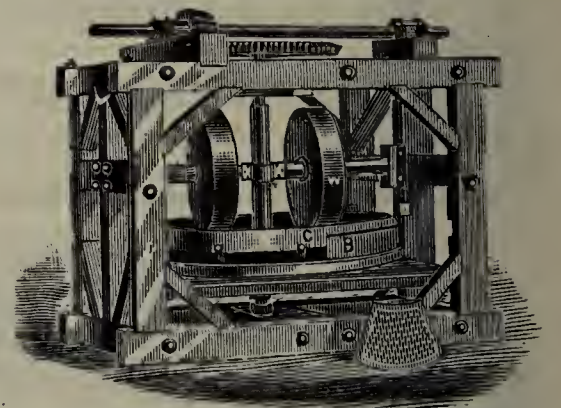
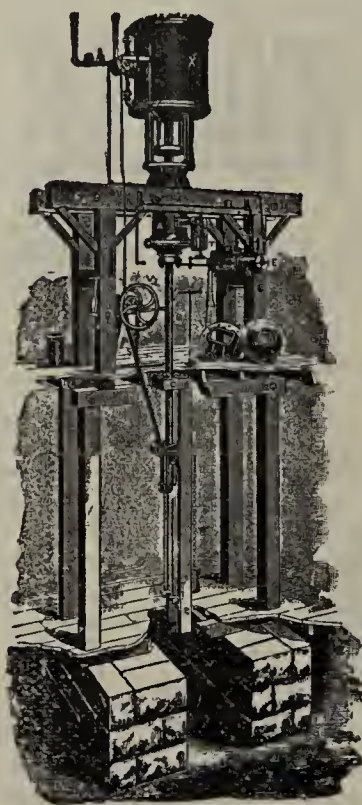
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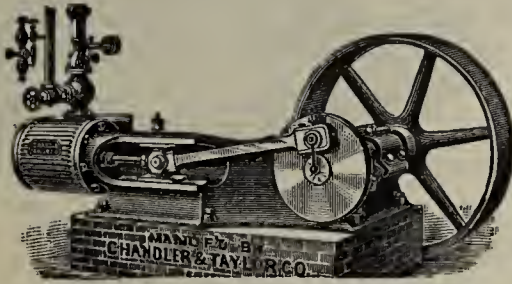
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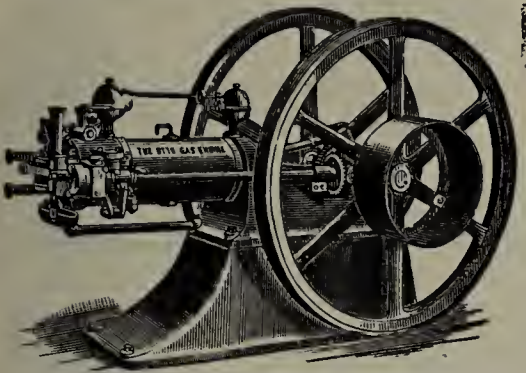
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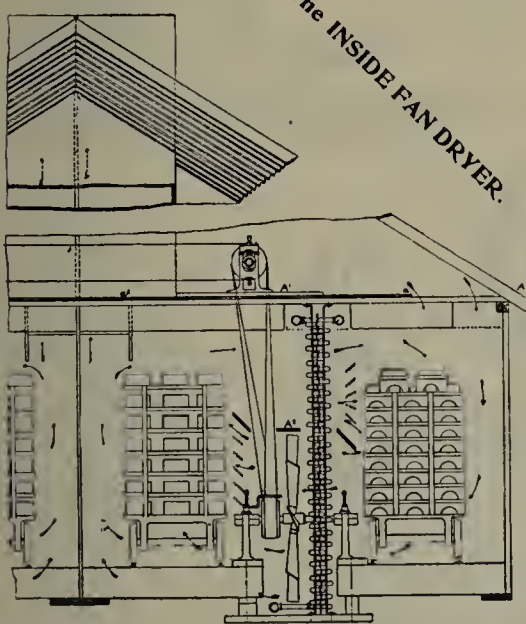
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U. S. Pat. Aug. 16, 1881. No. 245,742.  
U. S. Pat. Mar. 31, 1891. No. 449,170.  
U. S. Pat. Mar. 31, 1891. No. 449,231.  
British Pat. Mar. 31, 1891. No. 5,520.  
Canadian Pat. May 30, 1892. No. 39,025.  
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on the line of the Illinois Central and Yazoo & Mississippi Valley Railroads, giving the population, city and county debt, death rate, assessed valuation of property, tax rate, annual shipments, raw materials, industries desired, etc., apply to the undersigned. Our line is in the shape of the figure "7" and runs from Sioux Falls, S. D., and Sioux City, Ia., to New Orleans, passing through South Dakota, Iowa, Minnesota, Wisconsin, Illinois, Indiana, Kentucky, Tennessee, Mississippi and Louisiana, and has

## NEARLY EVERY KIND OF RAW MATERIAL

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Magnificent Pullman Sleeping and Parlor Cars  
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Ask for tickets and see that they read via  
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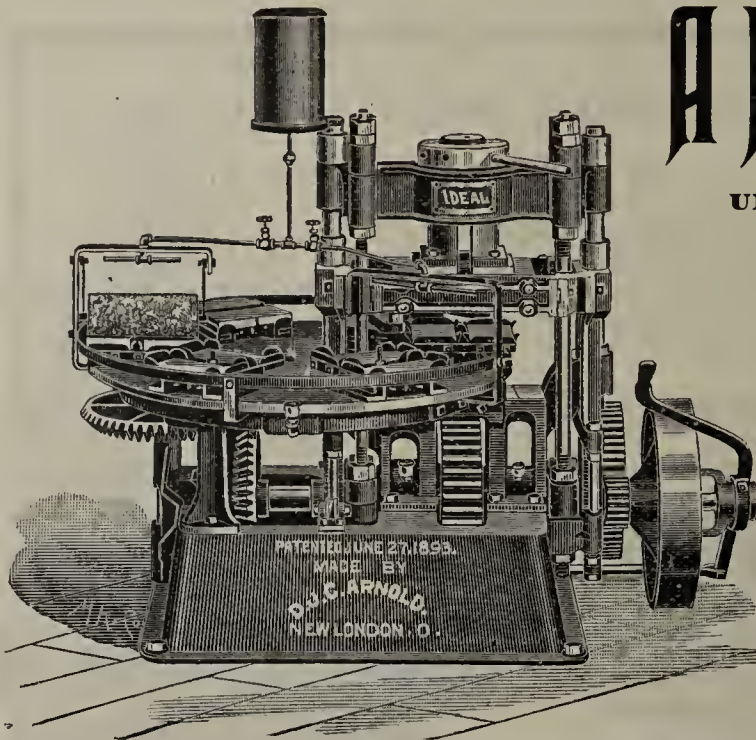
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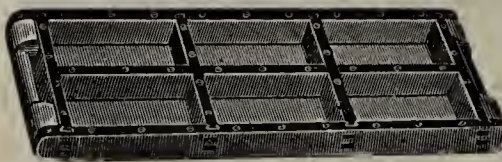
Simple, Compact,  
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New features not found  
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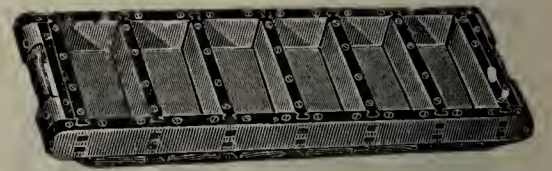
Find out all about it before  
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3 Brick Hand Mold.



6 Brick Hand Mold.



6 Brick Machine Mold.

## BRICK MOULDS.

All kinds and shapes  
made to order. A large  
stock of Hand and Ma-  
chine moulds of stand-  
ard sizes on hand to fill orders immediately. Anything  
not in stock made promptly. Standard of quality,  
the very highest to be found anywhere. New ideas  
this year. Satisfaction guaranteed. Some odd sizes  
**cheap.** Send for list and prices, stating about sizes  
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## IRON BRICK BARROWS.

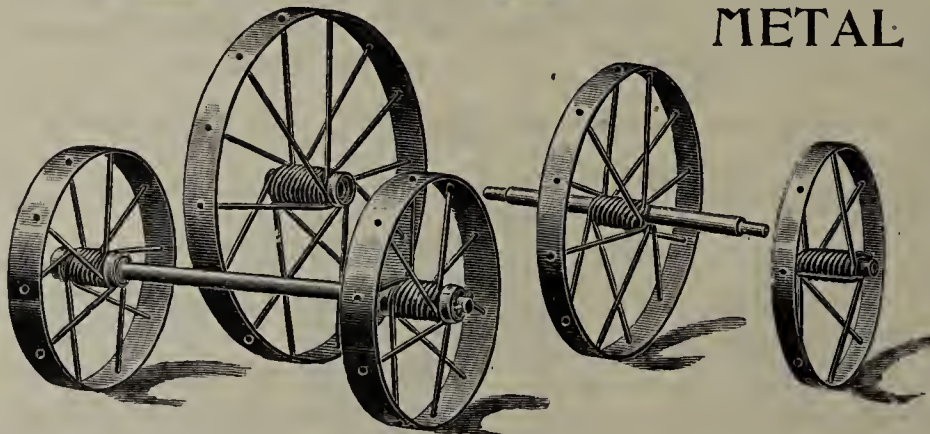


Not affected by  
the weather.

About the same  
weight of wooden  
barrows, and cost  
but little more.



## METAL WHEELS.



Specially adapted to  
use on  
Brick & Tile Yards.



STRONG

...and...

DURABLE.



A Full Line of Brick and Tile Yard Supplies.

ADDRESS, D. J. C. Arnold,

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Send for Catalogue and Prices.



*Why Pay Royalties? Why Pay Yard Rights?  
When You Can Get*

## Bickel's Improved Down Draft Kiln

**GUARANTEED WITHOUT.**

We will build this Kiln and guarantee it to give satisfaction, either by contract or on a per cent. basis.

This Kiln is Simple and Durable in Construction, and Economical in Operation, and does not require an expert to handle it. Any good burner, who understands his business, can easily manage it.

There are no small tile to break or burn out, and no iron exposed to the flames.

This Kiln is built Strong, and to any desired size, and adapted to burning Fire Brick, Vitrified Brick, and Dry Pressed Brick, and all kinds of Pottery goods. Built Square or Round.

For further information, address

**BICKEL BROS. CONTRACTING CO.,**

**920 Market Street,**

[Mention the Clay-Worker.]

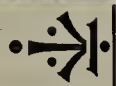
**ST. LOUIS, MO.**

## The BOSTON BRICK ASHLAR.

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

ROCK FACE.

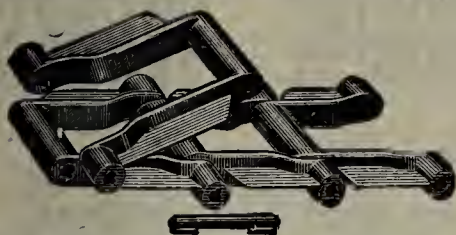
TOOLED FACE.



FISKE, HOMES & CO., Boston.

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Mey Detachable Chain Belt, Patented Feb. 7, 1888.

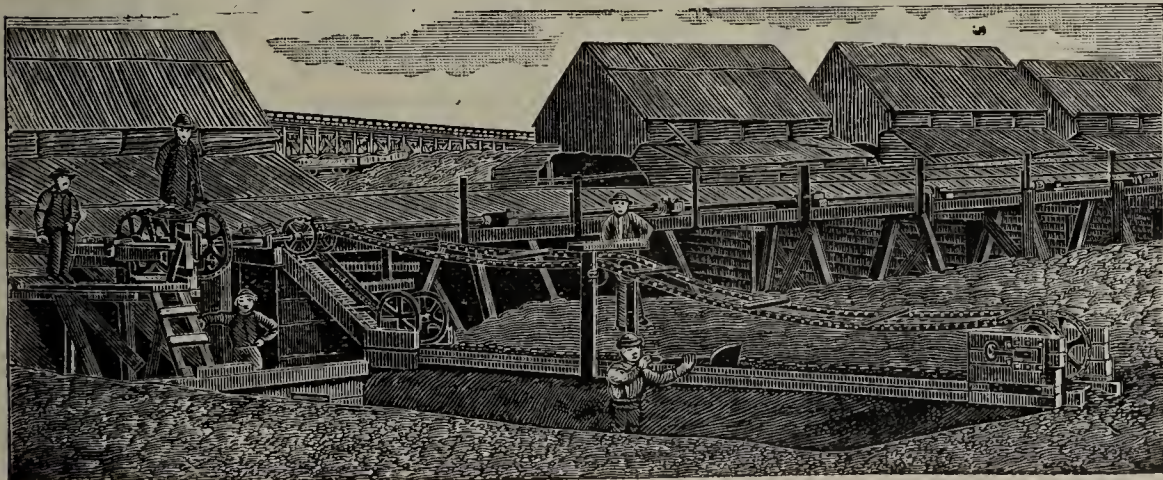
**F. H. C. MEY** CHAIN BELTING  
ENGINEERING WORKS,

APPROVED APPLIANCES FOR

**Elevating, Conveying & Transmission of Power**

64 to 68 Columbia St., BUFFALO, N. Y.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



Mey Patent Clay Elevator.

at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

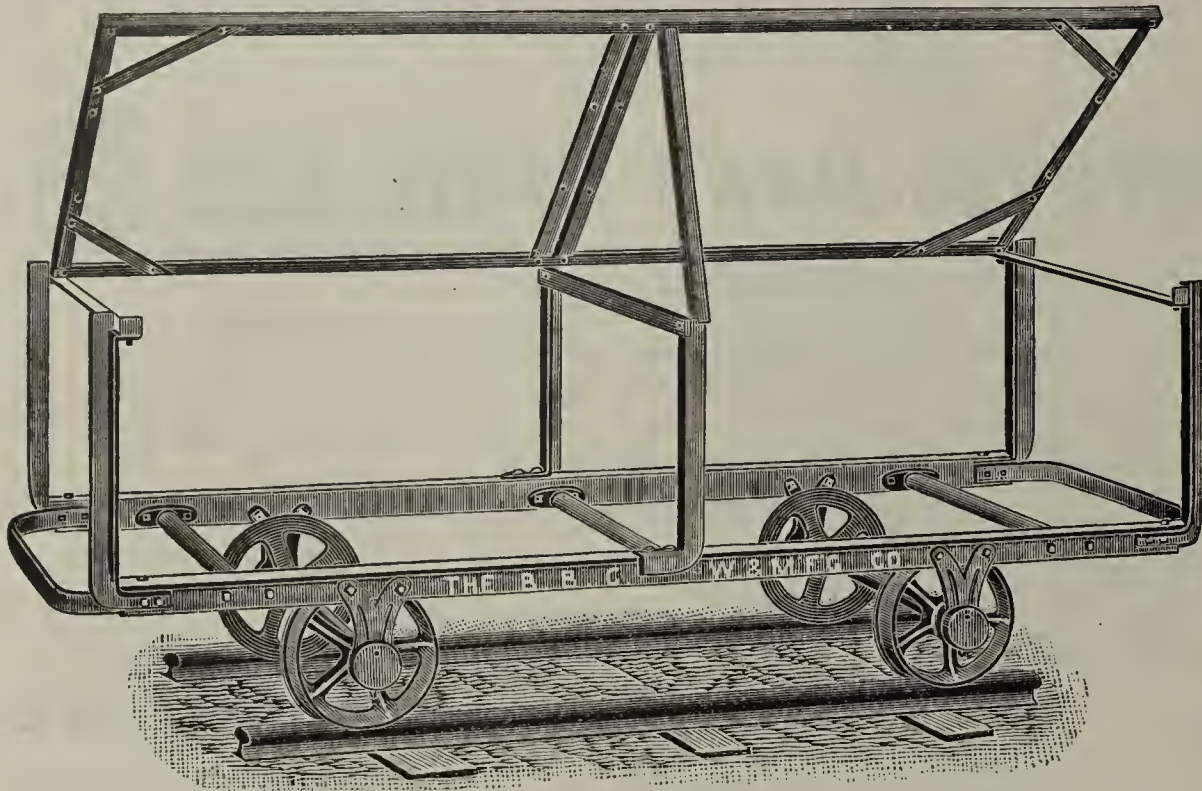
**Make Many More  
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
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## BRICK DRIER CARS.

ONE brick manufacturer who has used both the common cast iron and our all Steel Brick Drier Cars, says, "The

### Cast Iron Cars

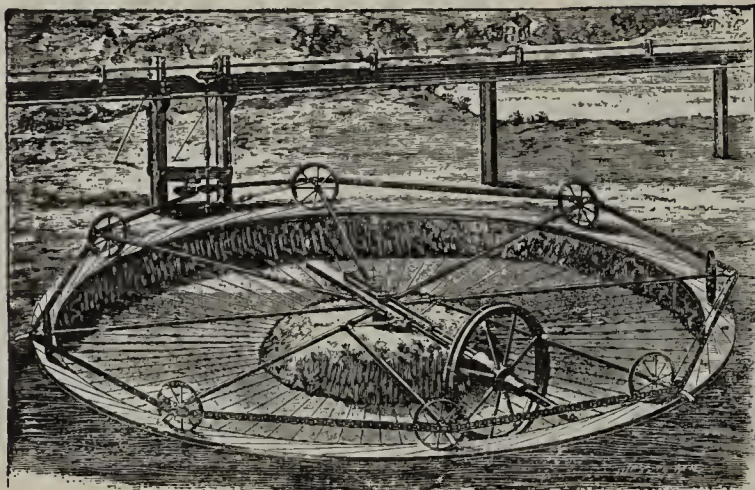
With which our yards were started have cost us fully three times as much as your

### All Steel Cars."

Profit by experience.

The Ball-Bearing Car Wheel & Mfg. Co.,  
961-981 Hamilton St., CLEVELAND, OHIO.

SUCCESSOR TO  
CLEVELAND WHEELBARROW & MFG. CO.



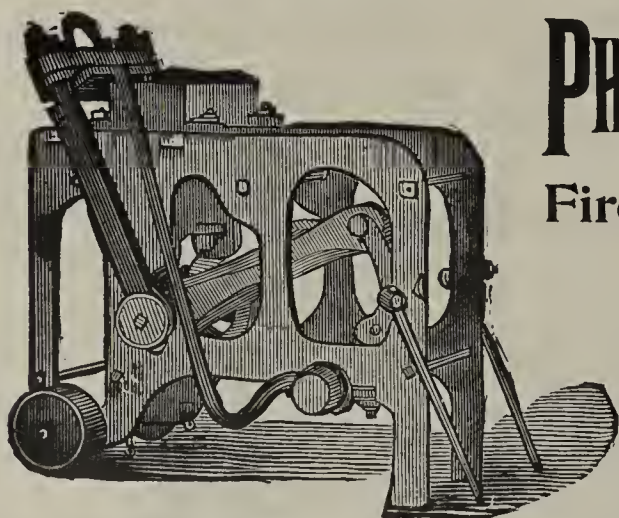
## DORNFELD'S PATENT CLAY TEMPERING MACHINE,

Manufactured by

The E. Kunert M'f'g Co.,

Watertown, Wis.

Send for Catalogue and Prices.



RED BRICK PRESS.

**GEORGE CARNELL,**

Nos. 1,819, 1,821 and 1,823 Germantown  
Avenue and Fifth Street,

PHILADELPHIA, - - - PENN.

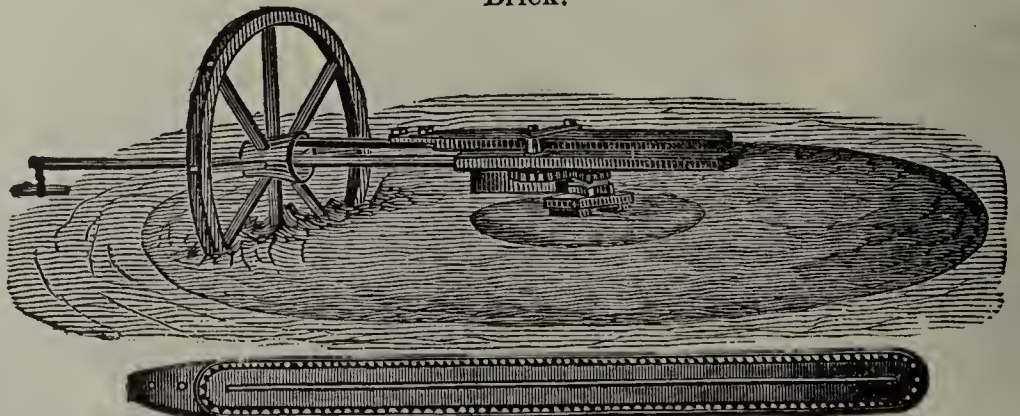
Send for Circular and Price-List.

## PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.



# BRICK MOLD LINERS.

Do YOU know that...

BRANCH-CROOKES SAW CO.,

St. Louis, Mo.,

Are making the hardest and toughest Brick Mold Liners for all the various Dry Press Brick Machines now in use in this country? Well they are. Now we understand there is a pool on these Liners. We are not in it. Try a few sets of our liners and be convinced both as to quality and price. We beg to refer to the Thomas Pressed Brick Co., of Brussels, Calhoun Co., Ill.

Branch-Crookes Saw Co.,  
St. Louis, Mo.

## THE STANDARD BRICK MACHINES

MANUFACTURED BY

A. M. & W. H. WILES,  
Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



# BRICK

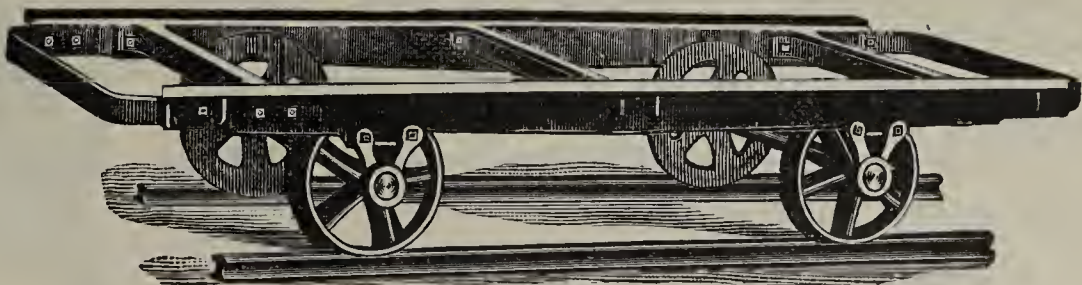
48 Styles.

Also  
Turn Tables,  
Transfers  
Kiln Doors,  
Grate Bars,  
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Iron Pipe.



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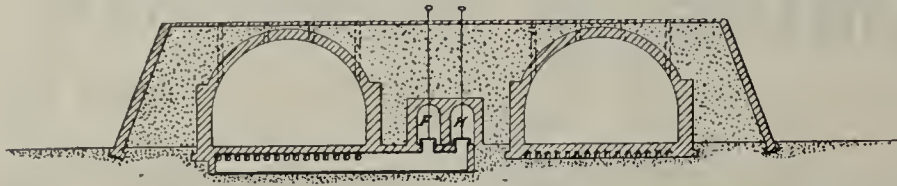


STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG. CO.,  
Cleveland, O.



# YOUNGREN'S IMPROVED CONTINUOUS KILN.



**Marks a Great Advance in the Art of Continuous Burning**

Accuracy of results reduced to a certainty.  
Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.  
Under ordinary circumstances the kiln pays for itself in six months.  
Do not decide on kilns before making a thorough investigation.  
Choose a kiln that is fully guaranteed as to results.  
Read what some of the users say about Youngren's Continuous Kiln and be convinced.

**PETERSEN BRICK COMPANY,**

**MANUFACTURERS OF PRESSED, ORNAMENTAL AND COMMON BRICK.**

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR:—In reply to your inquiry as to the working of our Continuous Kiln we take great pleasure in saying that the same is a success in every respect. As you well know our people were somewhat doubtful as to ability of your kiln to burn first quality of pressed and ornamental brick, but we have now demonstrated to their satisfaction, that the same can turn out from 35 to 40 per cent. of the finest quality of press and ornamental brick the color of which is even superior to those we formerly burnt in the E—downdraft kiln. As to common brick will say that every brick comes out hard and of good color. Wishing you success, we remain,

Yours truly

SAN JOSE, Cal., Aug. 25, 1893.

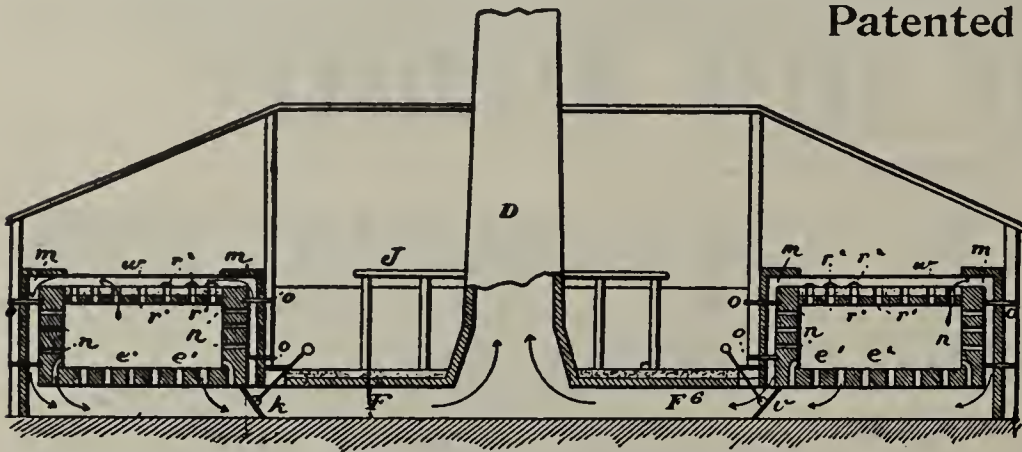
PETERSEN BRICK CO.,  
Per H. M. STAMMER, Superintendent.

For particulars address

**P. L. YOUNGREN, Oakland, Cal.**

# The KAUL Continuous Brick Kiln.

Patented March 23, 1892.



**T**HIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

Mention the Clay-Worker.]

**CARL F. KAUL, Madison, Neb.**

# A LONG FELT WANT SUPPLIED.

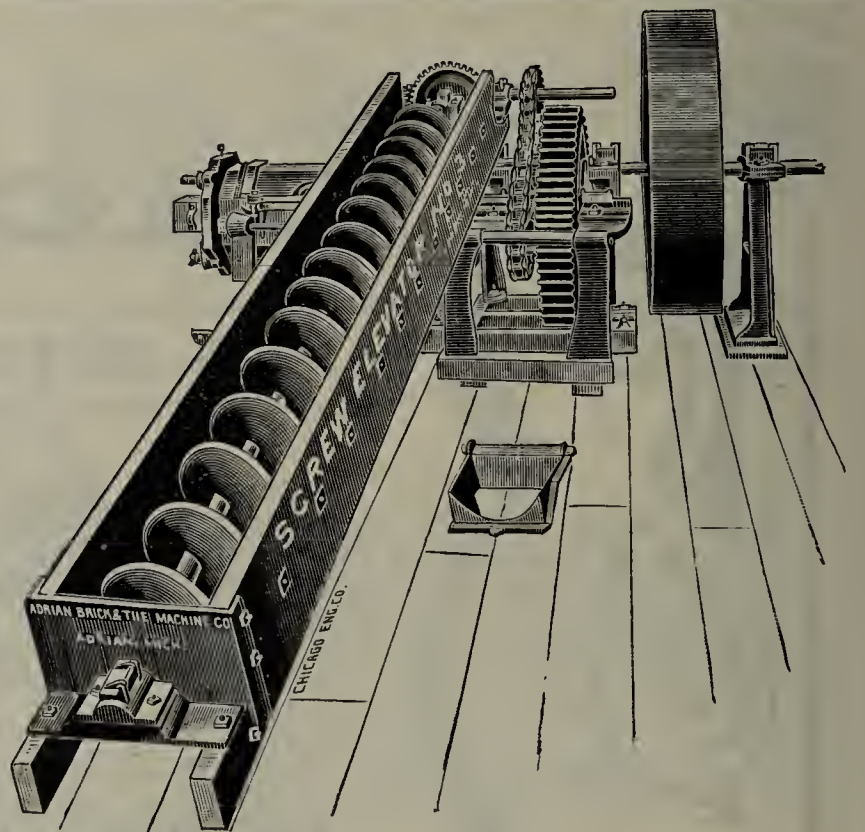
**A SCREW ELEVATOR FOR ELEVATING CLAY.**

The hopper of the brick machine is cut away on one side to receive the end of the conveyor and the knives are so arranged on the brick machine and conveyor shafts as to form an even feeder, thereby increasing the output. No belts to get out of order, no lagging of pulleys by particles of clay. At the same time it assists greatly as a mixer and granulator. It is an accessory every clay-worker should have.

For Clayworking Machinery and Builders' Elevators, address the

**Adrian Brick & Tile Machine Co.,**

**ADRIAN, - - MICHIGAN.**





# "Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours, I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our class of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

## MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

Thompson's Water-Proof Belt Dressing for

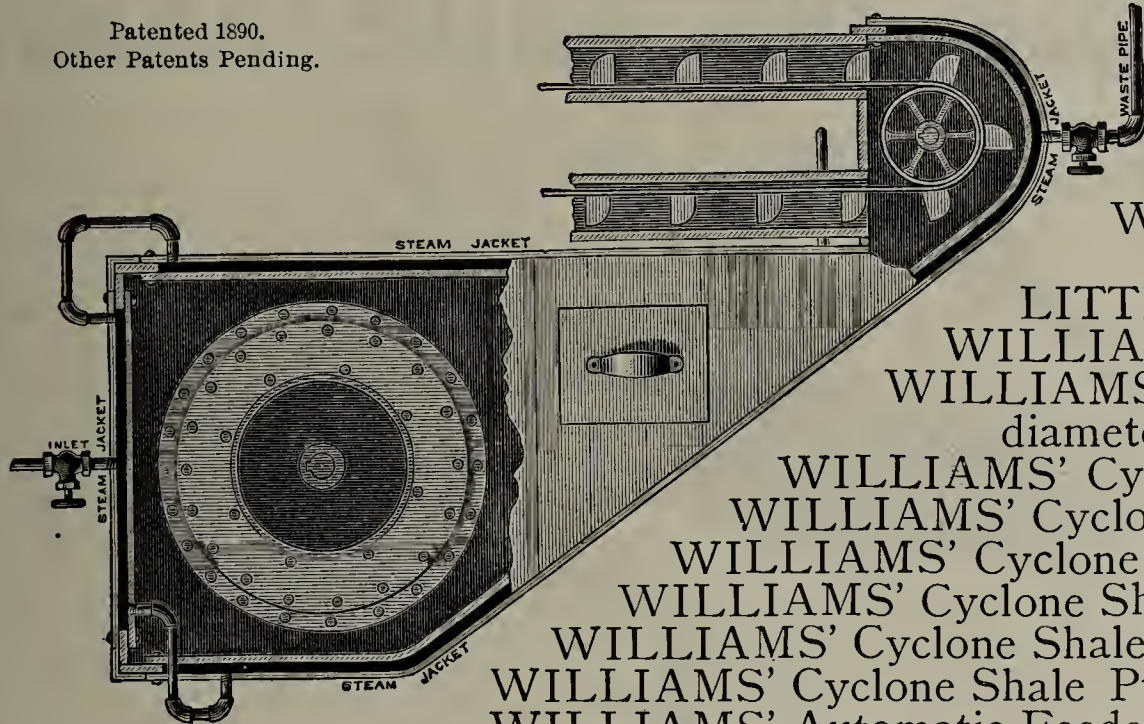
Leather, Rubber and Canvas Belting.

No user of Belting can afford to be without it.



# WILLIAMS' CLAYWORKING MACHINERY.

Patented 1890.  
Other Patents Pending.



WILLIAMS' Clay Elevators.  
WILLIAMS' Triple Roll Clay  
Crushers.

WILLIAMS' Brick Trucks,  
Three sizes.

WILLIAMS' Revolving Clay  
Screen.

LITTLE'S Steam Jacket for Pulverizers

WILLIAMS' Clutch Pulleys and Couplings.

WILLIAMS' Cyclone Clay Pulverizer 30 in.  
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.

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WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.

WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.

WILLIAMS' & LITTLE'S Patent Steam Clay Screen.

WILLIAMS' Pony Pulverizer for Testing Clay and Shale.

WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Clay Cultivators.

WILLIAMS' Clay Bunchers.

WILLIAMS' Brick Barrows.

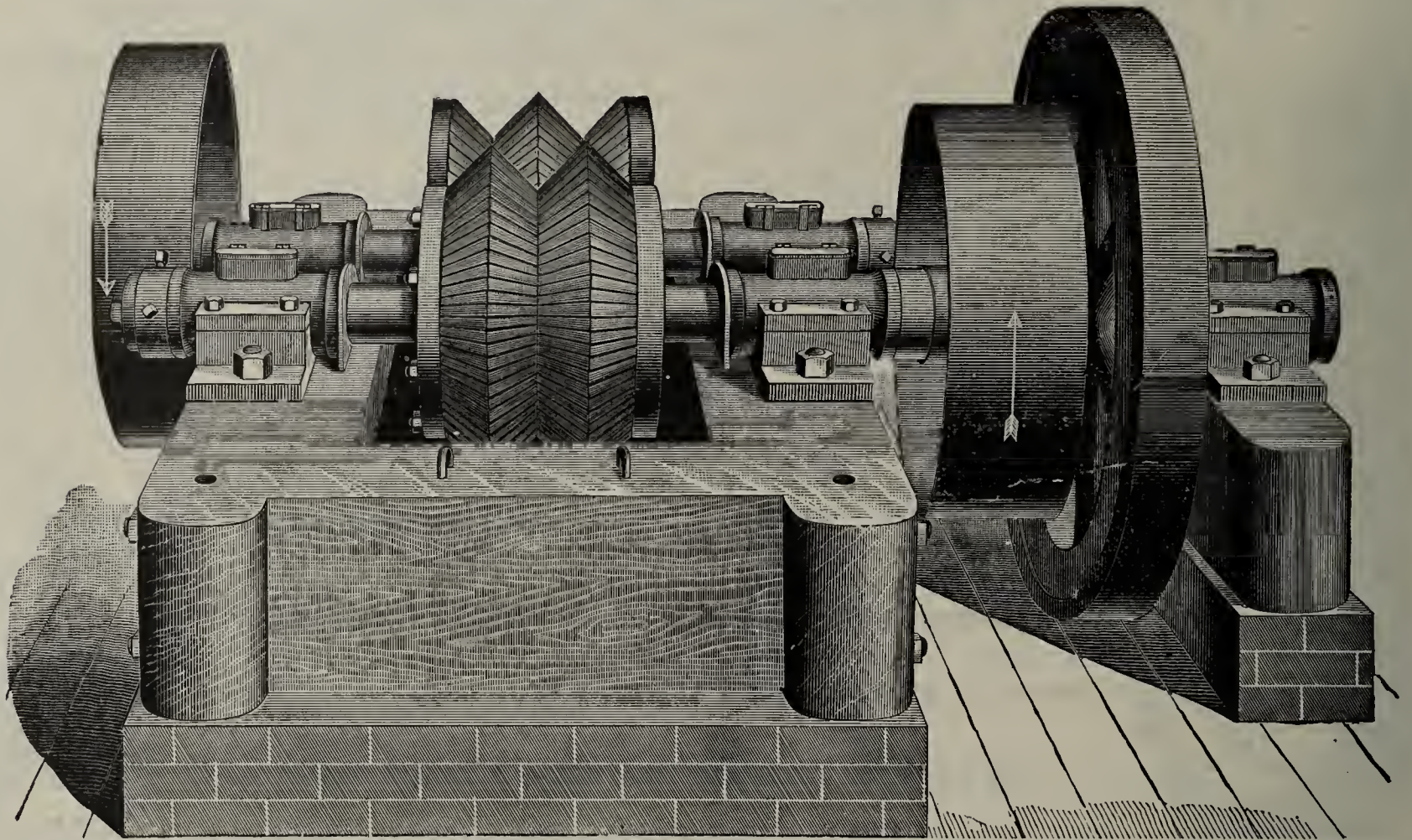
WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO., 2705 and 2707 N. Broadway. ST. LOUIS, MO.**



# NEWELL IMPROVED CLAY PULVERIZER

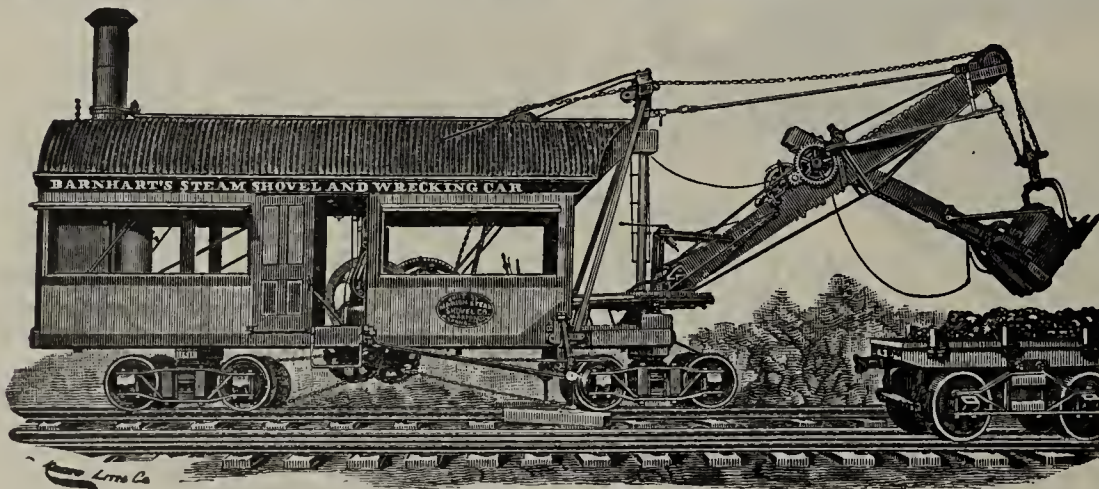
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeier Building, New York, U.S.A.  
26 Cortland and 21 Dey Streets,

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**  
603 West Center Street,  
**MARION. . . . OHIO.**

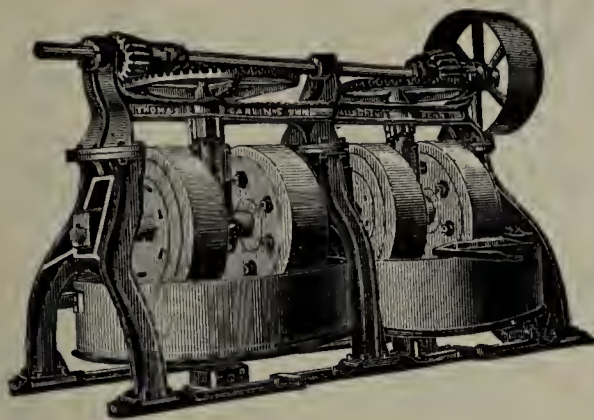


STYLE C—¾ YD

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick



OUR SPECIALTY.



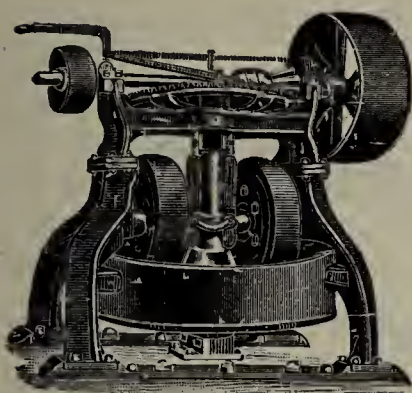
## GRINDING AND MIXING PANS

Of Every Description.



Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.

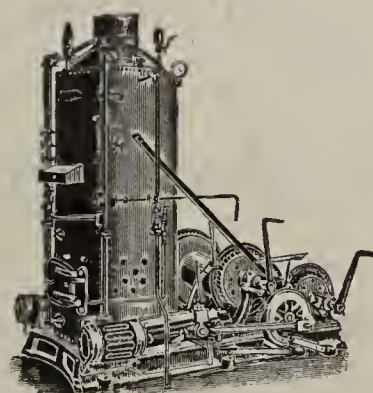


Thomas Carlin's Sons,  
 ALLEGHENY, PA.

One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

} IN STOCK:

{ One 8 foot Wet Pan.  
 Eight 3 foot gauge Dump Cars.



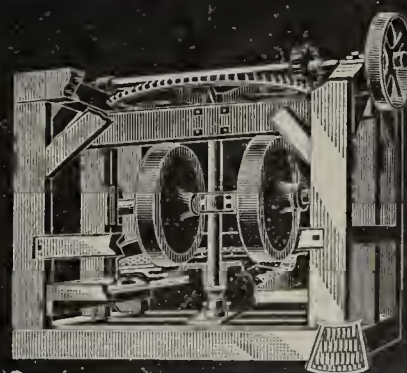
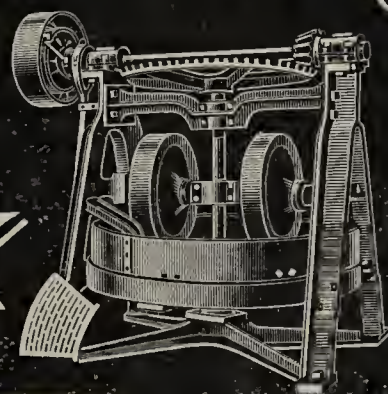
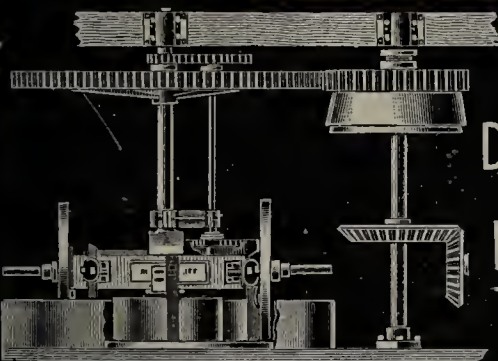
MANUFACTURERS OF  
 IMPROVED  
 CLAY WORKING  
 MACHINERY

OF EVERY DESCRIPTION

TAPLIN RICE &amp; CO.

CLAY MILLS,  
 STEAM SEWER PIPE PRESS,  
 DRY & WET PANS, DIES, CLAY BLOCKERS,  
 POTTERS' WHEELS AND  
 MACHINERY OF ALL KINDS.

AKRON, OHIO, U.S.A.



PROMPT ATTENTION  
 & DISPATCH GIVEN  
 TO ORDERS

SEND FOR  
 CATALOGUE  
 A



# IT IS USELESS TO REPINE

Good brick made by good machinery and backed by good management will put you in the front rank.....



Experiments are better handled by the rich suckers who profit by a practical training, but the Brickmaker who desires to keep the balance on the right side of his ledger wants machinery of an established reputation, and to obtain information of such machinery with prices and full particulars, address the manufacturers.

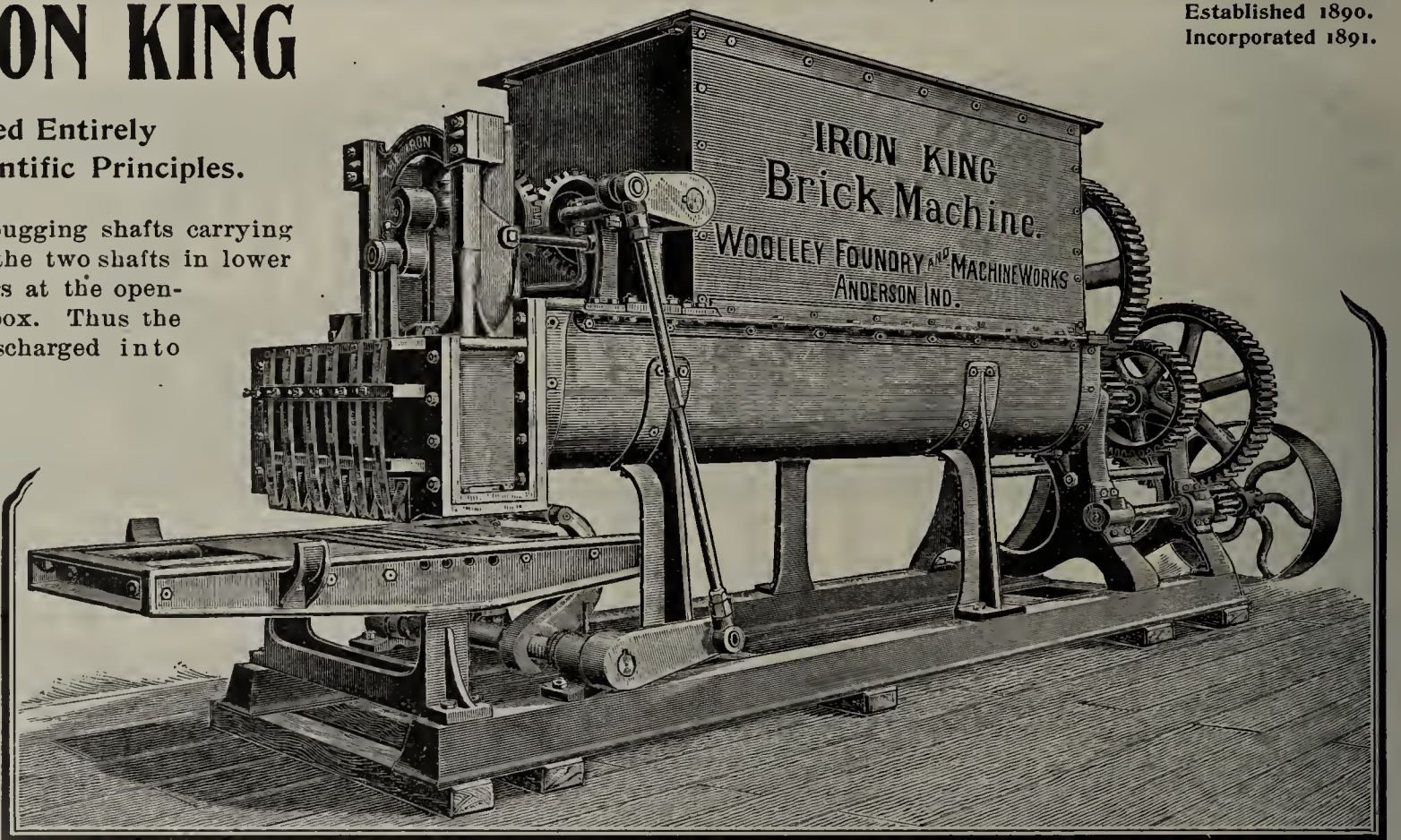
## Jonathan Creagers' Sons, Cincinnati, O.

IMPROVEMENTS IN BRICK MACHINES....IMPROVEMENTS IN DISINTEGRATORS....IMPROVEMENT IN THE ARRANGEMENT OF COMPLETE EQUIPMENT....PRICES INTERESTING.

### The IRON KING

Is Constructed Entirely  
On Scientific Principles.

It has three pugging shafts carrying steel knives. On the two shafts in lower chamber are augers at the opening of the press box. Thus the clay is evenly discharged into the press box, insuring an even pressure on each brick. Parties who are familiar with what is commonly known as soft clay machines, will readily understand the advantages that we gain, by dispensing with the old wiper or mud wing, and substituting the more modern and



Established 1890.  
Incorporated 1891.

positive device known as the auger. This machine has more pugging capacity, is stronger and has more iron and steel in it, and will make stiffer brick than any machine using a sanded mold. This machine will bear investigation. Write for full description and testimonials, or come to our works and see the machine in stock, we can show it in practical operation in works near us. In conclusion, if you buy a machine without investigating the Iron King, you are the loser. Address,

**WOOLLEY FOUNDRY & MACHINE WORKS, Anderson, Ind.**





Fig. 1.—A "TALE" OF BRICKS, B.C. 1492.

"And Pharaoh commanded the same day the taskmasters of the people, and their officers, saying: Ye shall no more give the people straw to make brick as heretofore: let them go and gather straw for themselves. And the tale of the bricks, which they did make heretofore, ye shall lay upon them; ye shall not diminish aught thereof: for they be idle... And the officers of the children of Israel did see that they were in evil case, after it was said: Ye shall not diminish aught from your bricks of your daily task."—EXODUS V.

WE present herewith two phases of the Brick industry—one of them a decidedly gloomy report from pioneers in the trade; the other, some cheerful statements of a "Middleman" who handles such goods extensively.

Fig. 1 represents Brick-Making as pursued in the Nile Valley about B.C. 1492, at which remote period labor troubles were by no means unknown, as we gather from the authentic record herewith.

Fig. 2 portrays an adopted citizen, from one of whose letters to the home of his youth we quote.

Unto such Royal Brick-Makers as Amenophis II., Thothmes III.



Fig. 2.—EXTRACT FROM LETTER.

"This is a fine country, sure enough! The very first hour I set foot ashore I got a job as assistant architect, at one dollar the day, in good money; and it's just sport, so it is. I only puts a few bricks into a small box like, and takes them up a bit of a ladder to a lot of other gentlemen that's waitin' for them, and they does every blessed stitch of the work with them bricks."

and other Pharaohs, the sale of any labor-saving machinery would have been well-nigh impossible, for the following cogent reasons: FIRST. The existence of a practically unlimited labor-supply removed all necessity for economy in that item; and, SECOND. The relations of Capital to Labor at that early period were such as to secure to the former an influence so paramount as to eliminate all pay-rolls, and thereby vastly reduce the costs of production.

In the **thirty-three hundred and eighty** odd years that have elapsed since the era mentioned, the Clay-Working Industry has undergone material modifications. In this year of grace A.D. 1894, what would have seemed an unwarranted waste of working-capital in the eyes of a Pharaoh, is now regarded by all clay-workers who wish to be "heard from" as simply indispensable, to wit: the most approved labor-saving, work-producing appliances. To better illustrate our meaning, we append a partial list of Brick and Tile-Makers' Machinery, all of it designed for the express purpose of decreasing labor on the one hand, and increasing the quantity and quality of output on the other, viz.:

Auger Machines (two new designs just ready). Upright Pug Mills. Horizontal Conveyors. Disintegrators. Winding Drums. Represses. Side Cut Cutting Tables for Brick (Patent Curved Cut). End Cut Brick Tables. Revolving Tile Carriers and Cut Off. Roller Tile Cutting Tables. Spring Trucks. Wheel Barrows. Wire Twister to Loop Cut Off Wires, &c., &c.

If you are interested in Clay-Working Machinery, we shall be pleased to have you write for our latest Catalogue.

**MICHIGAN BRICK AND TILE MACHINE CO., MORENCI, MICHIGAN.**

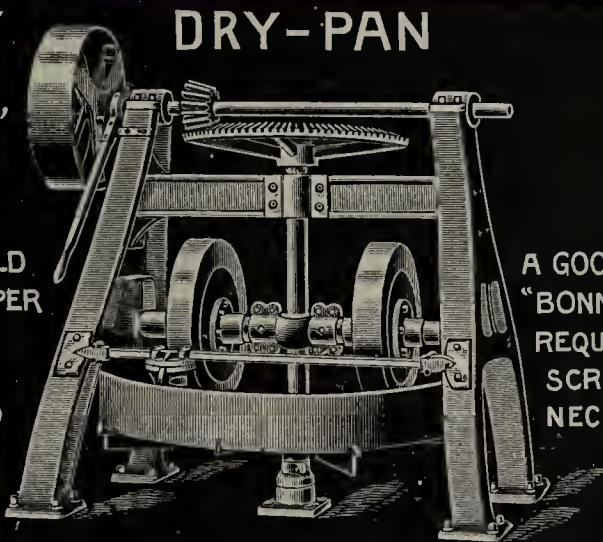
## EXTRA HEAVY

THIS PAN WEIGHS MORE,  
WILL LAST LONGER,  
DOES THE WORK BETTER,

AND WHILE IT COSTS MORE TO BUILD, IS SOLD  
AT A PRICE AS LOW AS OTHER PANS OF CHEAPER  
GRADE. THE HOUSINGS ARE WARRANTED FOR  
FIVE YEARS.

CUSTOMERS ARE ALWAYS PLEASED

## DRY-PAN



THE  
**BONNOT CO.**  
CANTON, O.

## A GOOD SCREEN

IS AS NECESSARY  
AS A GOOD MANAGER  
IN A SUCCESSFUL PLANT.

A GOOD MANAGER WILL SURELY INVESTIGATE THE  
"BONNOT" REVOLVING SCREEN. NO EXPENSE IS  
REQUIRED LOOKING AFTER IT. THE OLD STYLE  
SCREEN REQUIRES THE EXPENSE AND ATTENTION  
NECESSARY TO KEEP IT GOING.

THE BONNOT COMPANY  
CANTON, O.

GENTLEMEN! THE DRY PAN PURCHASED OF YOU HAS BEEN  
IN CONSTANT USE AND HAS GIVEN ENTIRE SATISFACTION.  
WE WANT NOTHING BETTER.  
YOURS VERY TRULY

BRAZIL BRICK & PIPE CO.  
BY J. V. AYER, SECRETARY.

THE BONNOT COMPANY,  
CANTON, O.

LOUISVILLE, KY, DEC. 27. 93.

GENTLEMEN! WE ARE VERY MUCH PLEASED WITH THE  
WORKING OF THE REVOLVING SCREEN. IT HAS BEEN IN  
CONTINUAL USE SINCE WE PURCHASED IT AND WE THINK  
IT DOES THE WORK BETTER THAN ANYTHING WE HAVE  
EVER TRIED.

YOURS TRULY,  
KENTUCKY VITRIFIED PAVING BRICK CO.  
BY M. J. BANNON, V. PRES. & GEN. MGR.

WHEN IN NEED OF A DRY PAN—EITHER IRON OR WOOD FRAME  
WRITE US BEFORE BUYING. WE MAKE THE STRONGEST  
DRY PAN ON THE MARKET—AT A PRICE SUITED TO THE TIMES

## PUG MILLS.

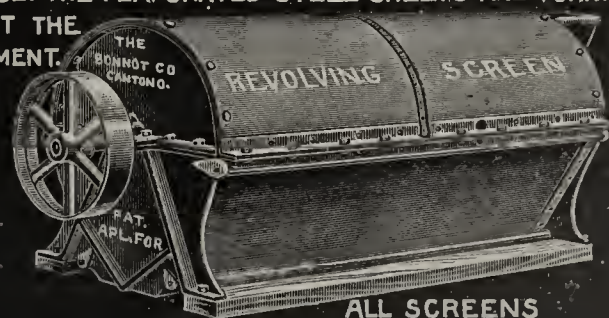


IF YOU WANT THE LATEST  
THING OUT—A PUG MILL WITH ADJUSTABLE OUTLET—PRICE  
NO MORE THAN A CHEAP ONE. WRITE FOR PARTICULARS.

IF YOU  
WANT  
INFORMATION  
ON  
REVOLVING SCREENS  
ASK FOR  
SPECIAL TERMS  
ON  
SCREENS.



HOW THEY ARE SOLD.  
WE GUARANTEE THESE SCREENS TO DO CERTAIN WORK  
WRITE US WHAT YOUR DAILY OUT PUT IS AND WE WILL KNOW WHAT  
TO ADVISE. THE PERFORATED STEEL SHEETS ARE FURNISHED  
TO SUIT THE REQUIREMENT.



ALL SCREENS  
ARE WARRANTED TO DO EXACTLY WHAT IS CLAIMED  
FOR THEM.

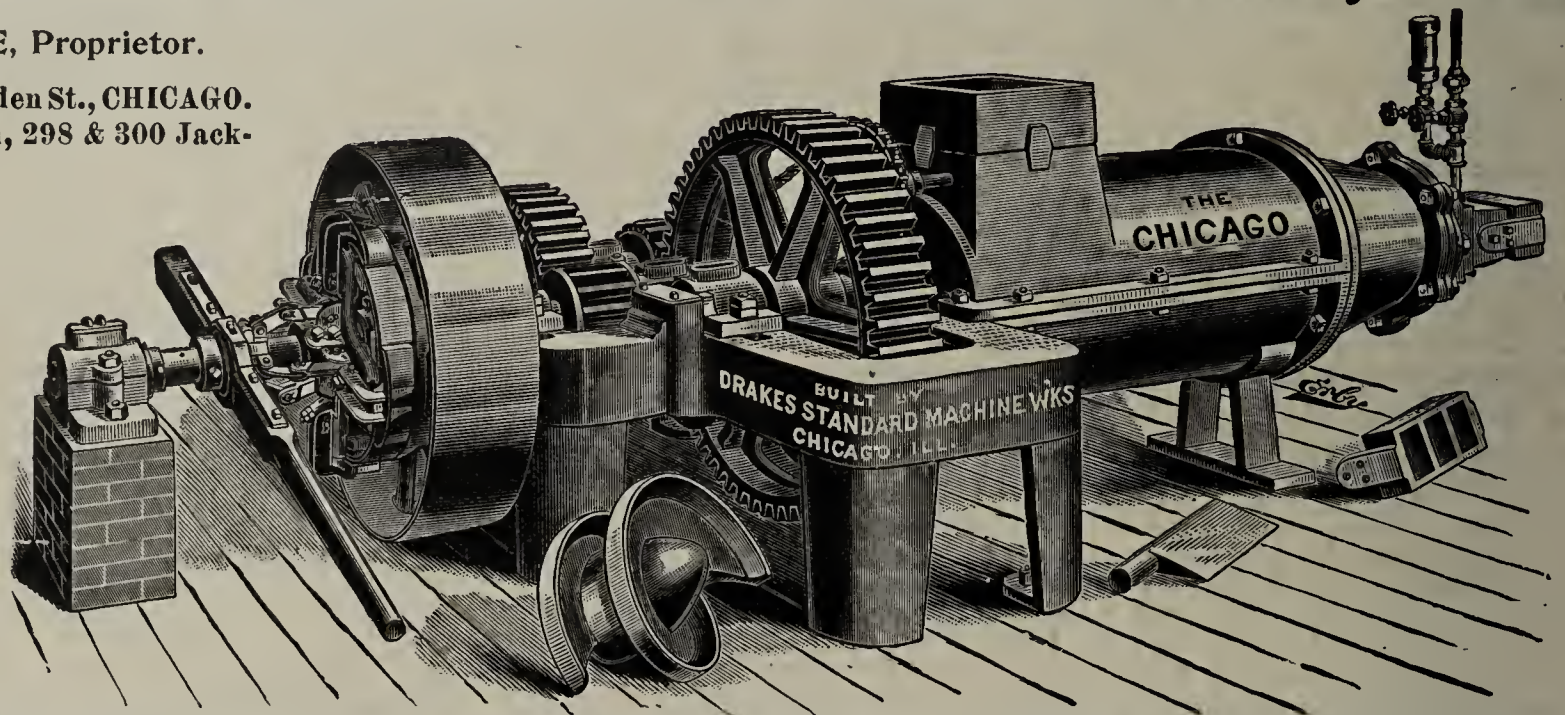


# DRAKE'S STANDARD MACHINE WORKS,

## Manufacturers of All Kinds of Brick Machinery.

C. T. DRAKE, Proprietor.

Factory, 7 & 9 Garden St., CHICAGO.  
Office & Salesroom, 298 & 300 Jackson Boulevard.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 50,000 brick per day. Surpassed by none. References: Turner Brick Co., Turner, Ill.; John Mooney, Highland Park, Ill.; A. H. Maynard & Son, Waukegon, Ill.; Myers & Toll, Chicago, and others.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, CLAY CRUSHERS, HAND REPRESSES, ETC., ETC.

Our "GRANULATORS" are the leaders in Chicago. So says Alsip Brick Co., who are running 11 Granulators; also Hayt & Alsip May, Purington & Bonner Brick Co.; Purington-Kimbell Brick Co.; Purington Brick Co., and many others.

**PRICES REASONABLE.**

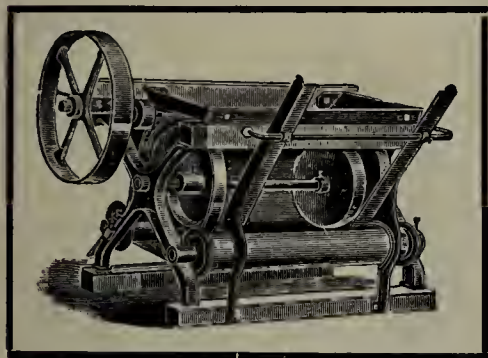
**CORRESPONDENCE SOLICITED**

A large advertisement for J.H. &amp; D. LAKE, CO. The central part of the ad features a detailed illustration of a large industrial factory with multiple chimneys and a train passing in front. The text 'J.H. &amp; D. LAKE, CO.' is prominently displayed at the top in a large, bold font. Below the company name, it says 'MASSILLON, O. U.S.A.' and 'MFR'S. OF'. The ad lists various products: 'FRICTION CLUTCH PULLEYS;', 'PLAIN OR SPLIT PULLEYS;', 'SHAFTING, HANGERS, Etc.', 'CUT-OFF COUPLINGS, PLAIN OR SPLIT;', and 'COUNTER SHAFTS COMPLETE.' At the bottom, it states 'FORMERLY OF HORNELLSVILLE, N.Y.' The entire advertisement is surrounded by numerous small, detailed illustrations of various mechanical components, including pulleys, shafts, and couplings.

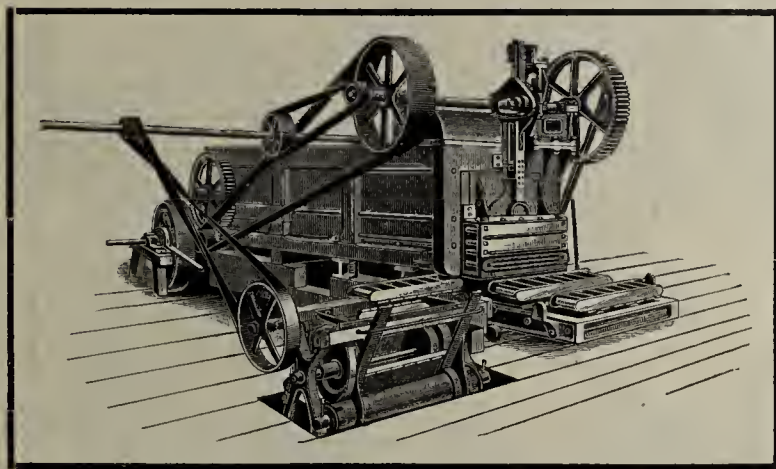


These are the Three Machines which

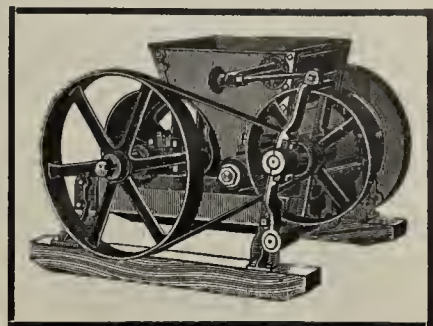
# C. & A. POTTS & CO.,



MOULD SANDER.



HORIZONTAL STOCK BRICK MACHINE.



DISINTEGRATOR.

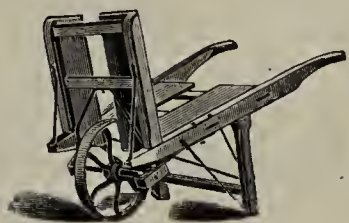
WILL ship on trial. GUARANTEEING them to work any clay direct from the bank, and make better brick, than can be made by any machine now on the market. These are the standard machines of America. Write, asking the nearest point to you where they can be seen in operation.

We also manufacture a full line of clayworking machinery including,



Brick Moulds.

Five sizes of Pug Mills, five sizes of Disintegrators, Clay Cars, Winding Drums, Elevators, Trucks, Barrows, Pulleys, Belting and Shafting.



As we manufacture all goods in our works we can guarantee them to be well made of good material, and save you all commissions.

See ad. on page 16.



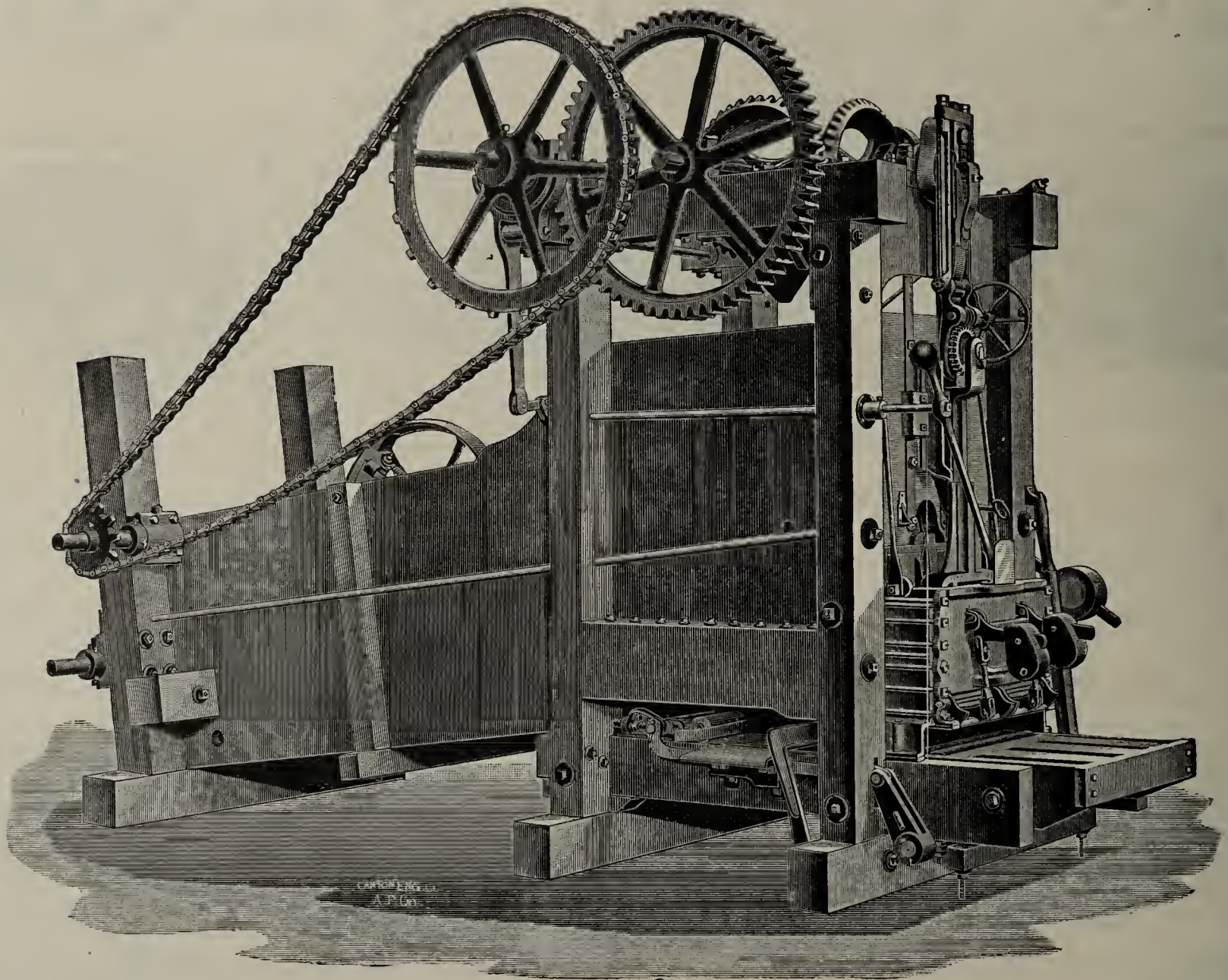
## C. & A. POTTS & CO.,

**INDIANAPOLIS, INDIANA.**



# OUR LATEST!

## The "Tiffin" HORIZONTAL BRICK MACHINE



### Possesses all the Good Points and Patented Special Safety Devices

That have conduced to render our "Tiffin" Vertical Machine so popular with practical Brickmakers.

#### •✠ PRICES REDUCED. ✠•

|                                                |       |
|------------------------------------------------|-------|
| Tiffin Horizontal Automatic Brick Machine..... | \$500 |
| " Vertical " " " .....                         | 400   |
| " Horse Power " " " .....                      | 300   |

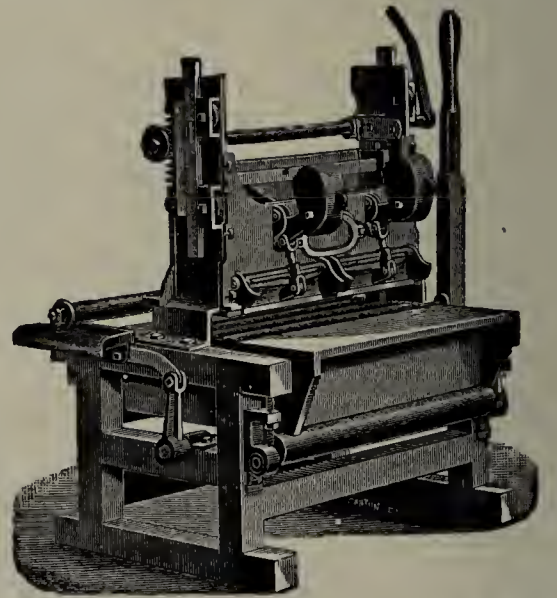
✠ If you have not received a copy of our Illustrated and descriptive Catalogue of Brick Machinery and Brickyard Supplies we will be pleased to mail you one.

### TIFFIN AGRICULTURAL WORKS,

Manufacturers of Steam and Horse Power Automatic Brick Machines, Horizontal Pug Mills, Elevators, Crushers, Tilting Turn Tables, "Old Reliable" Brick Machines, Pug Mills, Trucks, Wheelbarrows, Molds, Etc., Etc.

**TIFFIN, OHIO.**

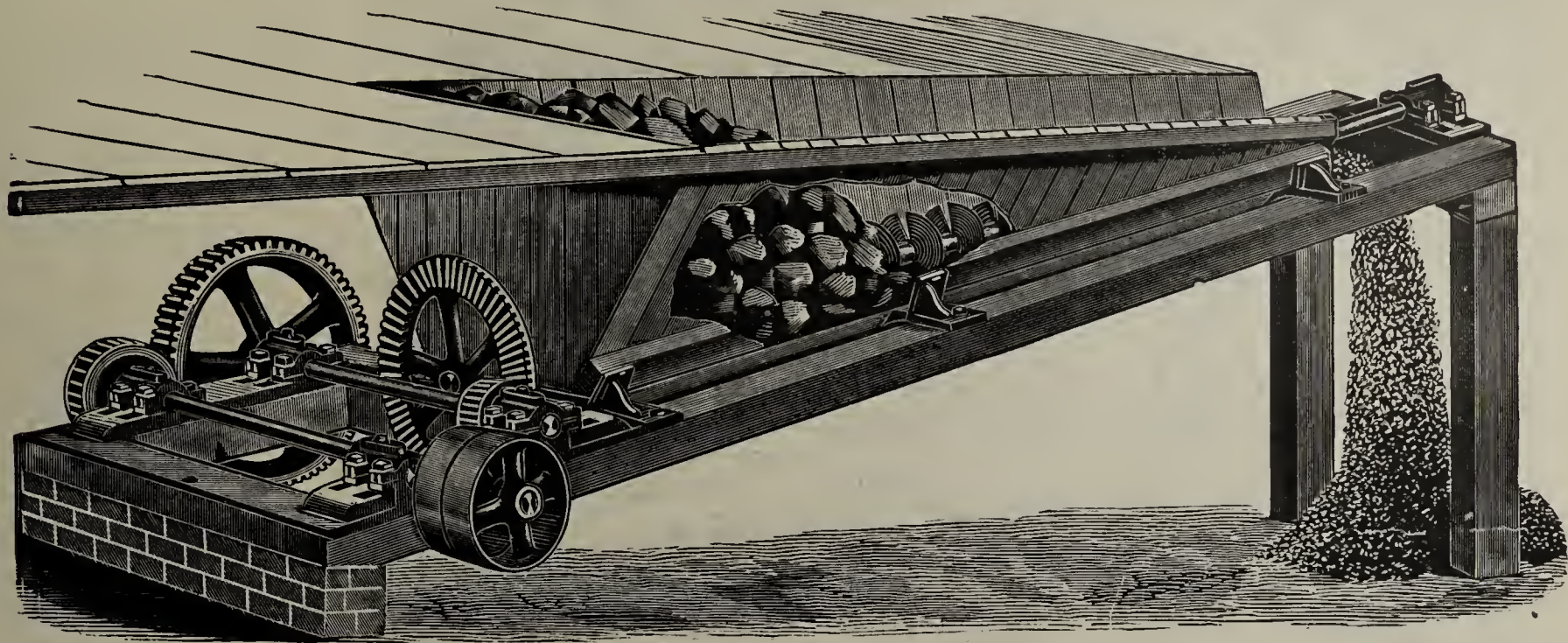
### The "Old Reliable"



MAINTAINS THE REPUTATION of being the best Machine on the market for use in small yards.



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
  2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
  3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
  4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
  5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
  6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.
- This machine is sold entirely upon its merits.

## —REFERENCES.—

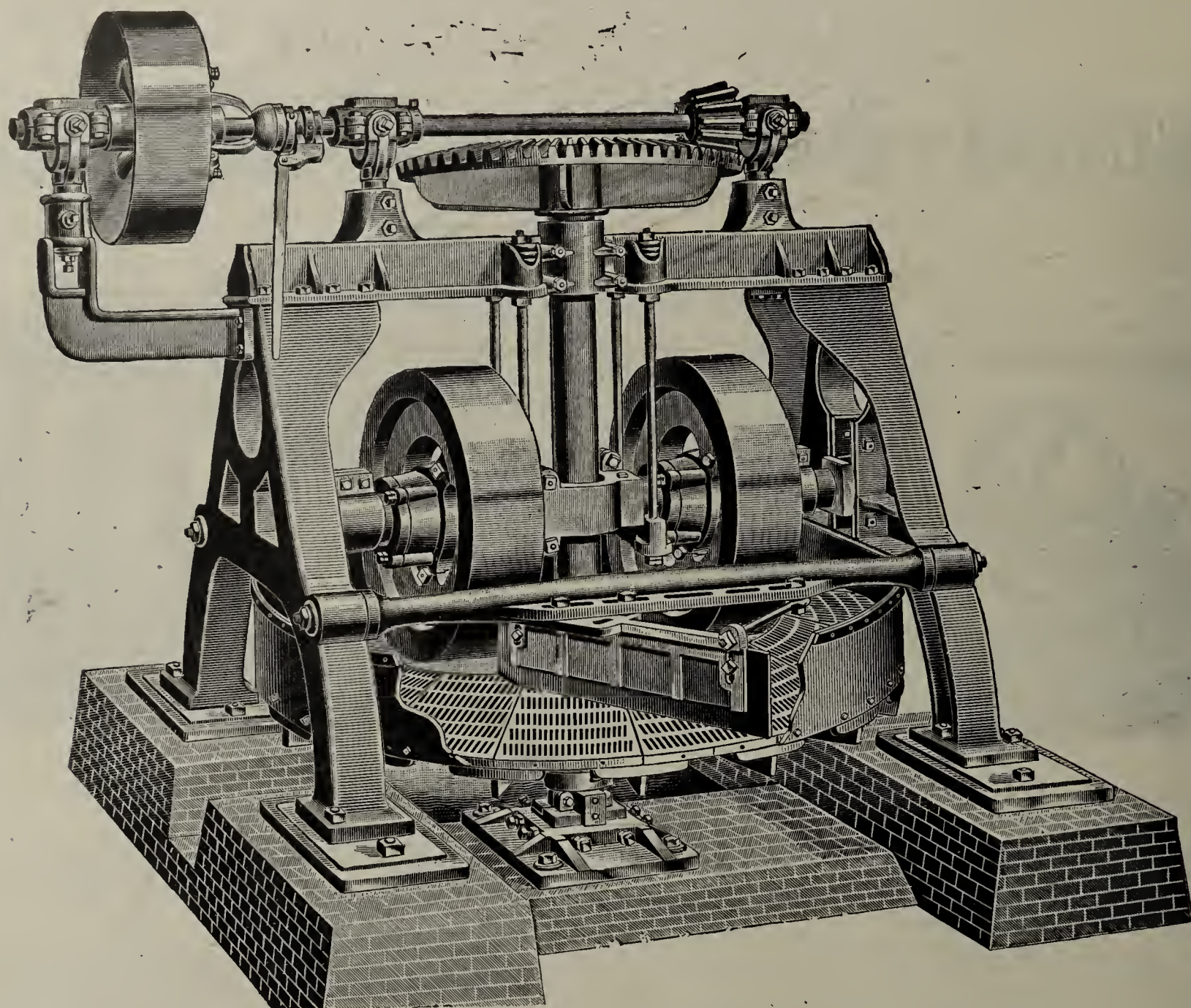
Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

# John Torrent,

MUSKEGON, MICH.

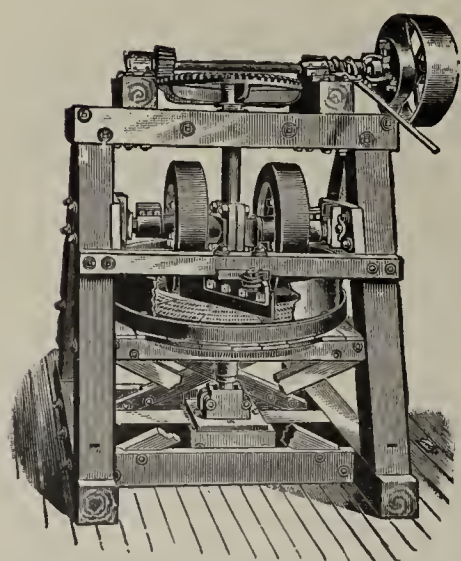
Mention Clay-Worker.





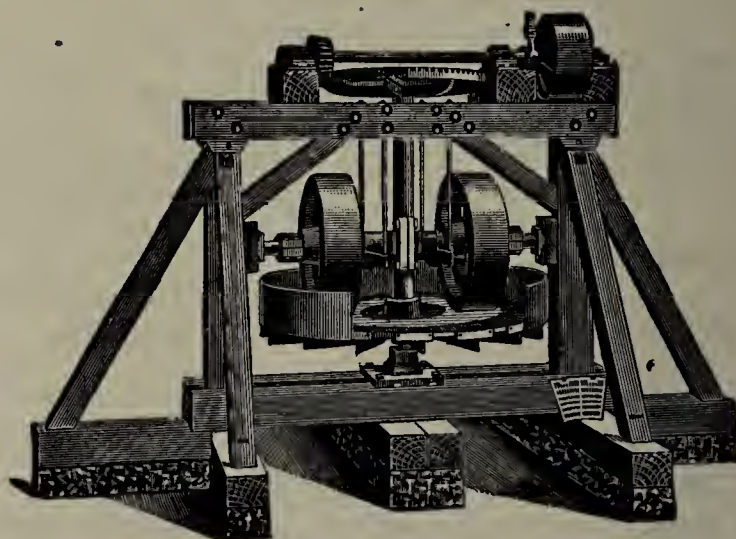
OUR SPECIALTY IS

**DRY PANS.**



IRON FRAMES,  
WOOD FRAMES.

~~~~~  
All Sizes and Price
to suit
Any Size Plant.



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

FROST ENGINE CO., Galesburg, Ill.,
U. S. A.



Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

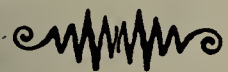
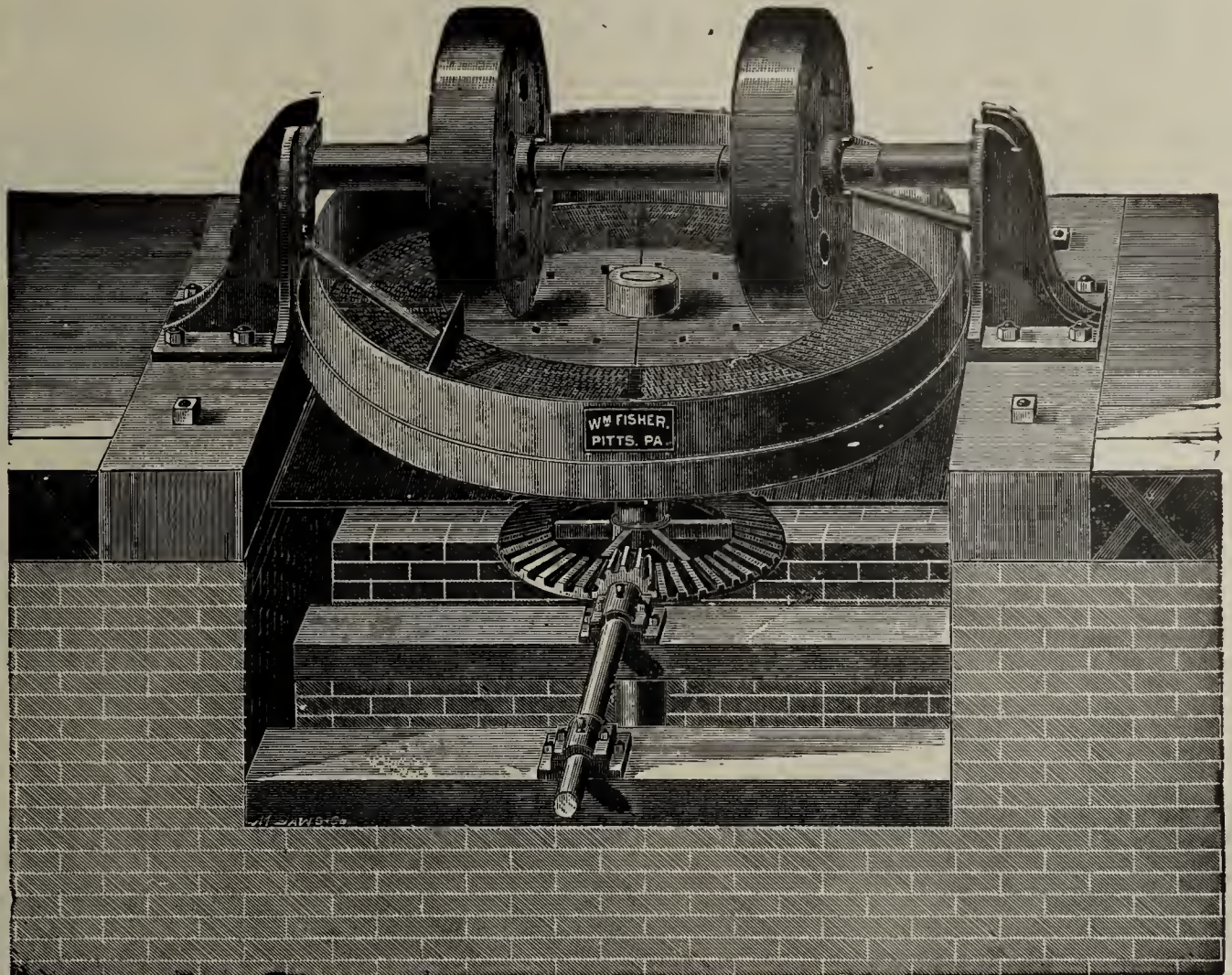
Pittsburgh, Pa.

Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and
Fire Brick Clay,
Limestone, Lime,
Sand, Phosphates,
Bones and other
refractory materials.

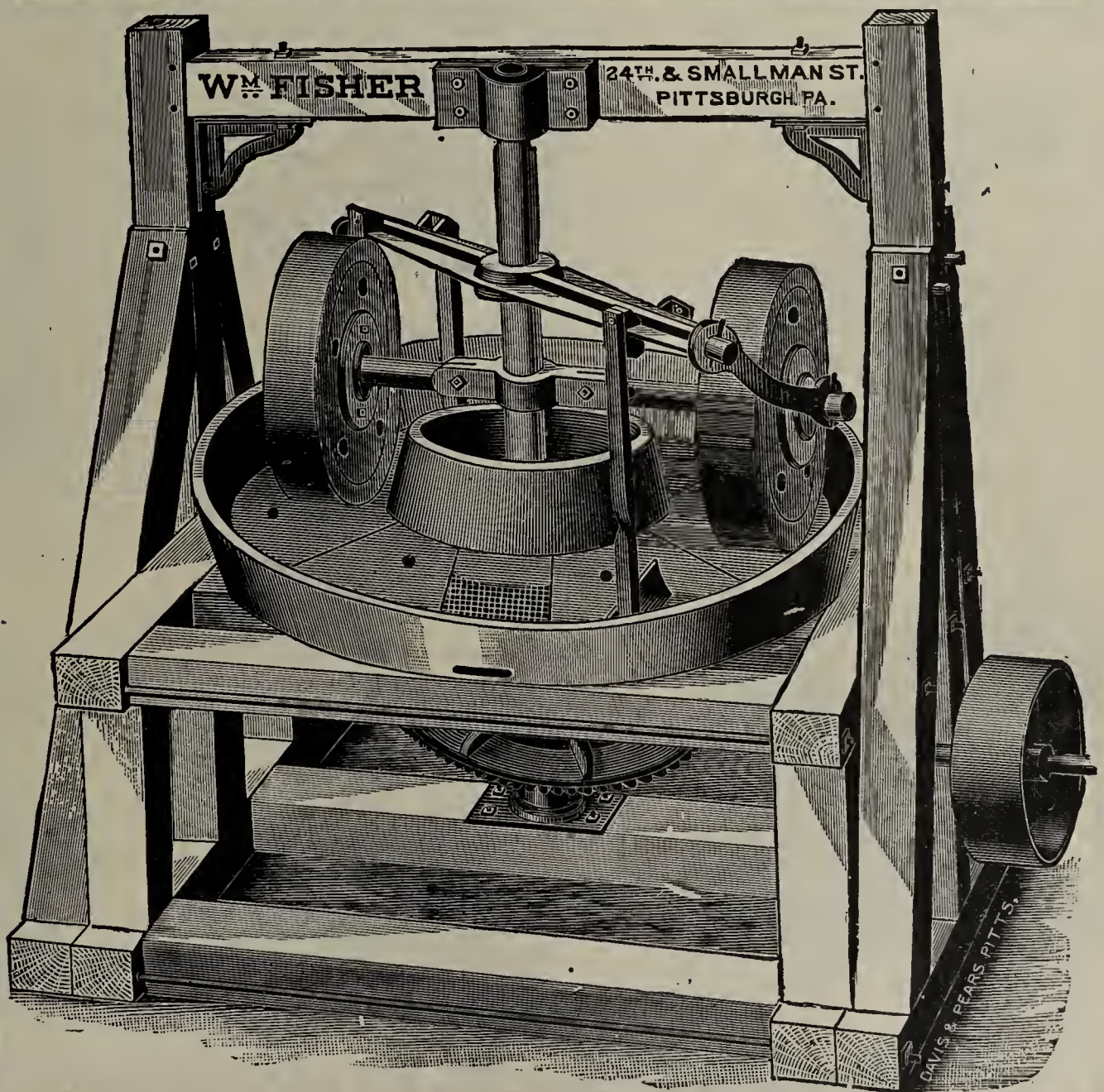


Wet Pans,

STATIONARY and REVOLVING,

FOR

Brick Works,
Steel Works,
Glass Houses,
Rolling Mills
and Paint Works.



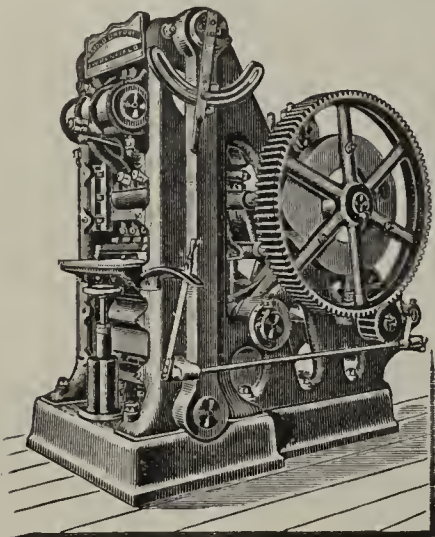
PUG MILLS,
BLAKE CRUSHERS,
BRICK PRESSES.



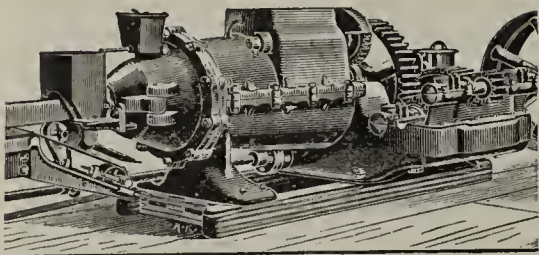
When writing for prices, state kind of material and capacity required.

J. W. PENFIELD & SON, WILLOUGHBY, OHIO, U. S. A.

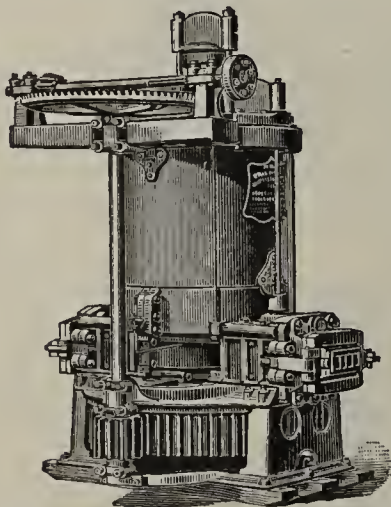
Some Things We Make:



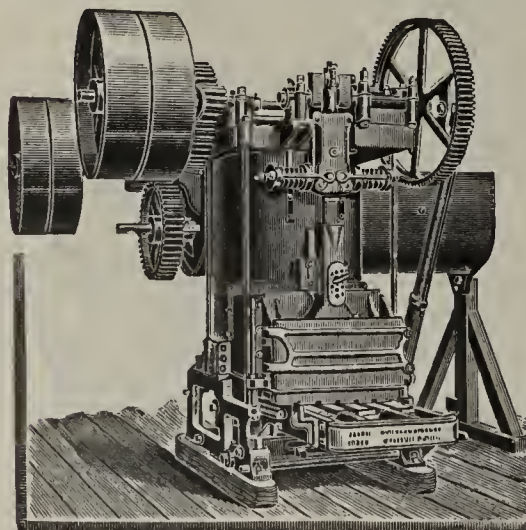
Dry Press Brick Machines.



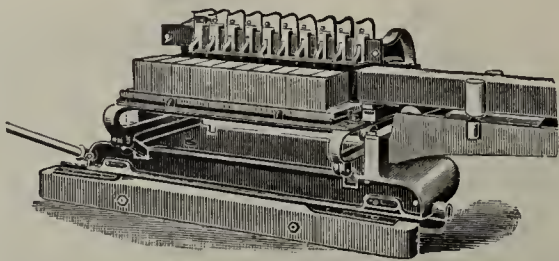
Auger Brick Machines;
Auger Tile Machines.



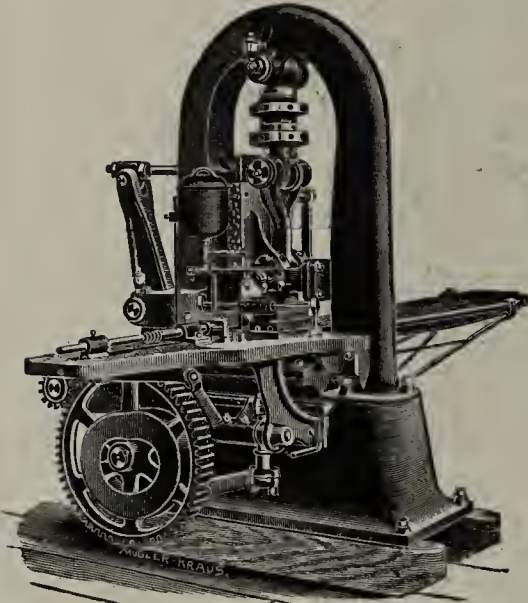
Plunger Brick Machines,
Also suited for making Tile, Fireproofing, Etc



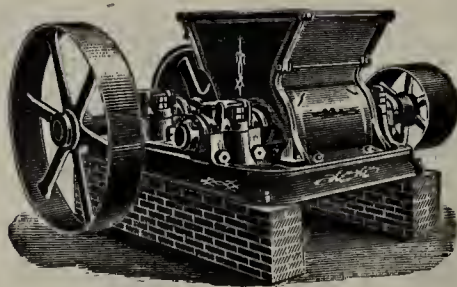
Stock Brick Machines,
For Sand-Mold Brick.



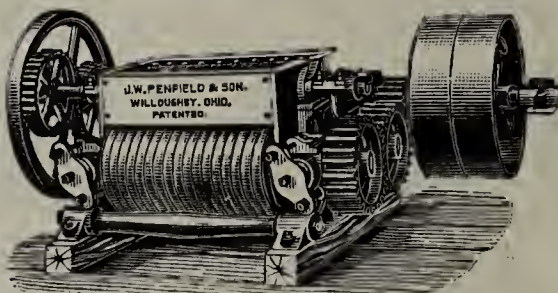
Board Delivery Brick Cutters.



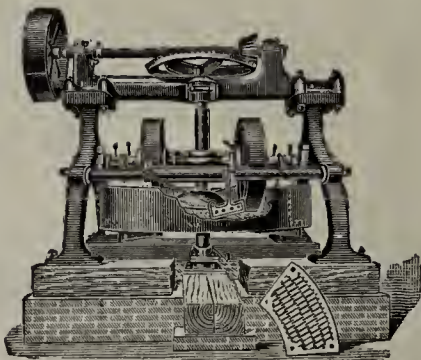
Brick Represses.



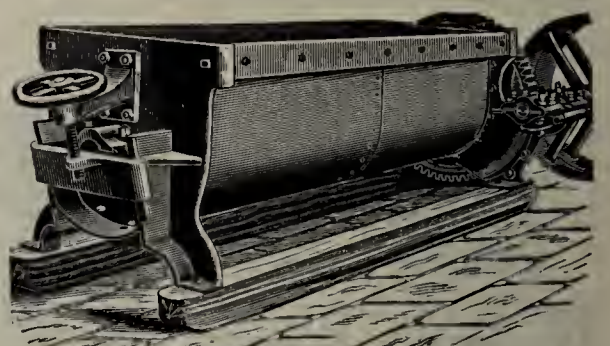
Disintegrators,
Singly or combined with Crushers or Pug Mills.



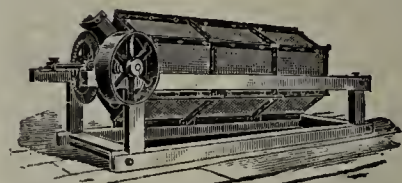
Clay Crushers; Stone Separators.



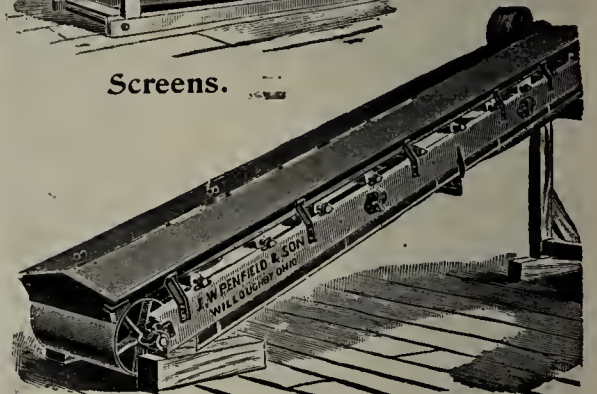
Dry Pans; Wet Pans.



Pug Mills; Granulators.



Screens.



Clay Elevators; Conveyors.

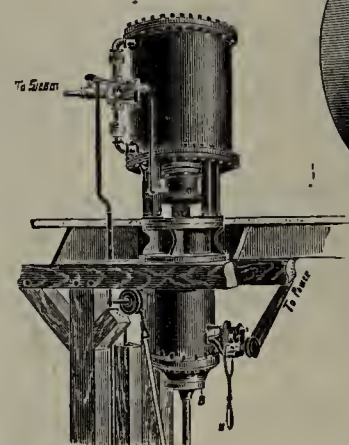


Clay Cars.



Winding Drums.

Barrows; Kiln Castings, Clutch Pulleys,
Sewer Pipe Presses,
Etc.

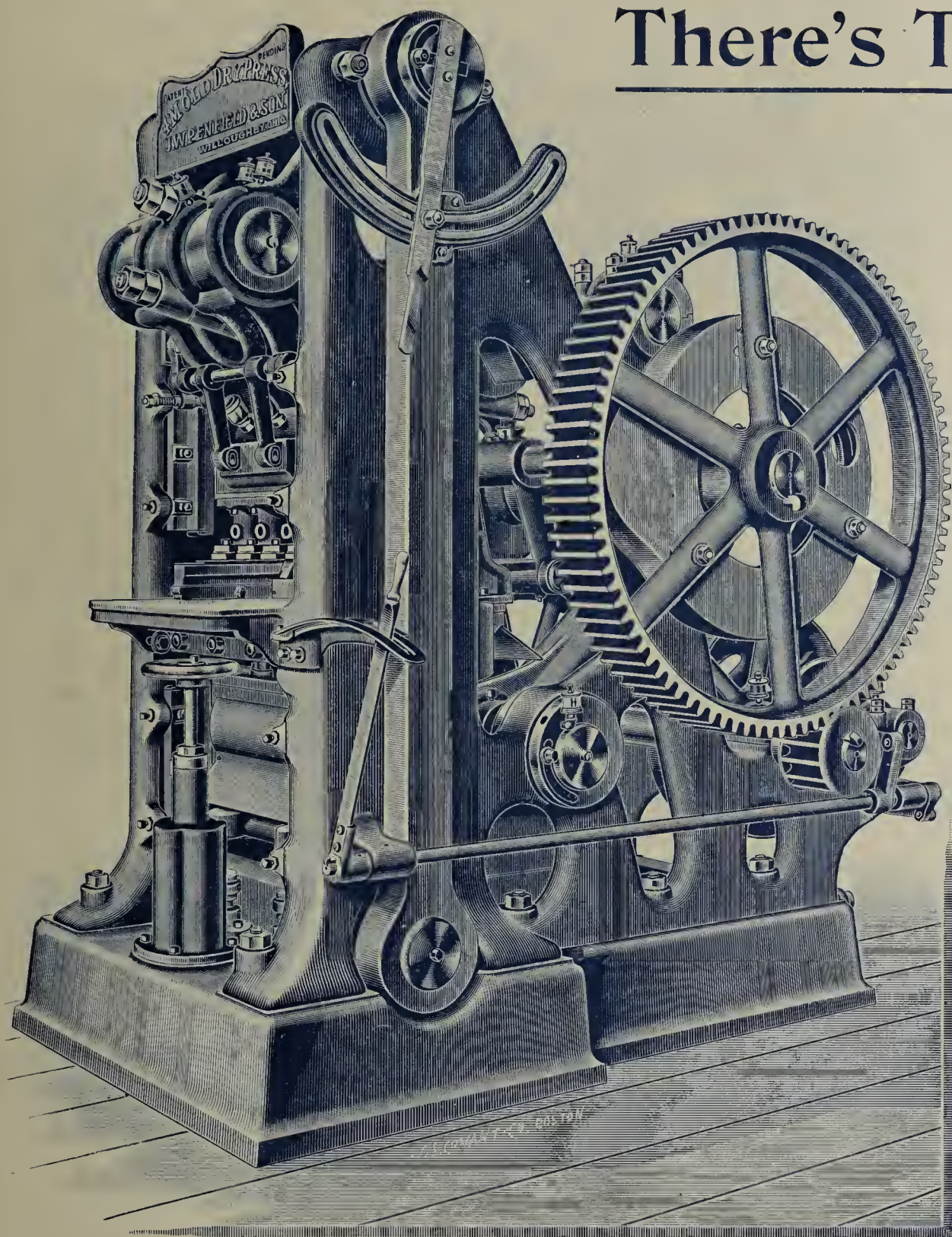


Send for Catalogue.

J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A.

There's This . . .

Difference



THE PENFIELD 4-MOLD DRY PRESS BRICK MACHINE.

Between driving a nail and pressing dry clay into brick. If you are strong enough you can drive the nail to its full length at one stroke, but no amount of force will compress dry clay to its utmost limit at one operation.

Right here is a potent reason why the Penfield Dry Press Brick Machine excels: After applying the combined pressure from the top and bottom to the full initial limit of compression of the clay, it releases the pressure (giving opportunity for reaction) and then repeats it with increased force and length of stroke, compressing the clay beyond the limit possible to secure with a once-exerted pressure or with an unaugmented repeated pressure.

. . .

We Take a Fresh Start

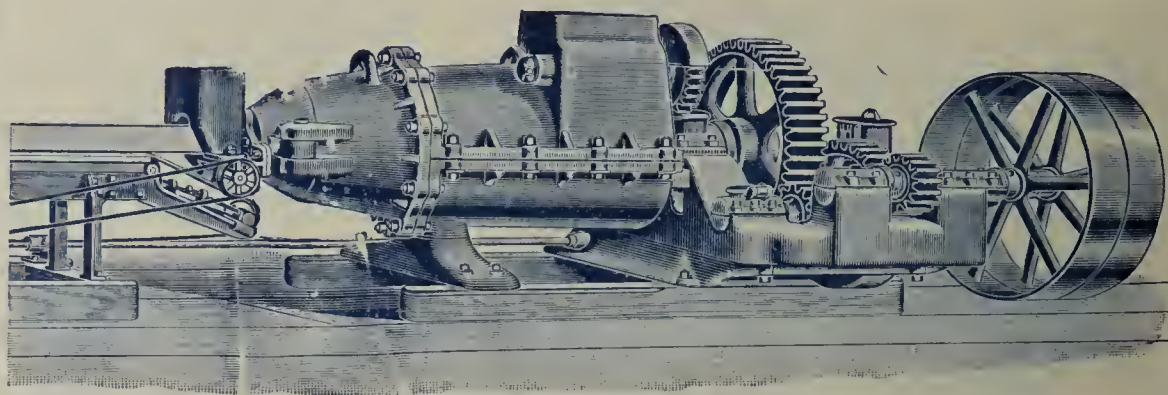
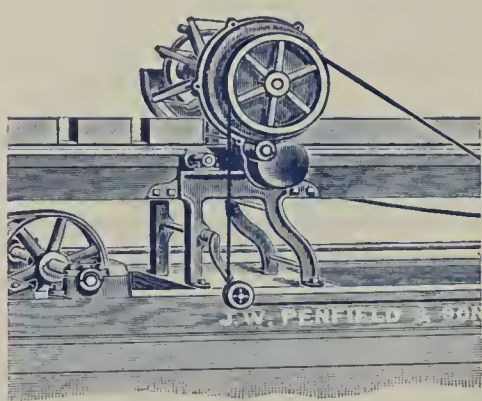
Where others leave off, and go a step farther, for by our method of repeating the pressure in augmented form, we are virtually

REPRESSING THE BRICK IN THE MOULD,

Making them denser and stronger, and securing more perfect outlines and greater beauty of finish. 'Tis plain to see why the Penfield Press can succeed where others fail. Come and see it, or write.

J. W. PENFIELD & SON,

Willoughby, Ohio, U. S. A.



PENFIELD AUGER BRICK MACHINE, AUTOMATIC CUTTER, ETC

John Porter,

A pioneer advocate of Brick Pavements, has long been recognized as an authority on the manufacture and use of Paving Brick.

His new works at Wellsville, Ohio, embodying the ideas gained in his many years of experience and observation and provided with all the requisites of a first class plant, are equipped throughout with

PENFIELD BRICK MACHINERY.

A Penfield No. 15 Auger Brick Machine and Five (5) Penfield Power Presses will produce his Paving Brick ; his Fire Brick will be made on a Penfield 4-Mold Dry Press Brick Machine.

The Evansville Pressed Brick Co.,

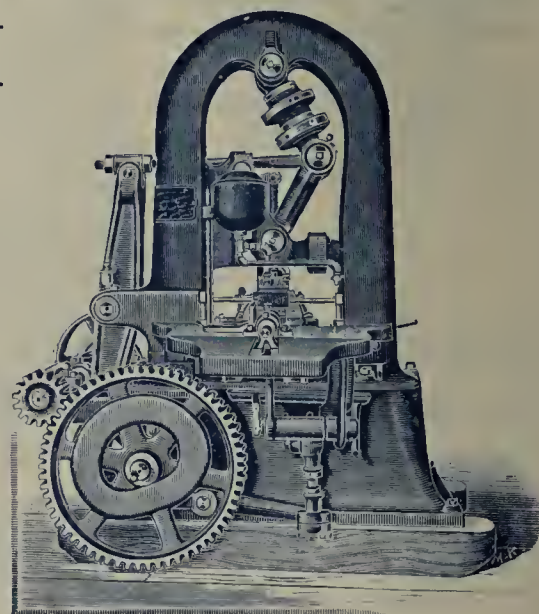
Of Evansville, Ind., after fully investigating the various represses upon the market, have placed in their works two (2) Penfield Power Presses, with which they will repress their Paving and Front Brick.

A WORD TO THE WISE IS SUFFICIENT.

J. W. Penfield & Son,

Brick and Sewer Pipe Machinery,

Willoughby, Ohio, U. S. A.



PENFIELD POWER BRICK REPRESS.

RECEIVER'S SALE.

BARGAINS IN CLAY MACHINERY.

OWING to disagreement of the partners, I have been appointed Receiver of the well-known firm of

NOLAN, MADDEN & CO.,

In order to get a settlement at once, and that the business may be continued without interruption, I will offer for sale at a great reduction in price the following

Machinery Now on Hand which must be Sold at Once:

Six No. 1 Steam Power Soft Clay Brick Machines.

Five No. 2 Horse Power Soft Clay Brick Machines.

Ten No. 6-B Stiff Clay Auger Machines for Brick and Tile.

Ten No. 5-B Stiff Clay Auger Machines for Brick and Tile.

The above machines are from new patterns and are heavier and stronger than any machines formerly made by this firm.

Twenty No. 5 Brick and Tile Machines with endless belt cut-off tables and complete set of tile dies.

Six No. 6 Brick and Tile Machines with endless belt cut-off tables and complete sets of tile dies.

Ten No. 7 Brick and Tile Machines for light power—tile dies from 3 to 10 inches.

Ten No. 10 Upright Tile Machines for tile from 10 to 20 inches.

Fifteen Disintegrators.

Fifteen Clay Crushers.

Eight Soft Clay Pug Mills.

A large assortment of side-cut brick tables, end-cut brick tables, endless belt tile tables, side and end-cut lubricating brick dies of any size, and solid brick dies—side or end-cut—any and all of which will be **SOLD AT UNHEARD-OF PRICES.**

In addition to the above new and improved machinery, we have a large line of second-hand Brick and Tile Machinery that will be sold **VERY CHEAP.** This business will be continued, and the manufacture of their unsurpassed clayworking machinery carried on as usual.

If you want anything in that line, or supplies, write us at once for prices, as the business will go on, and patrons will be furnished repairs and supplies as heretofore.

JNO. F. SCANLAN, Receiver,

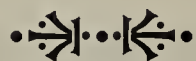
For **NOLAN, MADDEN & CO.,**

RUSHVILLE, IND.



FIFTH YEAR . . .

....OF SUCCESS!



6,843,856 BRICK MADE DURING THE SEASON.
WONDERFUL RECORD FOR ONE MACHINE.

BERLIN, CONN., Nov. 18, 1893.

THE MCLAGON FOUNDRY Co., New Haven, Conn.,

GENTLEMEN—Having finished making brick for the current year, we wish to report to you, as is our custom, the result of our present season's work.

Our output during the season just closed has been **6,843,856** brick, thus exceeding by several hundred thousand our product of any previous year. We attribute this success chiefly to the line of machinery used in our plant; and to us this record for a one machine plant is not only satisfactory but eminently satisfactory.

We regard the "New Haven" Brick Machine as **not only a standard of value to a brick plant, but almost a necessity to a successful one.** With it brickmaking is not an experiment but an accomplished fact, not a venture, but a success.

We cannot speak too highly of your machine, having learned by experience to estimate its worth in proportion to its strength and capacity.

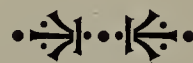
Wishing you and the "New Haven" Brick Machine continued success, we remain,

Very truly yours,

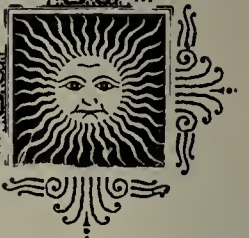
BERLIN BRICK CO.

NOTE.—This machine has **average one million pallet brick every month it has been used during the past five years.**

ABOVE LEADS TO ONE CONCLUSION ONLY.
FOR FURTHER INCONTESTABLE EVIDENCE WRITE



The McLagon Foundry Co.,
NEW HAVEN, CONN.



Actual Use Decides the Durability of a Machine.

MARTIN'S LETTER "A"

IS PRONOUNCED BY....

 Practical
Brickmakers

TO BE ~~~~~

THE STRONGEST,
MOST PERFECT
~~~~~ AND BEST  
Brick Machine in Use.

Are you looking for a machine that will work your clay? Before buying, do not fail to investigate the merits of the **MARTIN**.

There are over 3,000 of our Machines now in practical operation.

We will cheerfully furnish any information in reference to the manufacture of brick that may be desired.

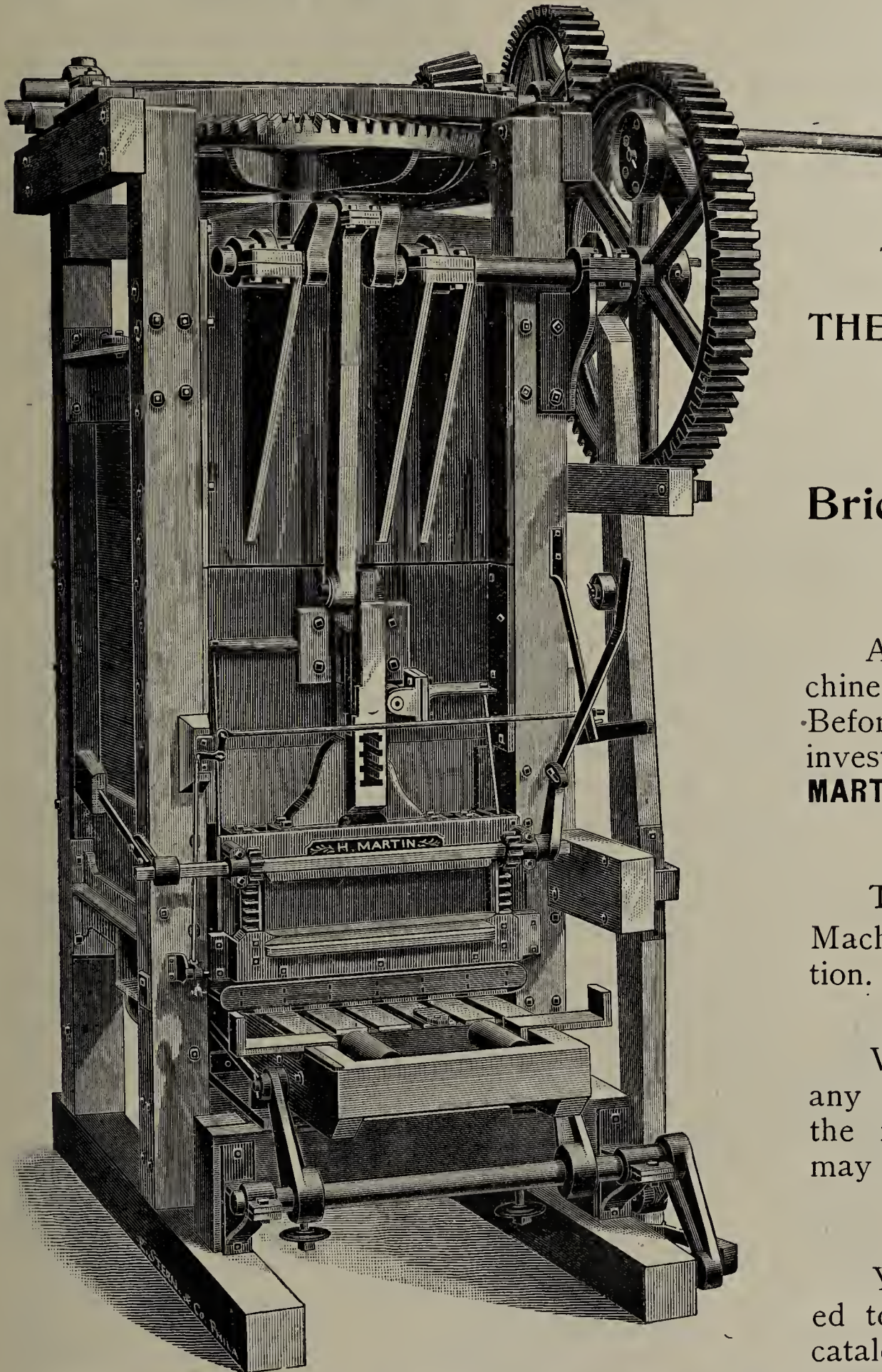
You are respectfully requested to write for our new 1894 catalogue

## THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

~~~~~ INCORPORATED ~~~~~

OFFICE: No. 36 E. James St.
WORKS: Cor. James and Christian Sts. }

LANCASTER, PA., U. S. A.



Fresh Evidence Monthly of the Highest Quality.

WHAT A LOAD

Is lifted from a brickmaker's mind when he gets a "Monarch" at work, and finds it "simply perfect," after years of unsatisfactory work with other machines. You can appreciate the feelings of the Wisconsin Red Pressed Brick Co. from the following statement.

Get one and be relieved of that anxiety you continually have regarding the one you have.

MENOMINIE, WIS., July 15, 1893.

THE WELLINGTON MACHINE CO.,
WELLINGTON, OHIO:

GENTLEMEN:—In regard to the "Monarch" brick machine, I can but simply repeat what I have said a score of times to friends and visitors at the yard, "that we have the best outfit for common brick I ever saw."

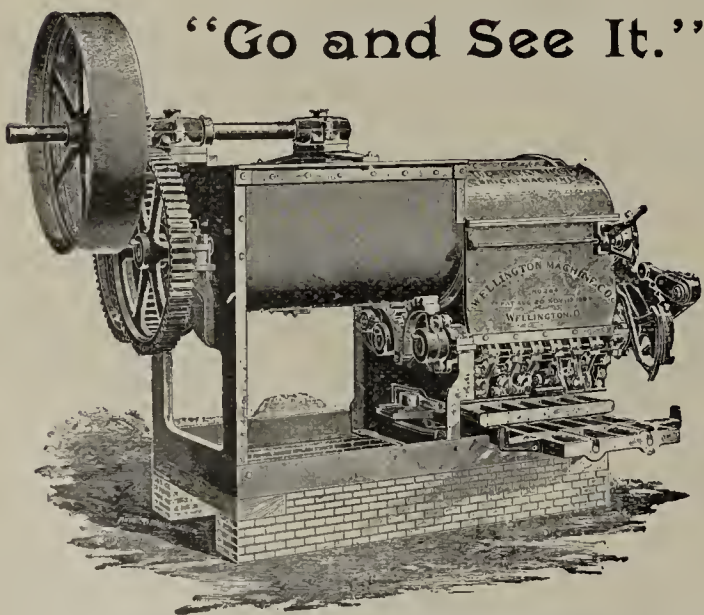
Our clay is very hard to work, and we have used machines with the old-style perpendicular press, also the horizontal press, and neither were satisfactory to us. But we find the pressing device in the "Monarch" simply perfect; no leakage possible, and easily regulated. It will press the clay and fill the corners perfectly with the clay as stiff as is possible to get them out of the moulds.

I have the "Monarch" speeded at the rate of 50,000 brick per day of 10 hours, and could make 60,000 per day without any additional strain on the machine. It is very light running, and the wear on the gearing is very slight. I could give many more good points about the pug mill, mould press and the safety devices, but I think it unnecessary, as anyone who reads the description of these will readily see their good points.

I desire to say that our business relations with the Wellington Machine Co. for six years have been of the most agreeable character.

Yours very truly,

S. L. ALEXANDER, Supt.



"Go and See It."

DON'T FORGET THESE FACTS.

That we worked five years developing the new principles in this machine, perfecting and simplifying every detail before we put it on the market.

That it is scientifically and mechanically constructed from the ground up, aiming not merely at goodness, but at perfection.

That it has 14 feet of pug mill (double), changing direction of movement of clay three times, cutting it all up.

That the presses are entirely in the mud. (This is the greatest point ever produced in a brick machine). Enabling moulding the stiffest possible material. Wear, leakage and friction are absolutely eliminated. This means much. Reflect on its importance.

That it is extremely simple. (Only four gears and none bevel.)

Immensely strong, (all iron and steel. Weighs 11,250 pounds.)

That long, easy moving, scientific leverages make its draft so light.

Investigate it now as it will last a lifetime, and is the "perfect machine" you have longed for so long. Only investigate is all we ask. GO AND SEE for yourself; the small cost of the trip, will be the best investment you ever made.

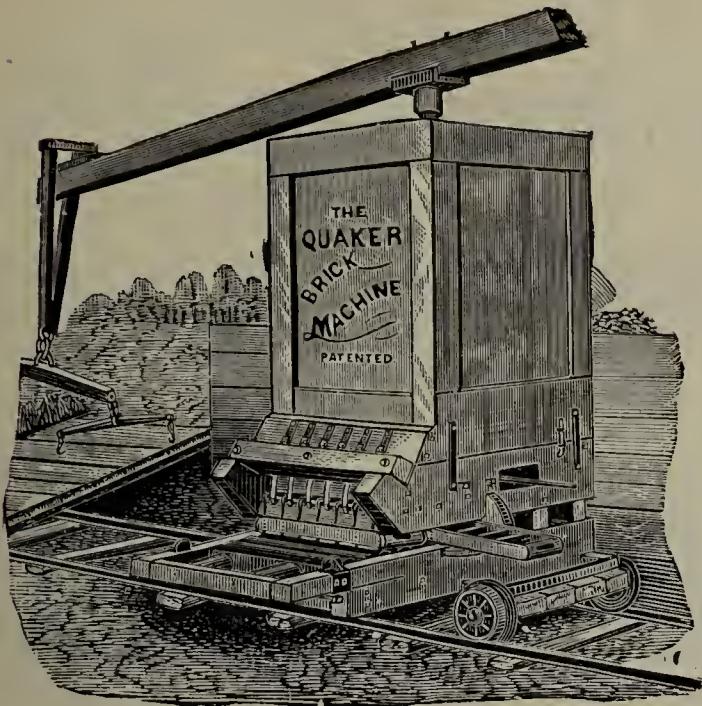
The Wellington Machine Co.,

Wellington, Ohio.

See the October CLAY-WORKER for list of 43 Happy Users.

THE "QUAKER"

Family of Machines, are the Most Used of Any Single Make of Machine.



The "New Model Quaker" Horse-Power Machine.

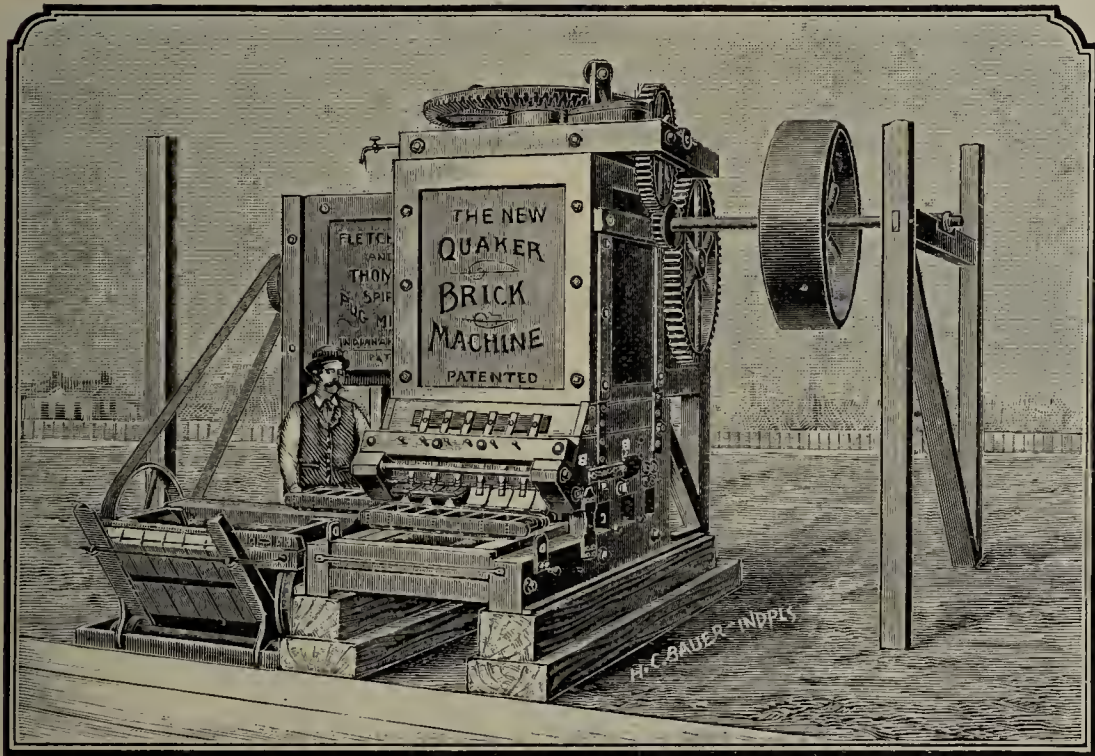
Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



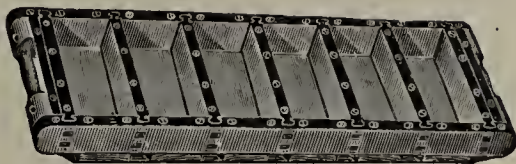
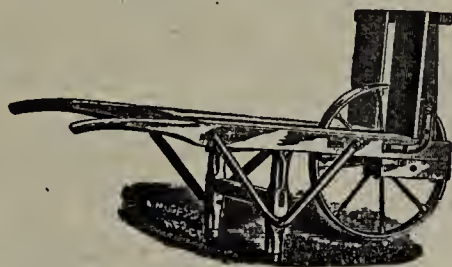
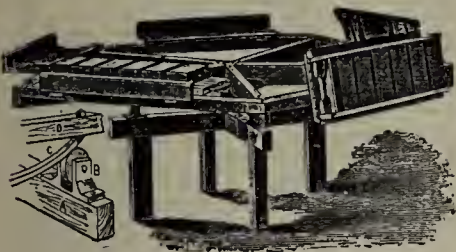
Steam-Power Machines—Two Sizes

The "Regular" is the Horse-power Machine with necessary gearing for steam-power added.

The "Extra Heavy" is a much heavier, specially built machine, and has for years stood at the head of all upright, wooden framed machines.



THE combination of our "Extra Heavy Steam Power Machine" with a "Horizontal Pug Mill" makes an outfit that will take clay from the bank, and make as many brick per day as any gang can take care of. Has made 50,000 per day.



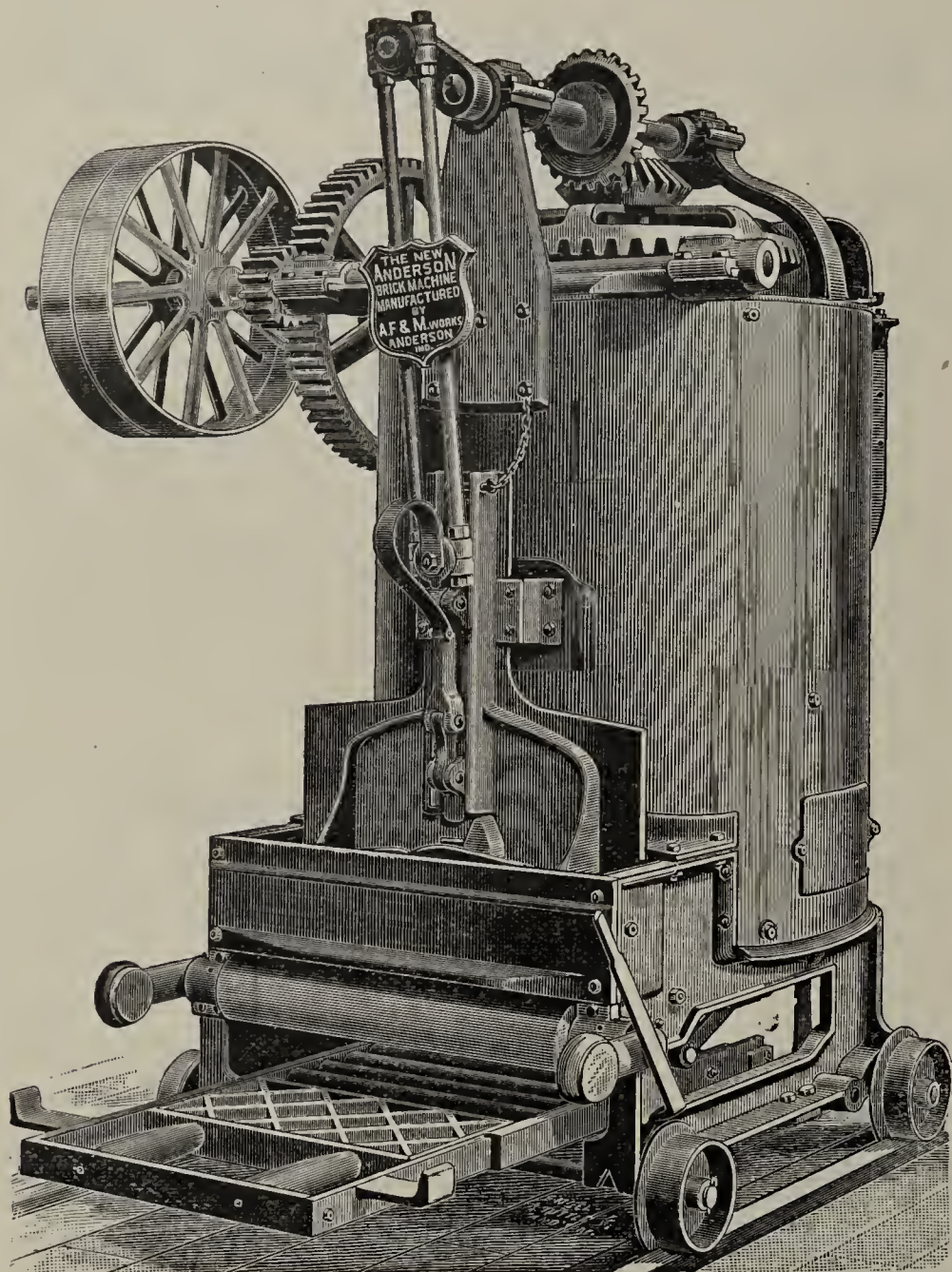
(FOUNDERS AND MACHINISTS.)

Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

The Wellington Machine Co.,

Wellington, Ohio.



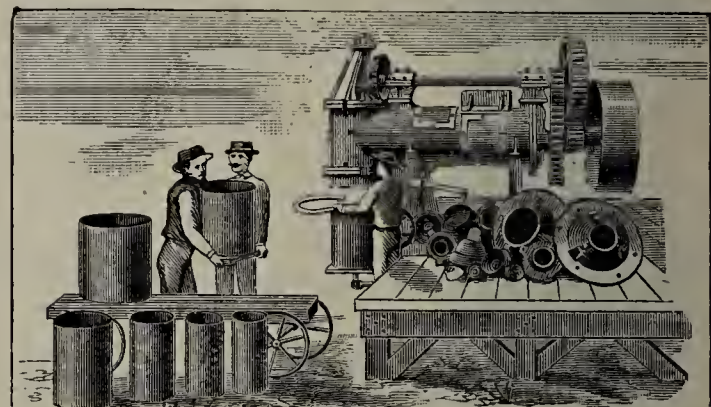
THE New Anderson Brick Machine

MANUFACTURED BY

THE Anderson Foundry & Machine Works

ANDERSON, IND.

THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.



The Greatest on Earth.

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 24 in. in diameter in a manner that defies competition.

Down Delivery for Large Tile.

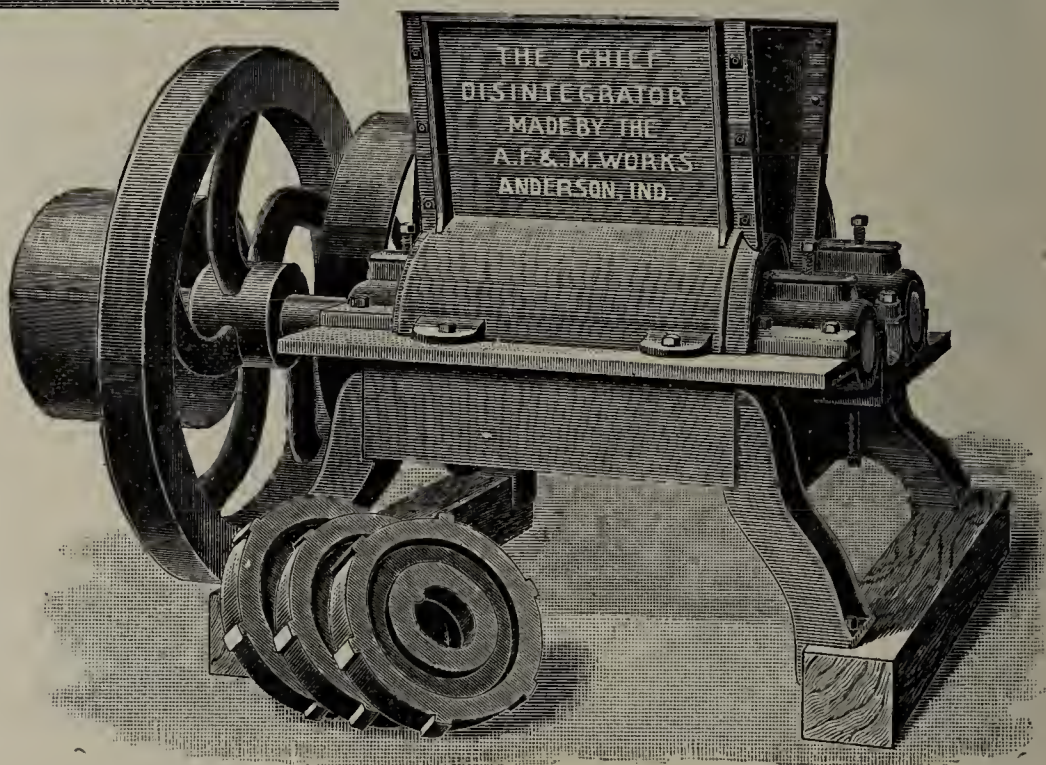
Side Delivery for Small Tile.



The Chief Disintegrator and Stone SEPARATOR.

Unexcelled for reducing hard lumps of clay, dry bats and broken tile. It also separates stone from the clay. The high speed roll is composed of hard steel sections 10 inches in diameter, by 1 3/4 inches thick, which can be reversed on the shaft when dull or replaced with new sections when worn out, at a very small expense. Every Disintegrator is thoroughly tested and guaranteed to reduce any kind of clay, either wet or dry.

PUG MILLS,
DISINTEGRATORS,
TRUCKS BARROWS
And All Brickyard Supplies.



NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

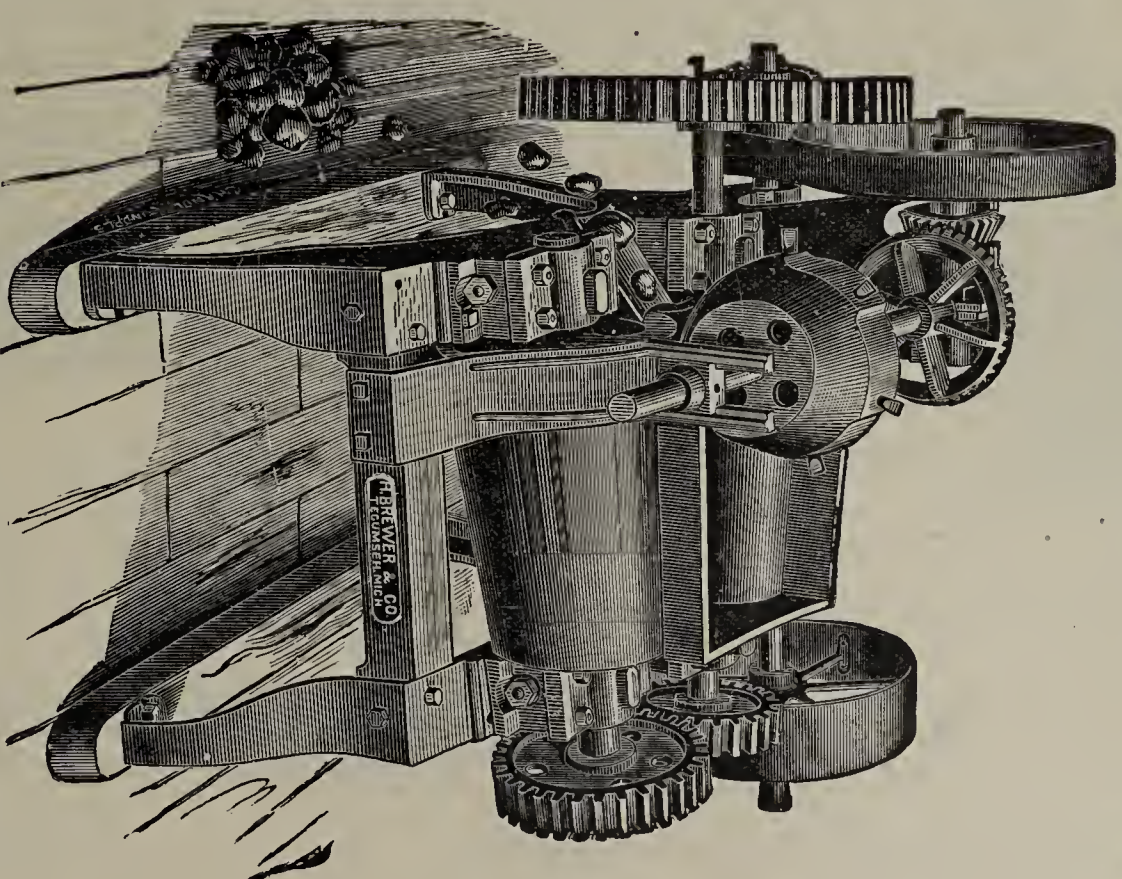
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

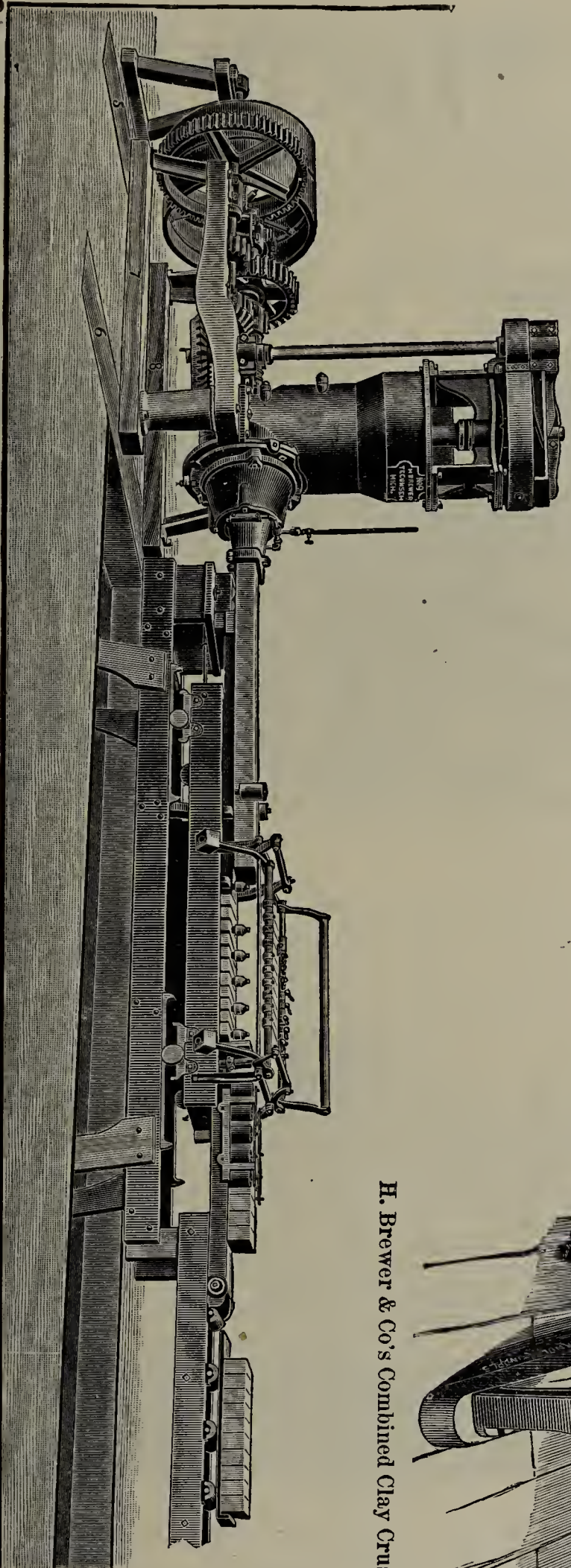
H. BREWER & CO.,

Tecumseh, Mich.

[Mention the Clay-Worker.]



H. Brewer & Co's Combined Clay Crusher and Stone Separator.

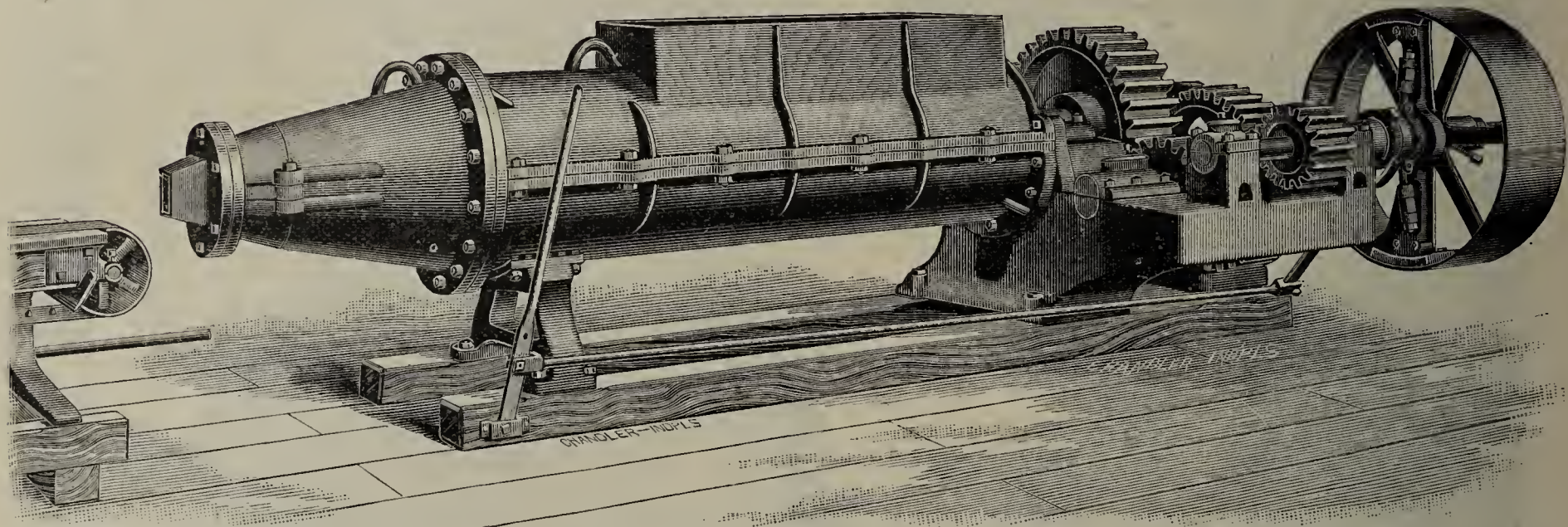


The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.

AUGER BRICK MACHINES

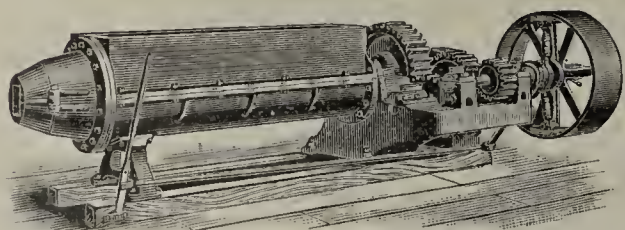
.... FOR

Street Pavers or Building Brick.

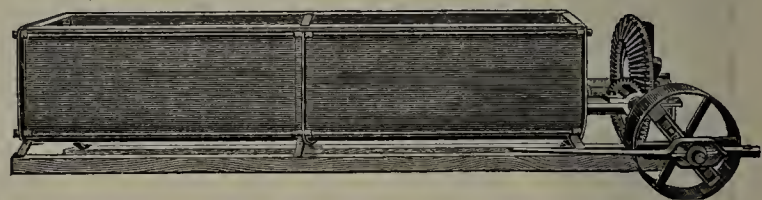


THESE are the heaviest and strongest machines of the class on the market. Cast Iron is cheap and we use lots of it in the construction of these Machines. The workmanship is the *best*. For Street Pavers this machine has no equal. It will make a dense and heavy brick, putting more clay in the square inch than any machine made. These are furnished with the *Best Automatic Cutting Table* ever offered the trade.

We also manufacture a complete line of Pug Mills and Granulators, having capacity of 25 M. to 150 M. Brick per day.



Extra Heavy Open Top Pug Mill.



Open Top Mill for Soft Clay.

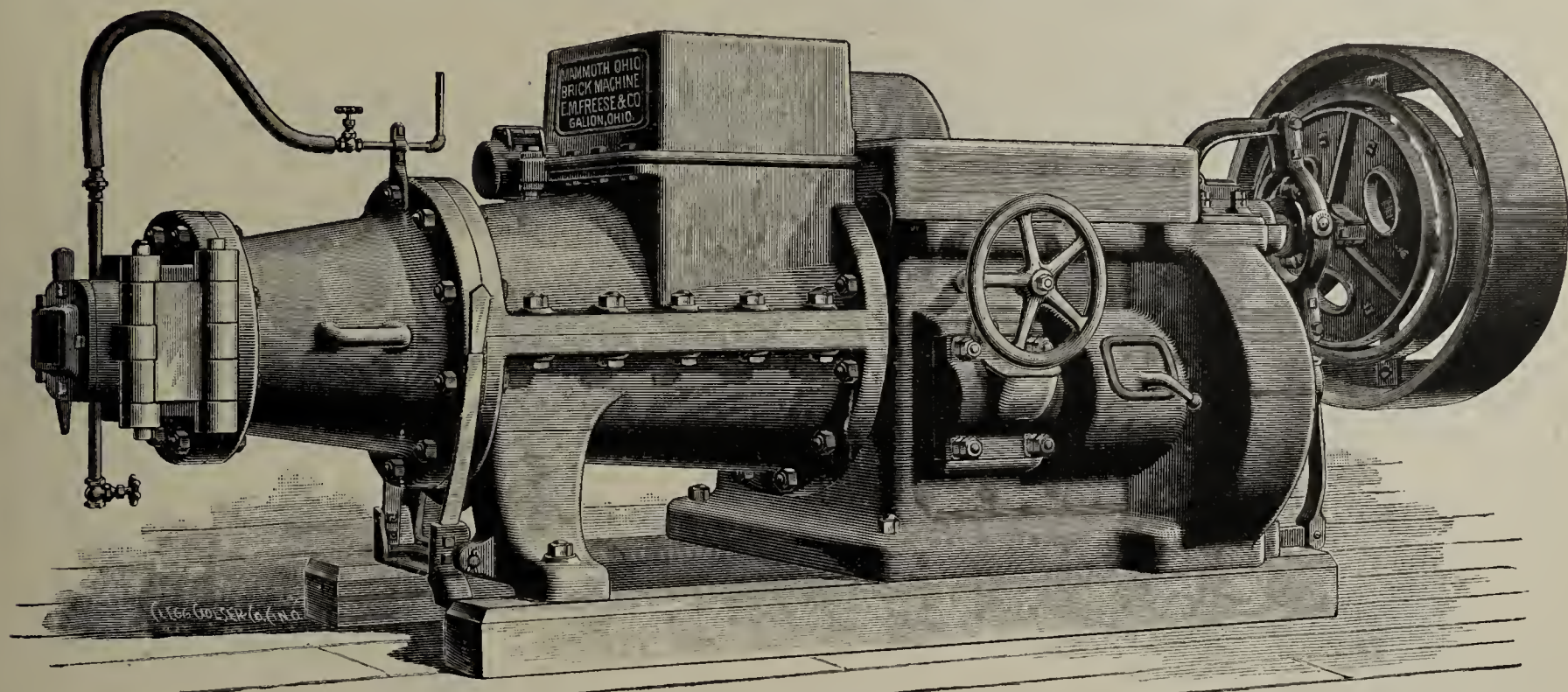
If in need of machinery of this kind it will pay you to write us for prices.

C. & A. POTTS & CO.,

INDIANAPOLIS IND.

SUPERIOR BRICK MACHINERY.

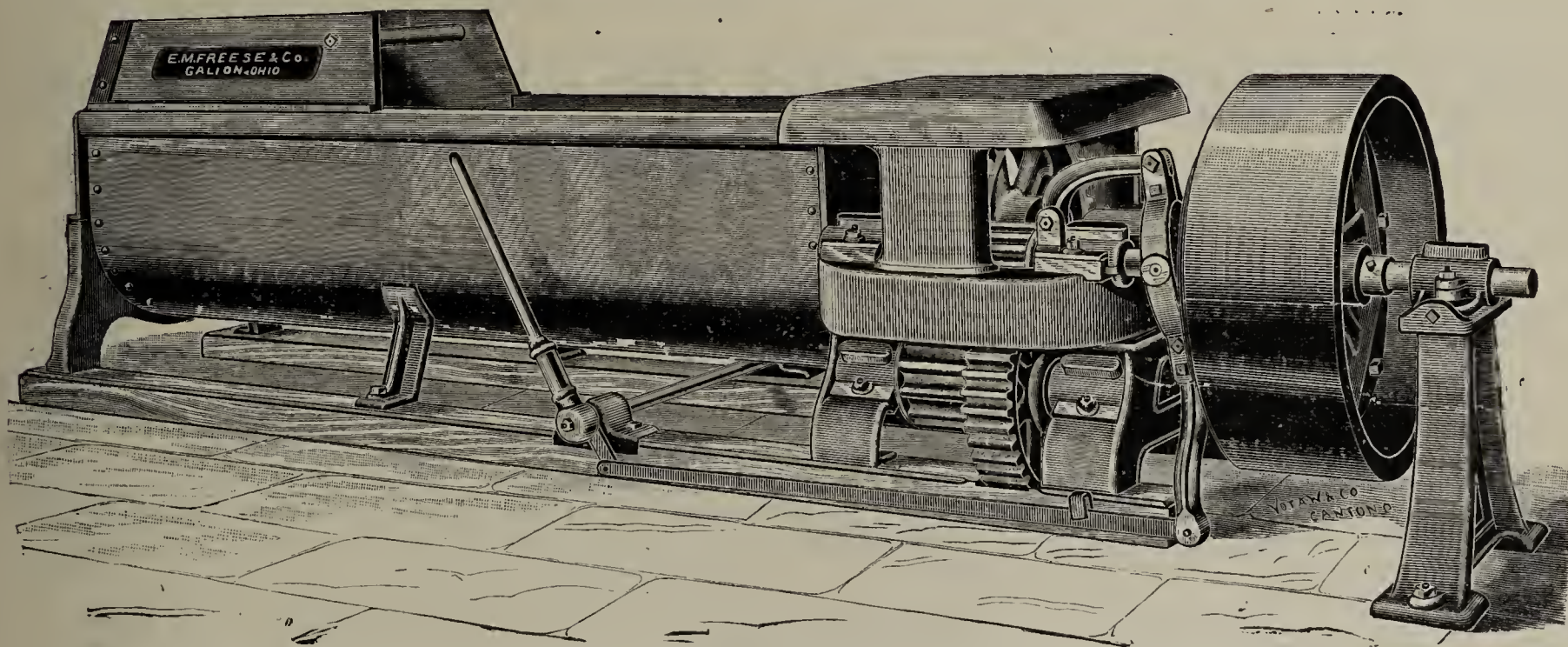
*For Paving, Building and Fire Brick.
Substantial, Simple, Practical.
Best Material and Workmanship.
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

PUG MILLS THAT PUG THE CLAY.



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

IT WILL PAY~~~~~

ADDRESS E. M. FREESE & CO.,

~~~~~ GALION, OHIO.



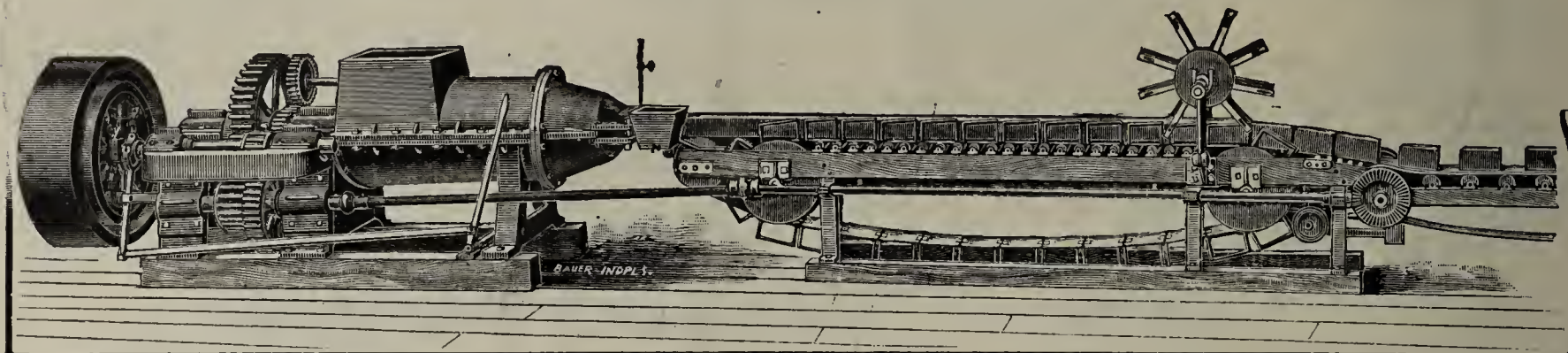
# IMPROVED BRICK and .....



# TILE MACHINERY,

MANUFACTURED BY

THE DECATUR LEADER MFG. CO.



Auger Machine with Automatic Cutter and Sander.

—OFFICE OF—

THE ABINGDON PAVING BRICK & TILE CO.,

MANUFACTURERS OF

## Paving and Building Brick.

ALL SIZES OF DRAIN TILE CONSTANTLY ON HAND.

ABINGDON, ILL., January 8th, 1894.

THE DECATUR LEADER MFG. CO., Decatur, Ill.,

GENTLEMEN:—Please send us one of your improved sanders; also the improvements for your Automatic Cut-off Table. We must say that we are much pleased with the machinery that we bought from you. We have been running brick and tile machines of different kinds for over eighteen years, but never run one yet with as little expense as yours. We have run the Leader now for fifteen months, and have not had five cents expense for repairs. The machine makes four thousand brick per hour; also nice tile, and very fast. Your Automatic Cut-off Table is a daisy and we would not do without one. It paid for itself in one year.

Respectfully Yours,

THE ABINGDON PAVING BRICK & TILE CO.,

CHARLES PISTER, *Manager.*

Our line is complete. Send for printed matter.

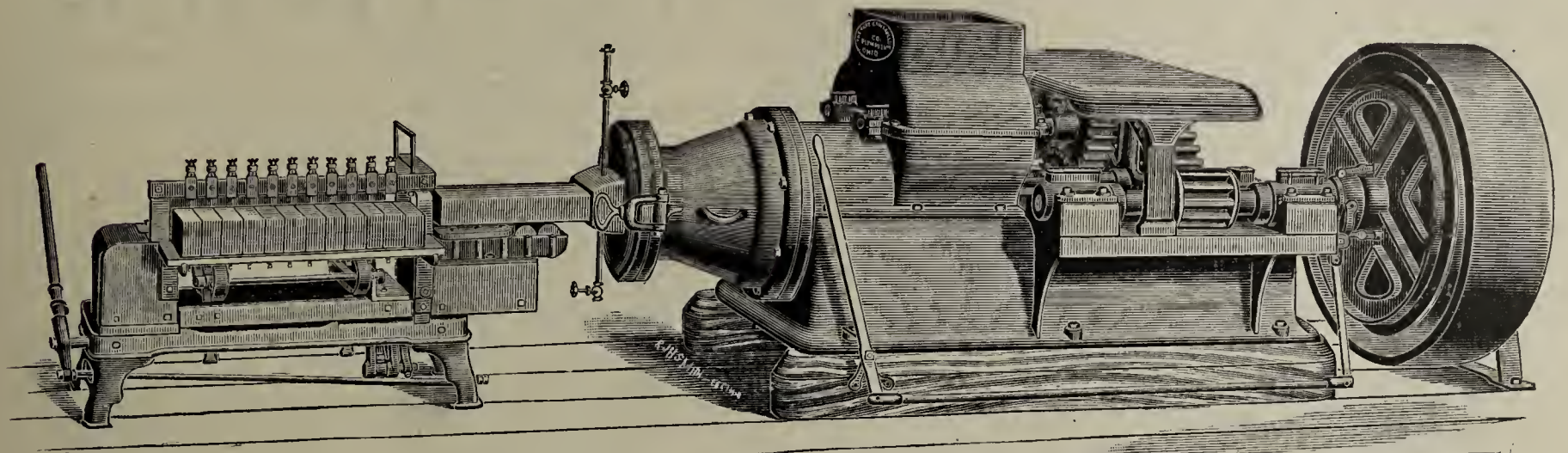
## THE DECATUR LEADER MFG. CO.,

[Mention the Clay-Worker.]

## Decatur, Ill., U. S. A.

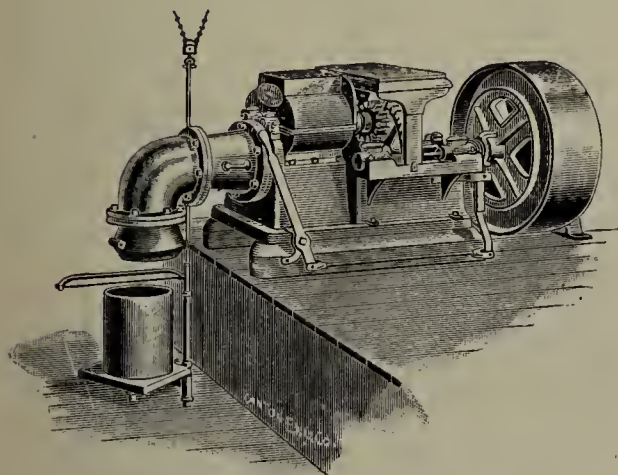


# "PLYMOUTH" BRICK AND TILE MACHINES



'A' Machine, with Board Delivery Cutting Table.

COMPLETE, RELIABLE,  
STRONG, DURABLE,  
INCOMPARABLE.



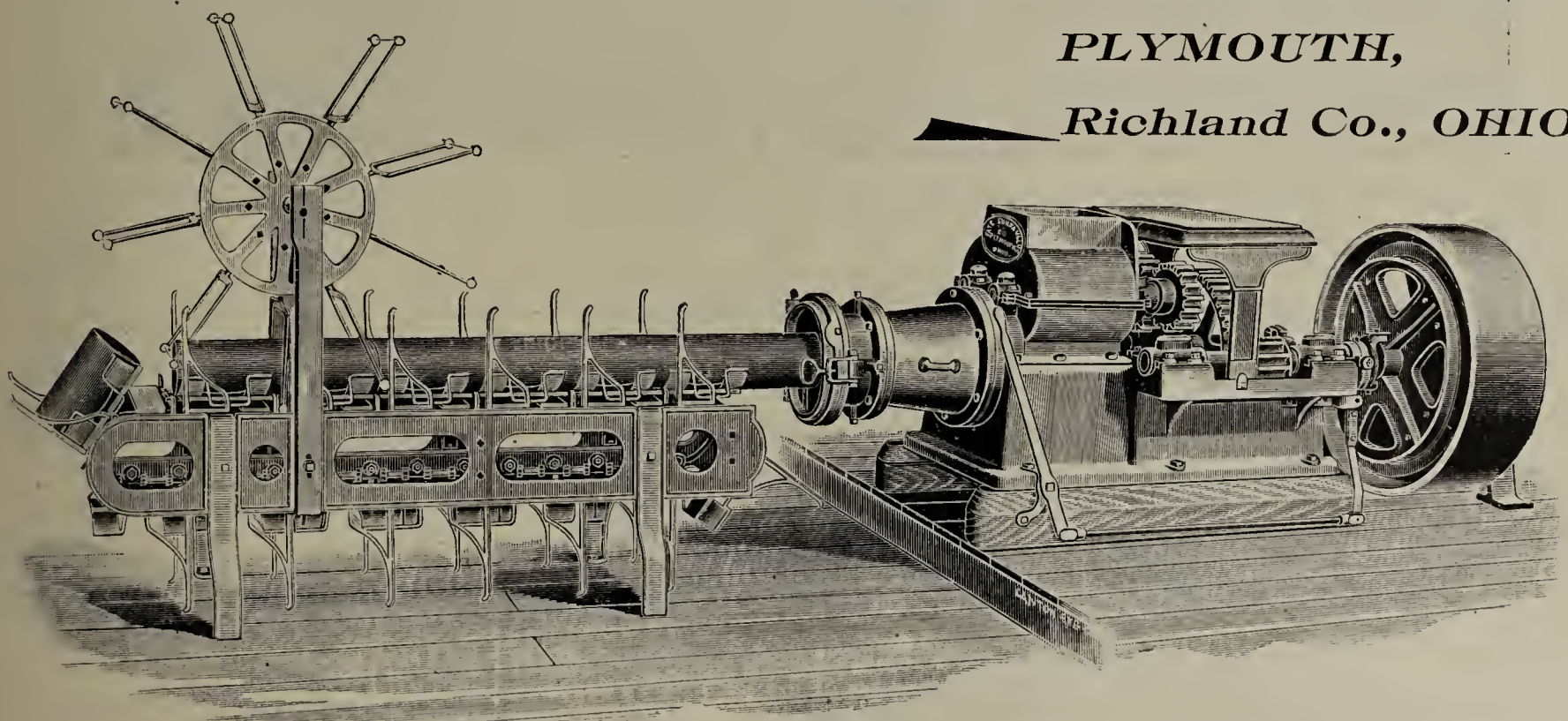
'D' Machine. With Elbow Attachment for Delivering Large Tile on End.

Send for Catalogue and Estimates On Entire Outfits.

## THE FATE-GUNSAULLUS CO.,

PLYMOUTH,

Richland Co., OHIO.

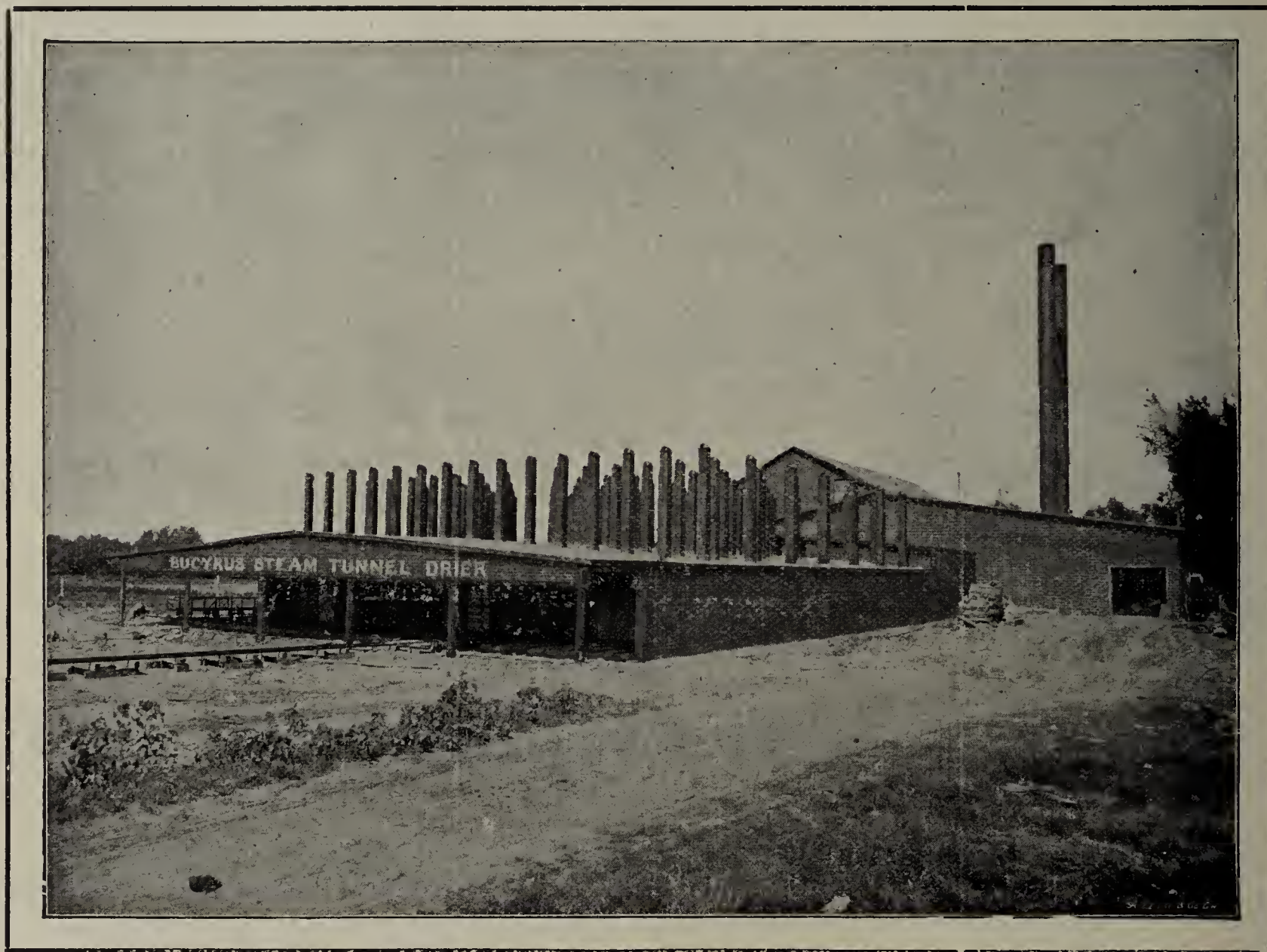


"D" Machine, with Automatic Cutting Table. For cutting tile from  $2\frac{1}{2}$  to 8 inches; also building blocks.



# BUCYRUS STEAM . . . . . . TUNNEL DRIER.

Fifty of these Dry-Houses are now in the most successful operation on 50 first class brick yards throughout the United States.



**W**E guarantee the successful operation of this drier. Although we have not advertised it during the three years that we have been constructing it, we now feel that a good thing must be advertised in order to acquaint the profession with us more thoroughly. We solicit your correspondence, and would be pleased to mail you our drier catalogue together with our new 1894 Machinery Catalogue.

## THE FREY-SHECKLER COMPANY,

Manufacturers and Builders of Complete Factory Outfits.

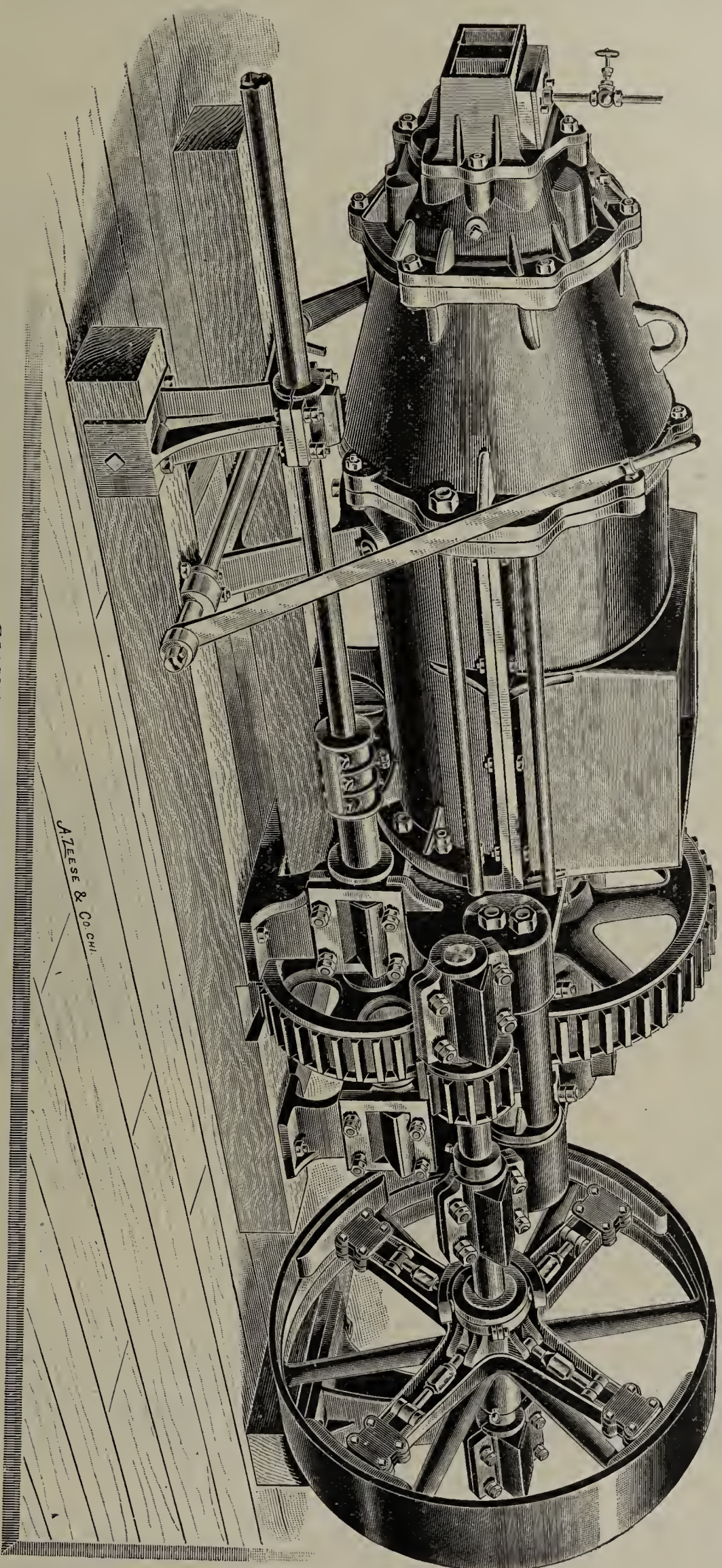
DRY AND WET PANS, BRICK MACHINES, CUTTING TABLES, RE-PRESSES,  
 PUG MILLS, DRY CARS, TRANSFER CARS, TURN TABLES, DRIER, KILN  
 ACCESSORIES BARROWS, TRUCKS, CONVEYORS, ELEVATORS, SHAFTING,  
 BELTING, PULLEYS, ETC., ETC.



**BUCYRUS, OHIO,  
 U. S. A.**



# The Frey=Sheckler Co., Clay Working Machinery.



GIANT BRICK MACHINE.

## The Frey=Sheckler Company,

Manufacturers of a Full Line of Clay Working Machinery,

BUCYRUS, OHIO, U. S. A.

SEND FOR CATALOGUE.

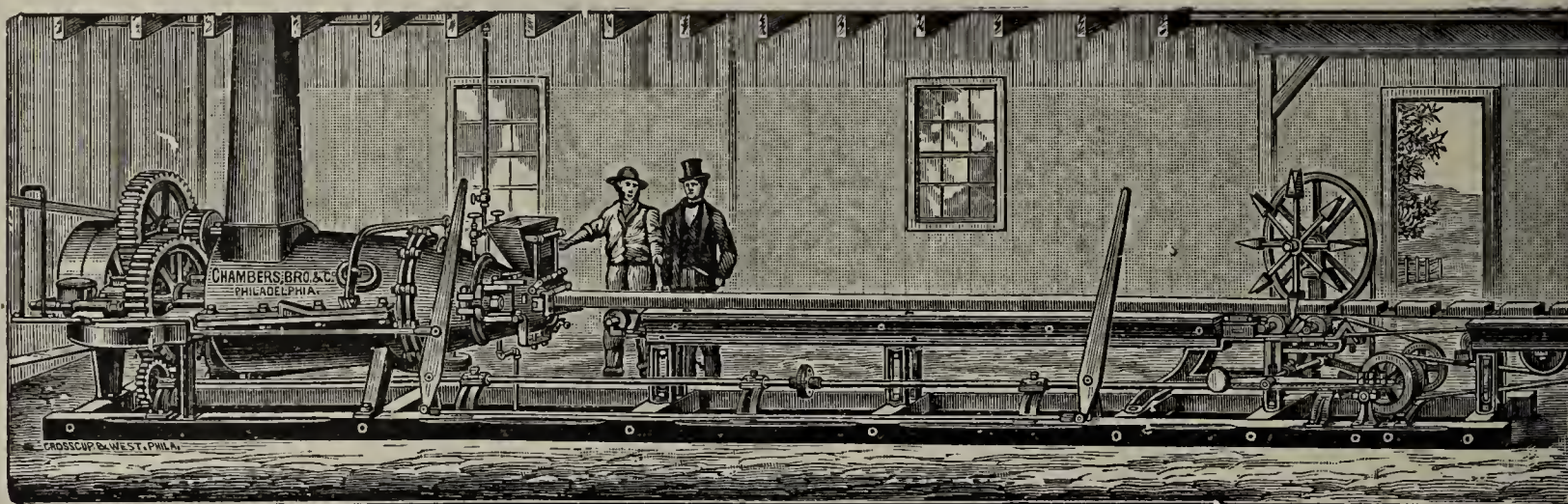


# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

## IMPROVED BRICKMAKING MACHINERY.



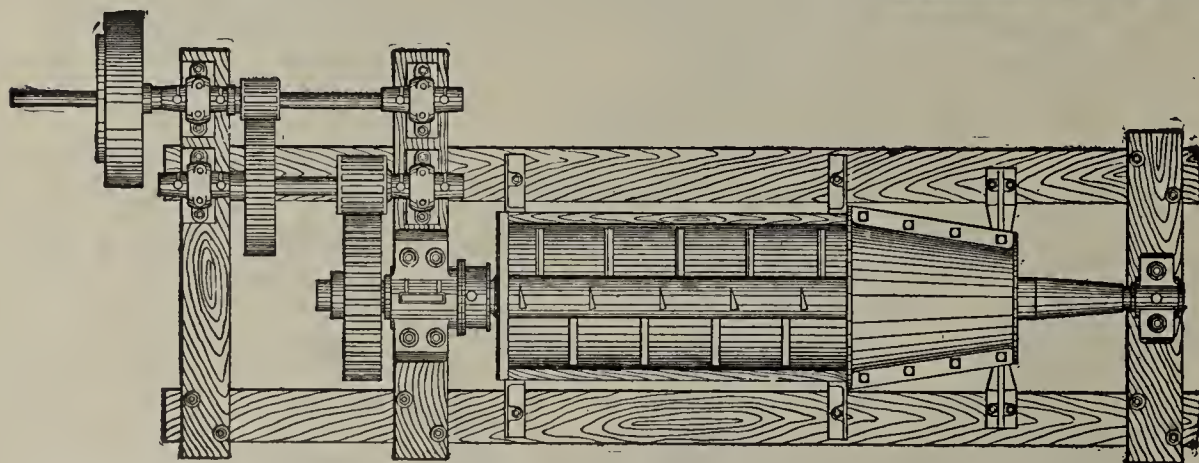
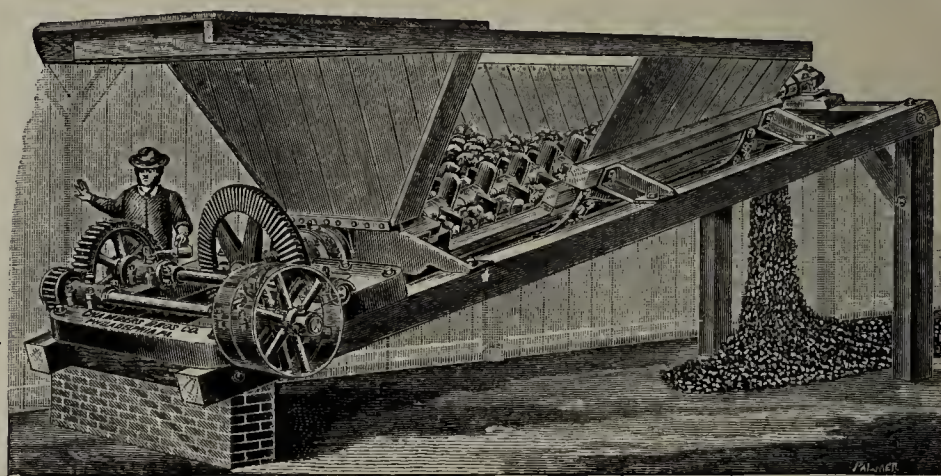
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,  
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



# CHAMBERS BROTHERS CO.,

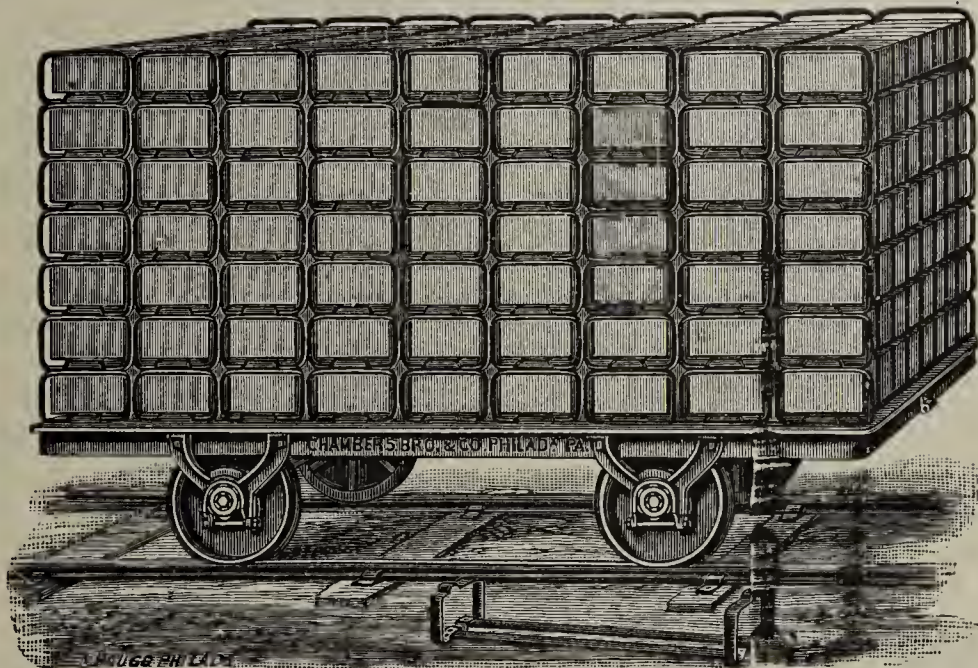
Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

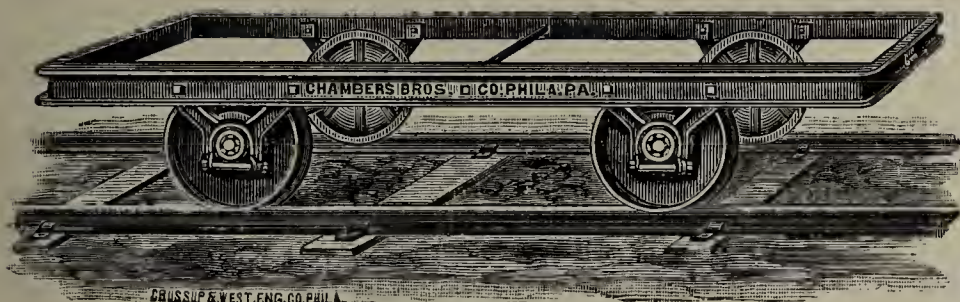
## IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

Cars and Complete Equipment  
For Artificial Dryers of  
all Kinds.

### STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

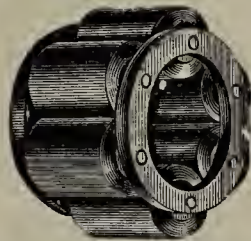


(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

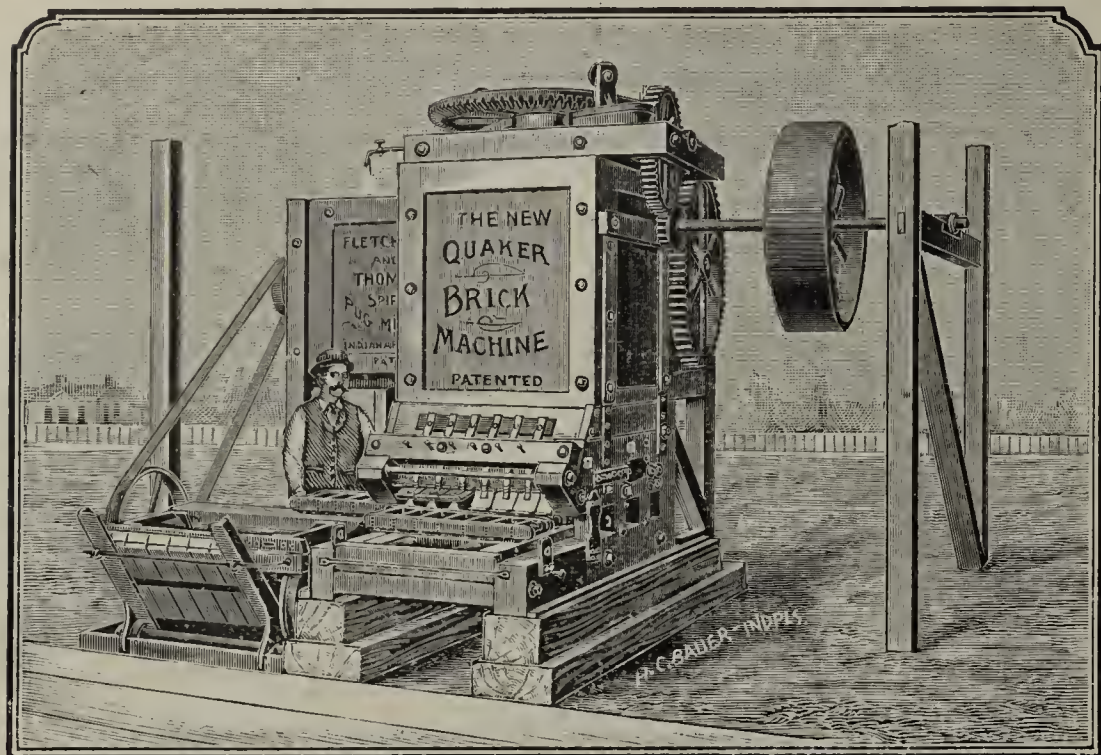
Send for complete Car Catalogue.

See ad. on front cover page.

[Mention the Clay Worker



# Brick Machinery and Brickmakers' Supplies.

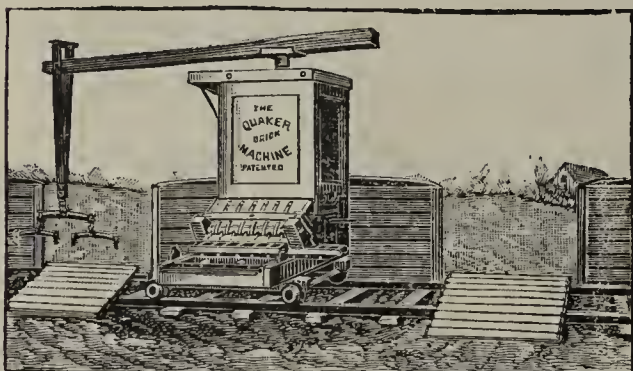


Machine Molds.



Made of Best Cherry.  
All Iron Bound.  
Any Size Desired.

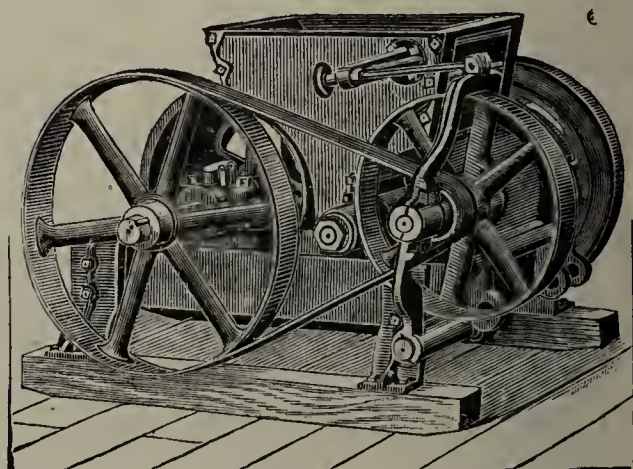
This Machine with our Spiral Pug Mill and Mold Sander combined makes the most complete plant in use. Capacity limited only by the ability to provide clay and take care of the product.



**THE NEW QUAKER**

HORSE POWER MACHINE.  
Simple, Durable and reasonable in price. Capacity 15,000 to 20,000 per day.

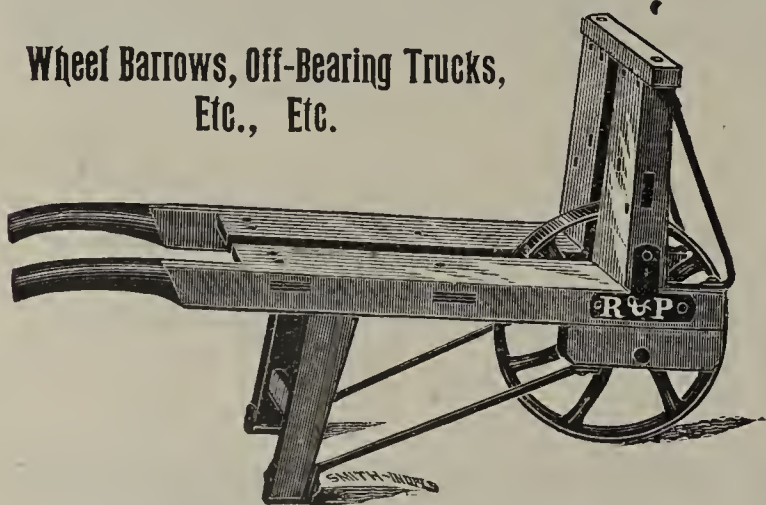
Repress Machines,  
Tempering Wheels,  
Clay Carts,  
Kiln Doors,  
Grate Bars, Etc.



**DISINTEGRATORS.**

The best pulverizer in use. Different sizes. Capacity 25,000 to 150,000 per day.

Wheel Barrows, Off-Bearing Trucks,  
Etc., Etc.



Brick Barrows, with or without Springs.  
Mud Barrows, Sand Barrows, Etc.

Engines,  
Boilers,  
Shafting,  
Pulleys,  
Belting,  
Steam Pumps,  
Fittings, Etc.



Dump Cars, Portable Track,  
Winding Drums, Wire Cable, Etc.

We make a specialty of equipping and fitting up complete yards in every detail, either large or small. Correspondence solicited. Send for Illustrated Catalogue.

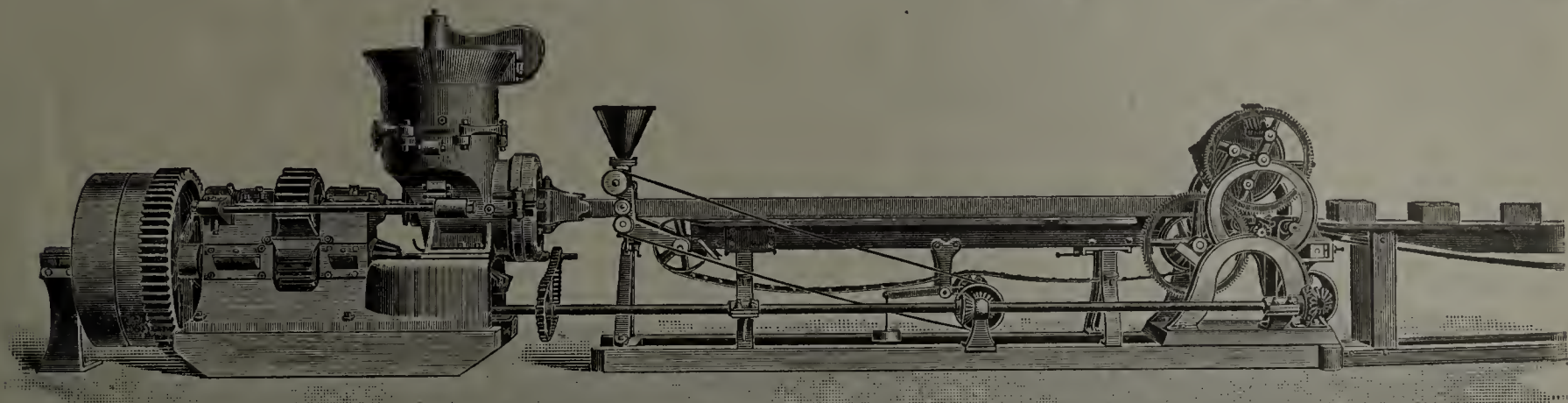
**S. K. FLETCHER, Gen'l Agent,**

[Mention the Clay-Worker.]

Successor to Fletcher & Thomas, INDIANAPOLIS, INDIANA.

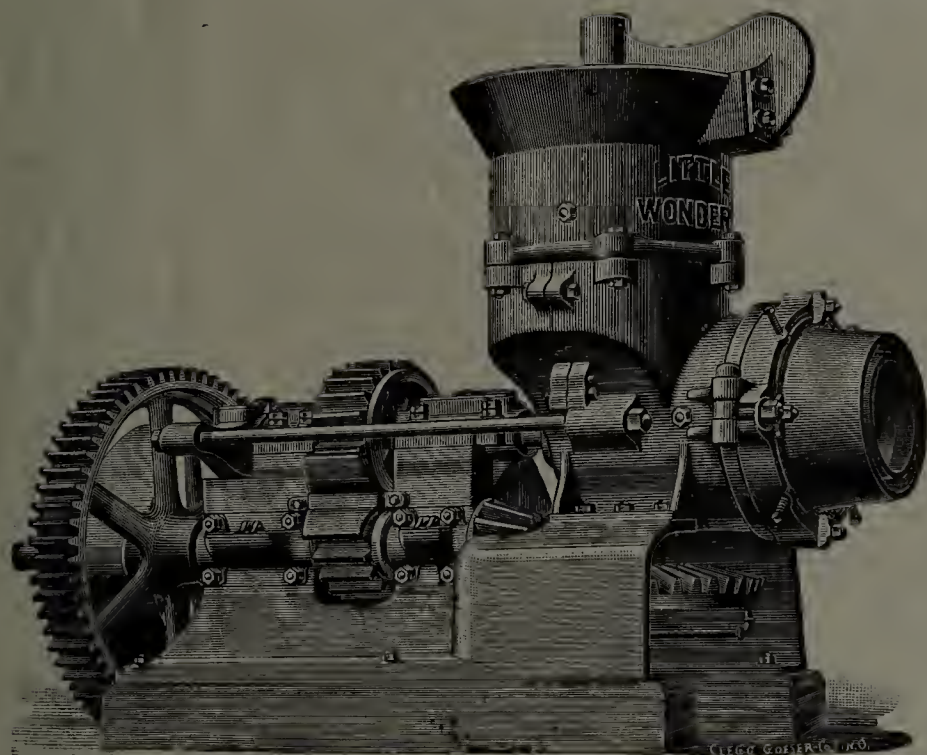


# The WONDER'S IN NEW DRESS.

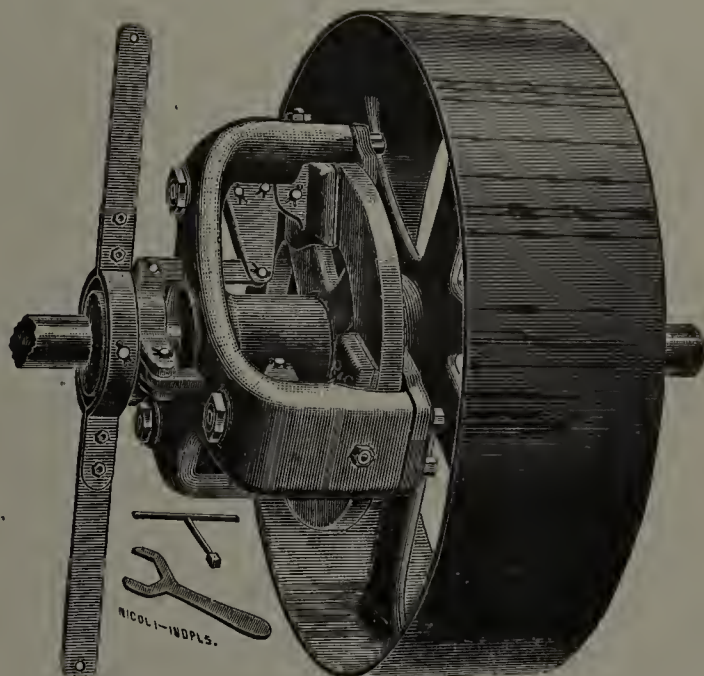


NICOLI-IND.

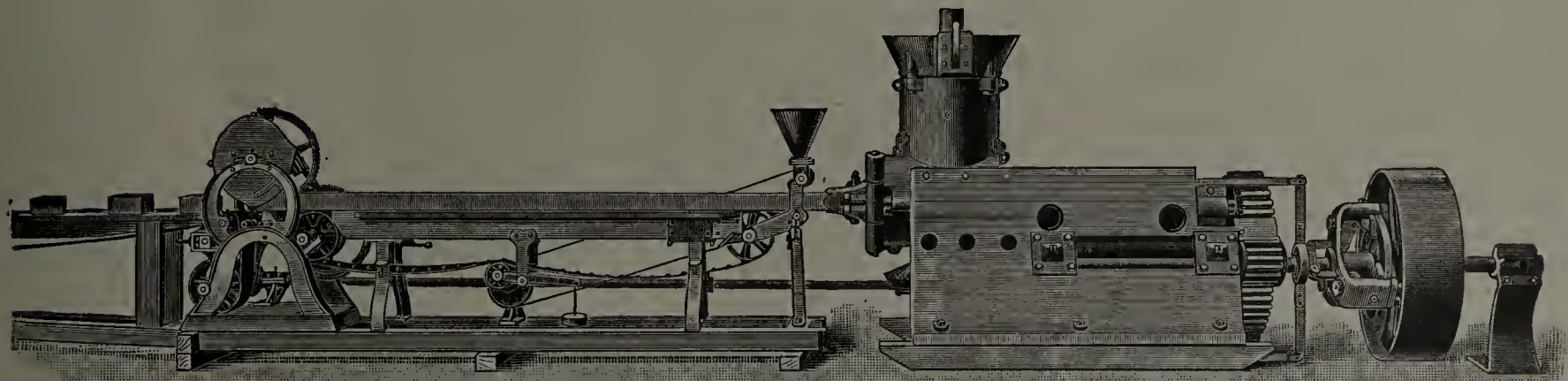
Little Wonder Brick Machine with Cunningham's Automatic Cutter and Sander. 25 M. daily Capacity.



Little Wonder Brick and Tile Machine.



Friction Clutch Pulley.



Big Wonder Brick Machine with Cunningham's Automatic Cutter and Sander. 60 to 75 M. daily Capacity.

## The Wallace Mfg Co.,

When You Send for Further Particulars  
Mention the CLAY-WORKER.

FRANKFORT, IND.



# THE LATEST IMPROVED Iron = Clad Brick Dryer.



We refer to the following parties using the Iron-Clad Dryer:

|                                                                                |                                                                                          |
|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Weckler-Prussing Brick Co., Chicago, drying 175,000 stiff mud brick per day.   | Huntington Paving Brick Co., Huntington, W. Va., drying 40,000 paving brick.             |
| Purinton Brick Co., Chicago, drying 150,000 stiff mud brick per day.           | Wabash Clay Co., Veedersburg, Ind., drying 40,000 paving brick.                          |
| Labahn Brick Co., Chicago, drying 100,000 stiff mud brick per day.             | Benton Harbor Brick and Tile Co., Benton Harbor, Mich., drying 25,000 stiff mud brick.   |
| Thomas Moulding Co., Chicago, drying 75,000 stiff mud brick per day.           | John Porter Co., New Cumberland, W. Va., drying 30,000 paving brick.                     |
| Lillis & Glennon, Brownington, Mo., drying 30,000 paving brick per day.        | Zeeland Brick Co., Zeeland, Mich., drying 150,000 stiff mud brick.                       |
| Raritan-Hollow and Porous Brick Co., Perth Amboy, N. J., drying fire-proofing. | E. Webster & Nephew, Philadelphia, Pa., drying 30,000 soft mud brick.                    |
| National Clay Co., Rock Island, Ill., drying 25,000 paving brick.              | Fallston Fire Clay Co., Fallston, Pa., drying 30,000 paving brick.                       |
| Utica Fire Clay Co., Utica, Ill., drying fire-proofing.                        | Park Fire Clay Co., Park Quarries, Pa., drying 30,000 paving brick.                      |
| Ottawa Fire Clay and Brick Co., Ottawa, Ill., drying 25,000 paving brick.      | W. A. Doyle, Fort Smith, Ark., drying 25,000 paving brick.                               |
| Quincy Press Brick Co., Quincy, Ill., drying 25,000 stiff mud brick.           | Standard Brick Co., Milwaukee, Wis., drying 33,000 soft mud brick.                       |
| Trimble Brick Co., Trimble, Ohio, drying 25,000 stiff mud brick.               | Fulcher & Dyas Brick Co., Nashville, Tenn., drying 40,000 stiff mud brick.               |
| Pioneer Fire-Proof and Construction Co., Ottawa, Ill., drying fire-proofing.   | Evansville Press Brick Co., Evansville, Ind., drying 45,000 stiff mud brick.             |
| Excelsior Brick Co., Chicago, Ill., drying 20,000 fire brick.                  | Glens Falls Terra Cotta and Brick Co., Glens Falls, N. Y., drying 25,000 soft mud brick. |
| J. P. Cappeau & Co., New Kensington, Pa., drying 60,000 stiff mud brick.       | St. Louis Press Brick Co., St. Louis, Mo., drying 40,000 press brick.                    |
| A. Hammerschmidt, Elmhurst, Ill., drying 25,000 stiff mud brick.               | Cleveland Vitrified Press Brick Co., Cleveland, Ohio, drying 30,000 press brick.         |
| Chicago Retort and Fire Brick Co., Chicago, Ill., drying 15,000 fire brick.    | J. A. Blaffer & Son, New Orleans, La., drying 35,000 soft mud brick.                     |
| Spurck Street Paving Brick Co., Peoria, Ill., drying 50,000 paving brick.      | St. Joe Paving Brick Co., St. Joe, Mo., drying 30,000 paving brick.                      |
| Royal Brick Co., Canton, Ohio, drying 50,000 paving brick.                     | Kankakee Tile and Brick Co., Kankakee, Ill., drying 25,000 stiff mud brick and tile.     |
| Buckeye Fire Clay Co., Uhrichsville, Ohio, drying 25,000 paving brick.         | Alton Paving, Building and Fire Brick Co., Alton, Ill., drying 75,000 paving brick.      |
| Buckeye Brick Works, Wellsville, Ohio, drying 25,000 paving brick.             | Mackolite Fire-Proofing Co., Chicago Heights, Ill., plaster paris fire-proofing.         |
| Vulcan Clay Co., Wellsville, Ohio, drying 25,000 paving brick.                 | Boone Paving Brick Co., Boone, Iowa, drying 28,000 paving brick.                         |
| Logan-Granite Clay Co., Logan, Ohio, drying 25,000 paving brick.               | Flint Brick Co., Des Moines, Iowa, drying 50,000 paving brick.                           |
| Athens Brick Co., Athens, Ohio, drying 50,000 paving brick.                    | Turner Brick Co., Turner Junction, Ill., drying 35,000 building brick.                   |
| Salem-Garfield Mining and M'fg. Co., Salem, Ohio, drying 25,000 paving brick.  | Mayer & Toll, Chicago, Ill., drying 35,000 building brick.                               |
| Ottumwa Brick and Construction Co., Ottumwa, Iowa, drying 50,000 paving brick. |                                                                                          |
| Hugo Becker, Le Claire, Iowa, drying 50,000 paving brick.                      |                                                                                          |
| Davenport Paving Brick Co., Davenport, Iowa, drying 25,000 paving brick.       |                                                                                          |

IN looking over this list of references, it will be noticed that we are drying bricks for a great number of successful brickmakers, many of whom have added one tunnel at a time, as required by the growth of their business, proving that our system does good work. Our success, we regret to say, has led many to attempt imitating us, with disastrous results. Our imitators argue, from our success, that steam heat is the proper and only heat for drying clays, losing sight of the fact that we absorb the moisture from brick by drawing the hot air over and around the brick by natural draft, using a large volume of moderately-heated air to accomplish the work, just as nature does it, while our imitators are using high degrees of heat and little or no ventilation; cooking the moisture out of the brick, making it impossible to produce tough bricks, no matter how they are burnt. If the reader wants to adopt nature's method, write the

## WOLFF DRYER CO.,

Patentees and Builders of the IRON-CLAD DRYER,

358 Dearborn Street, Room 304,

CHICAGO, ILL.





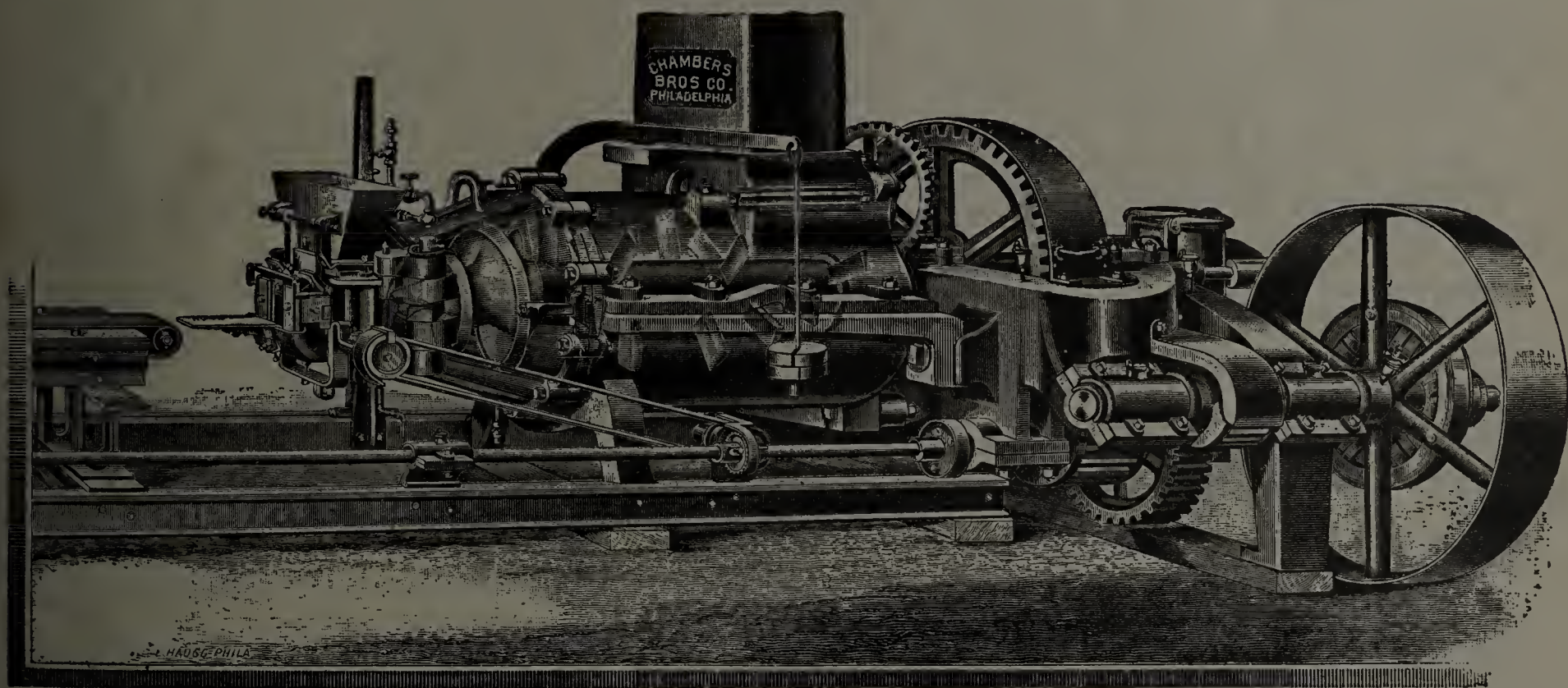
THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXI, No. 3.

INDIANAPOLIS, IND., MARCH, 1894.

\$2.00 a Year in Advance.

# Brick Making Machinery,



## Chambers Brothers Company,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,

J. E. EASTES, Chicago Agent,

203 South Canal Street.

PHILADELPHIA, PA.

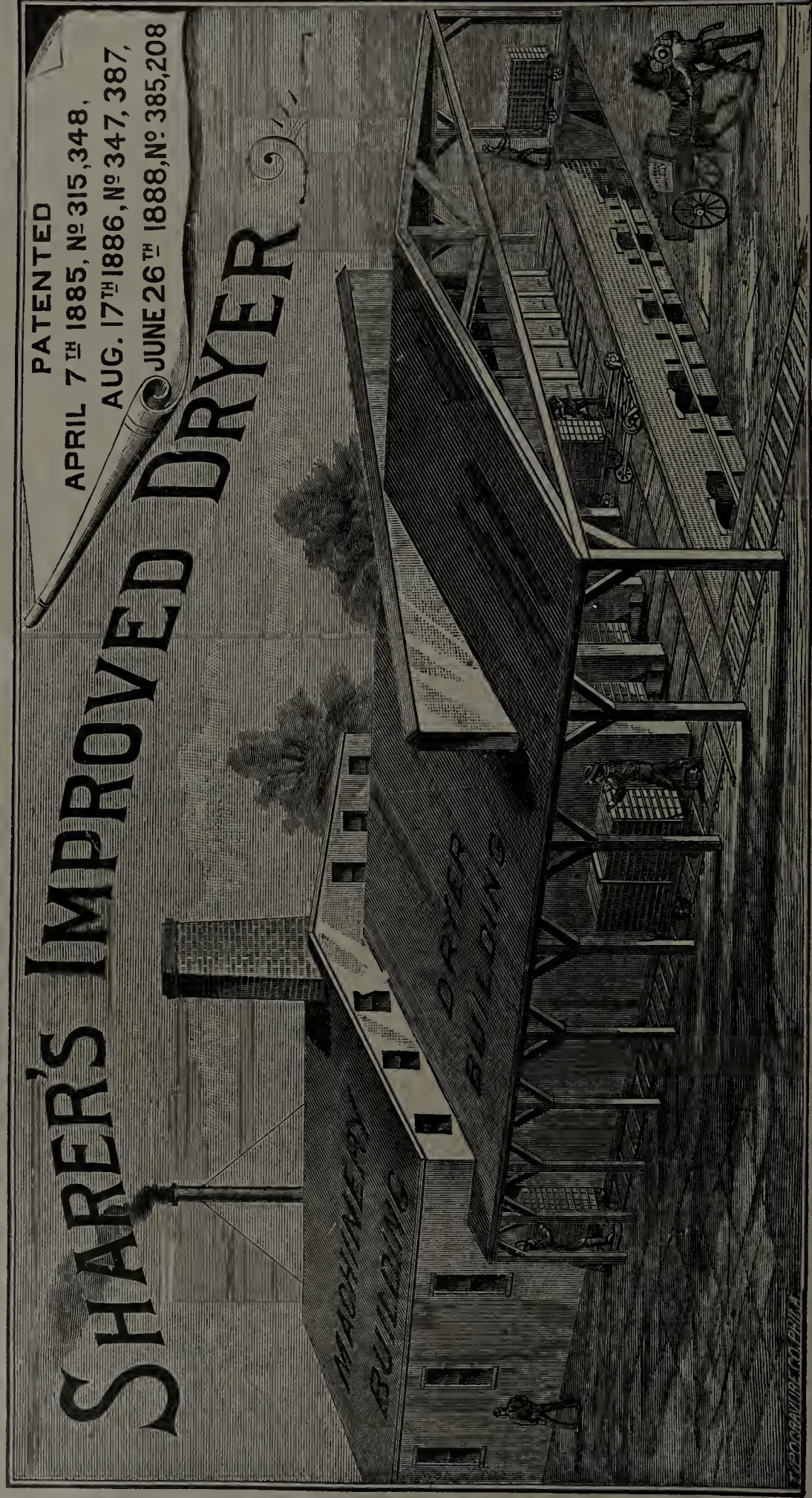
See ads. on pages 412 and 413.



# THE SHARER DRYER AND CONSTRUCTION CO.,

BRICK MANUFACTURING EXPERTS.  
CONSTRUCTING ENGINEERS. ♦ CONTRACTORS AND BUILDERS.  
COMPLETE PLANTS A SPECIALTY.

Builders of All Kinds of Dryers and Kilns for Dry Log and  
Burning any and all Kinds of Clay Products.



Owners of SHARER'S IMPROVED DRYER;  
SHARER'S IMPROVED CALORIFIC KILN.

Manufacturers of Cars, Transfer Cars, Turn Tables, Furnace Castings and Complete Dryer and Kiln Equipments.

New plants built and equipped complete in every particular. Old plants remodeled and modernized. Clays tested and analyzed. Plans and estimates furnished. Information costs you nothing. Send for Catalogue "C."

## SHARER DRYER & CONSTRUCTION CO.,

TORONTO OFFICE: 71 Adelaide, East, Toronto, Ont., Canada,  
HUGH CAMERON, Manager.

Rooms 506 and 507, The Mutual Life Building,  
N. W. Cor. 10th and Chestnut Streets,  
PHILADELPHIA, PA.



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS

—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

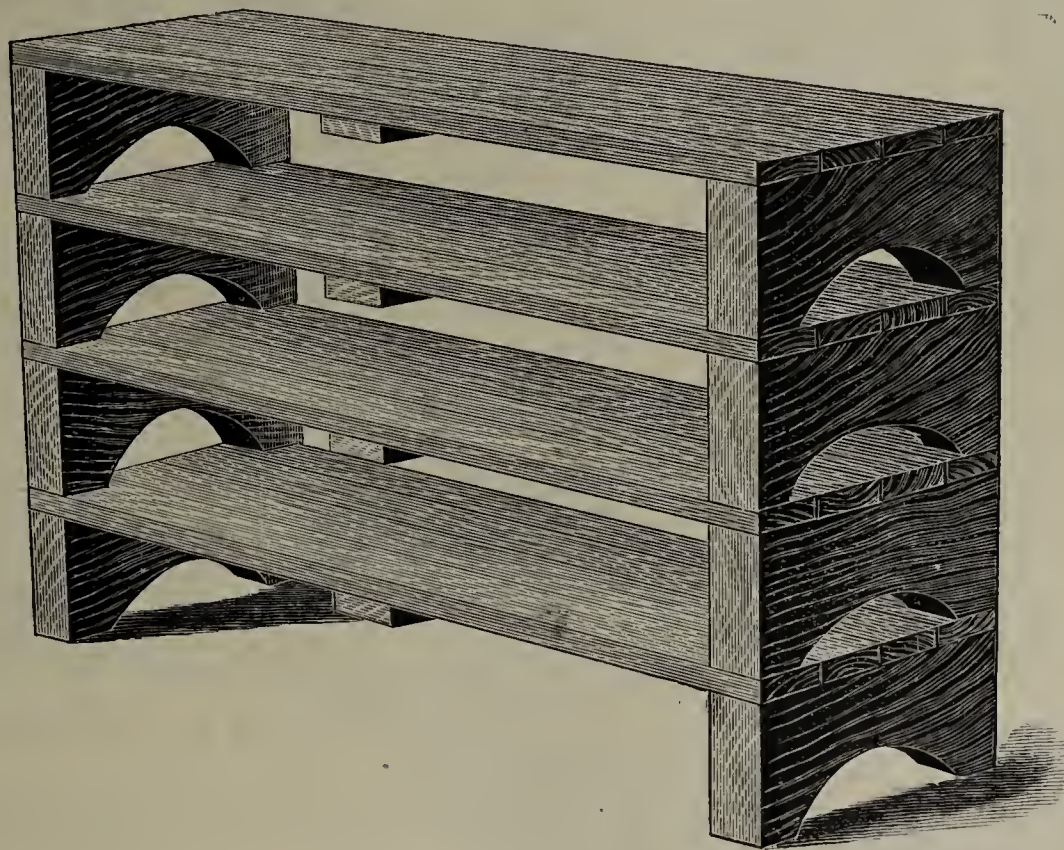
THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

## WOODEN BRICK PALLETS

WOODEN  
BRICK  
PALLETS



STYLE C.

WOODEN  
BRICK  
PALLETS

We manufacture all styles and sizes. Write to us direct for descriptive circulars and prices.

WM. B. MERSHON & CO., = Saginaw, East Side, Mich.



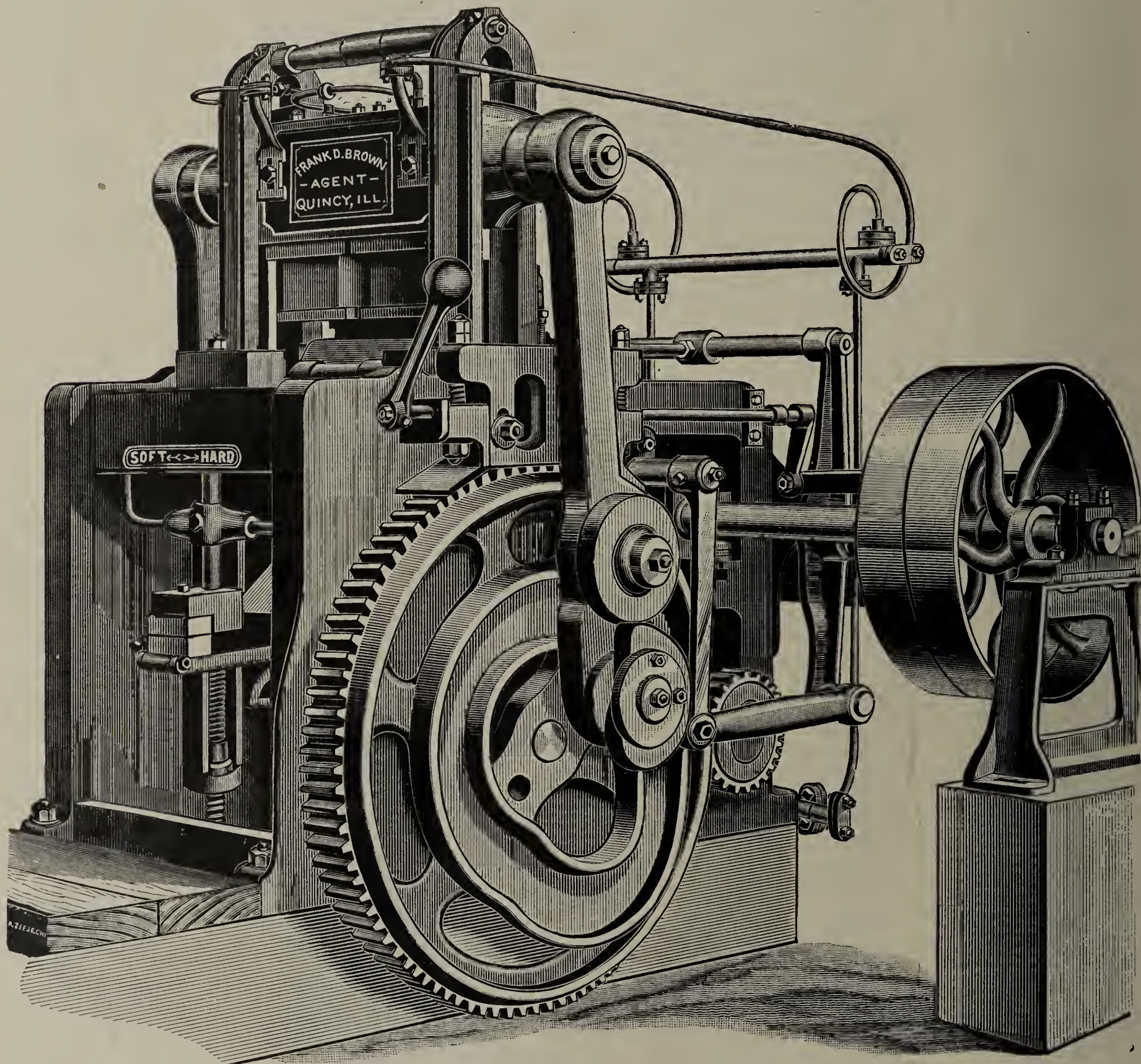
# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

• HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. •

Best, Cheapest and Most Durable Press in the World.

\* ————— One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

**FRANK D. BROWN,** Room 18 Major Block,  
Cor. La Salle & Madison Sts. **Chicago.**



# The Ross-Keller Brick Machine.

## (Triple Pressure)

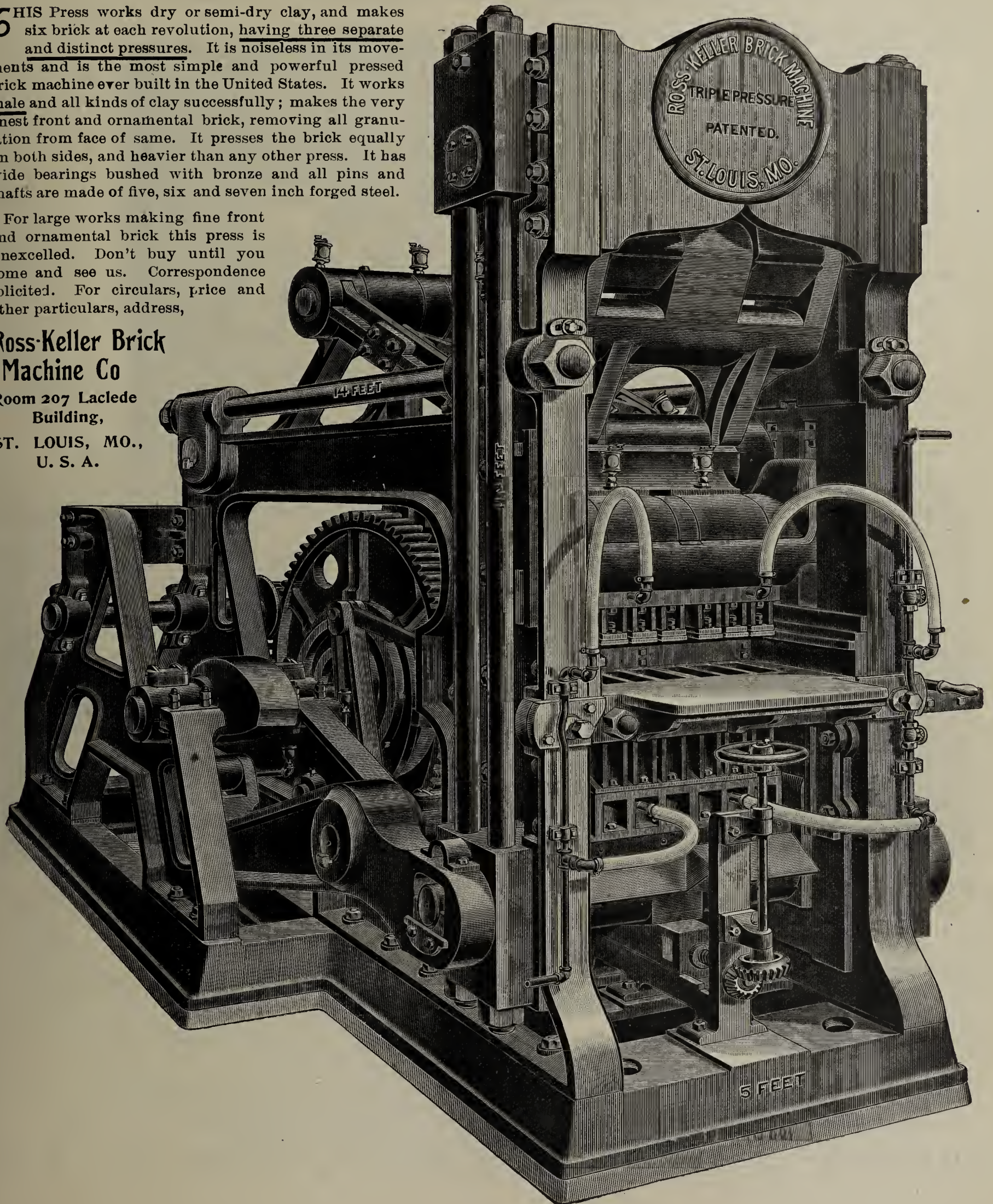
Weight 75,000 Pounds, Capacity 35,000 to 40,000 Brick Per Day.

**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five, six and seven inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address,

**Ross-Keller Brick  
Machine Co**

Room 207 Laclede  
Building,  
ST. LOUIS, MO.,  
U. S. A.





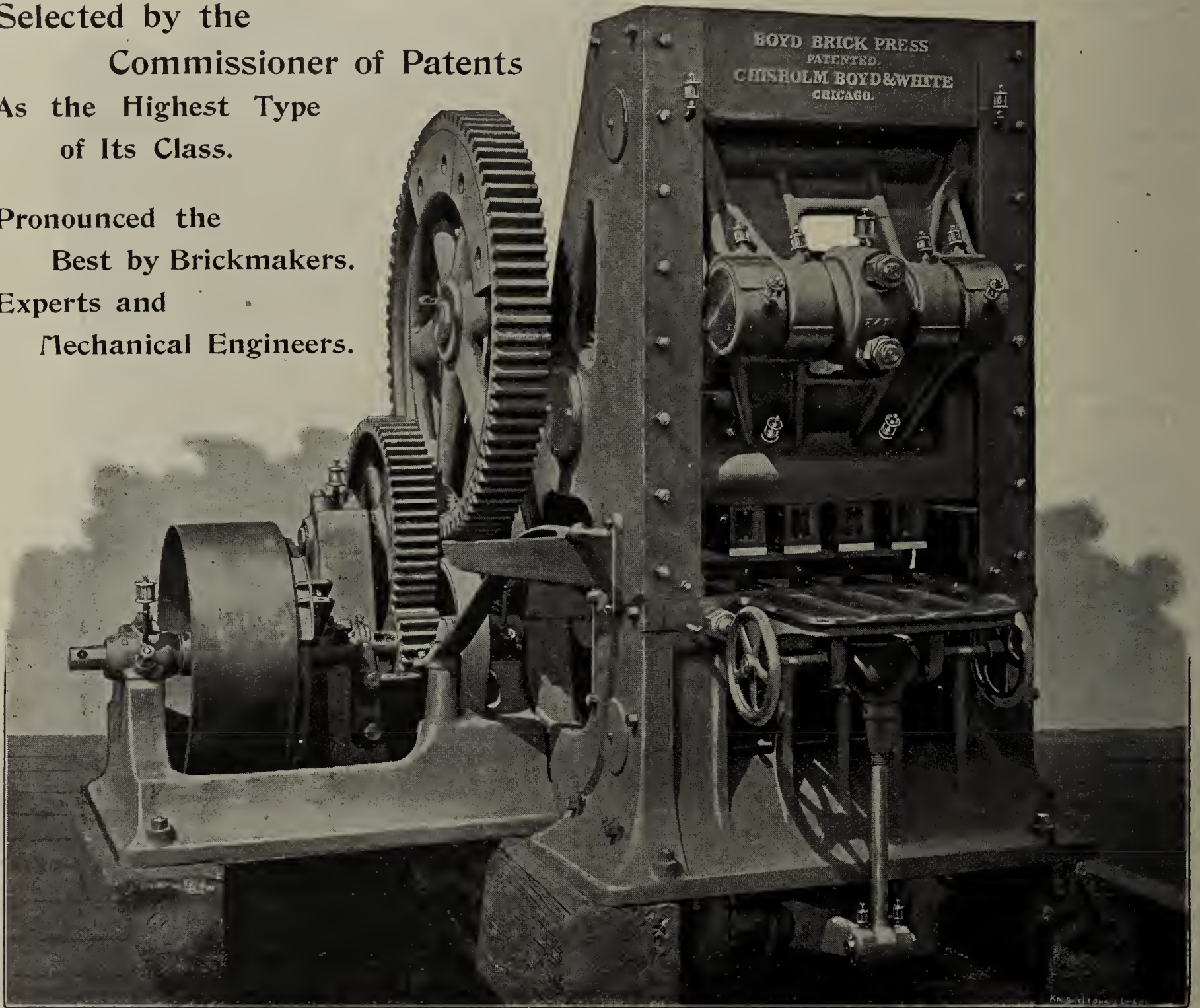
# TRIUMPH OF THE BOYD PRESS

• • • • •  ALL THE HONORS.

*AWARDED A MEDAL AND DIPLOMA.*

Selected by the  
Commissioner of Patents  
As the Highest Type  
of Its Class.

Pronounced the  
Best by Brickmakers.  
Experts and  
Mechanical Engineers.



THE BOYD BRICK PRESS IS THE ONLY AMERICAN BRICK MACHINE  
TO RECEIVE A MEDAL, DIPLOMA, OR OFFICIAL MENTION AT

❖ The World's Columbian Exposition. ❖



Monon Block:  
324 Dearborn Street.

CHISHOLM BOYD & WHITE,  
Chicago, Ill., U. S. A.



# THE ANDRUS DOUBLE PRESSURE BRICK PRESS.

## Refer to . . .

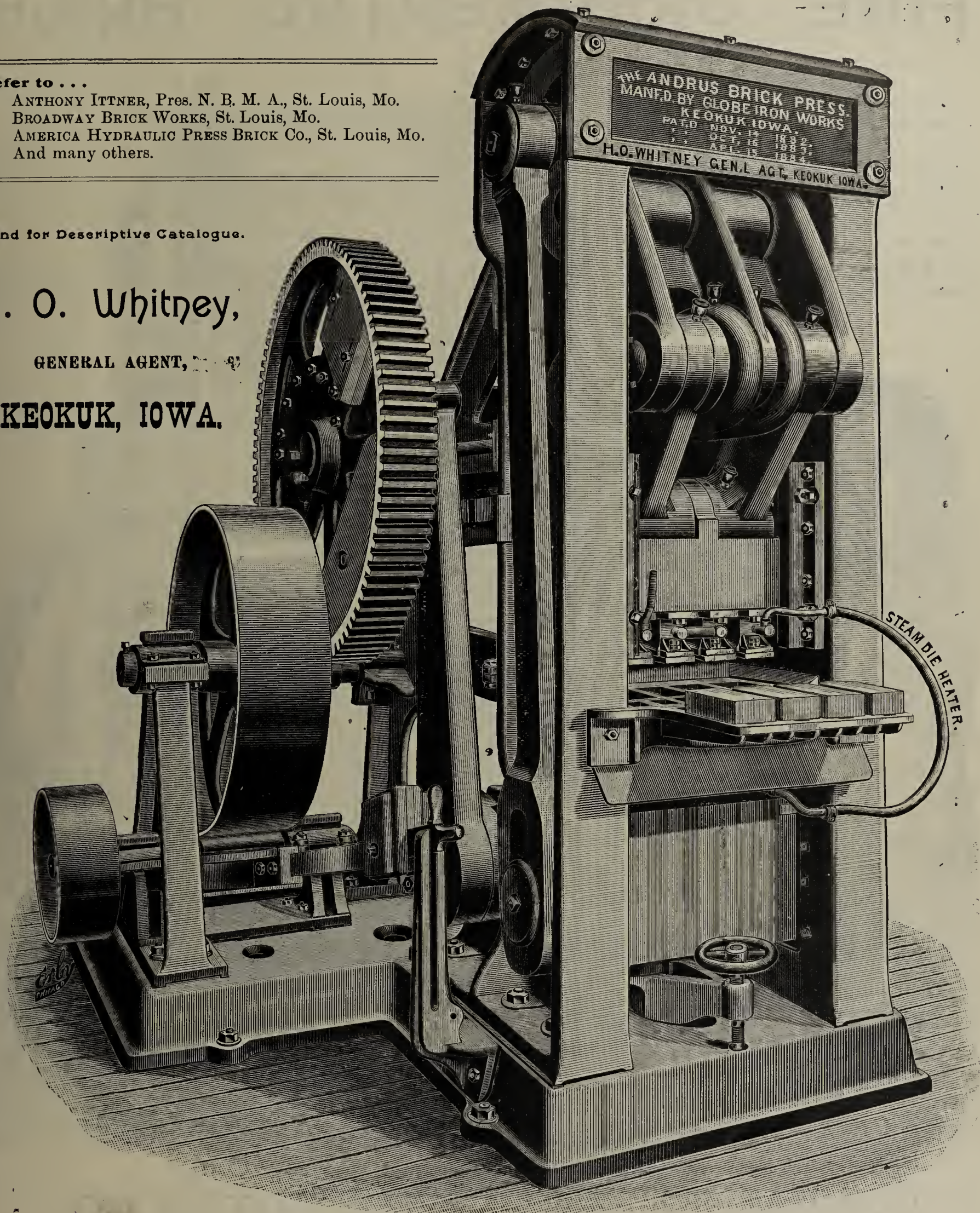
ANTHONY ITTNER, Pres. N. B. M. A., St. Louis, Mo.  
BROADWAY BRICK WORKS, St. Louis, Mo.  
AMERICA HYDRAULIC PRESS BRICK CO., St. Louis, Mo.  
And many others.

Send for Descriptive Catalogue.

H. O. Whitney,

GENERAL AGENT,

KEOKUK, IOWA.





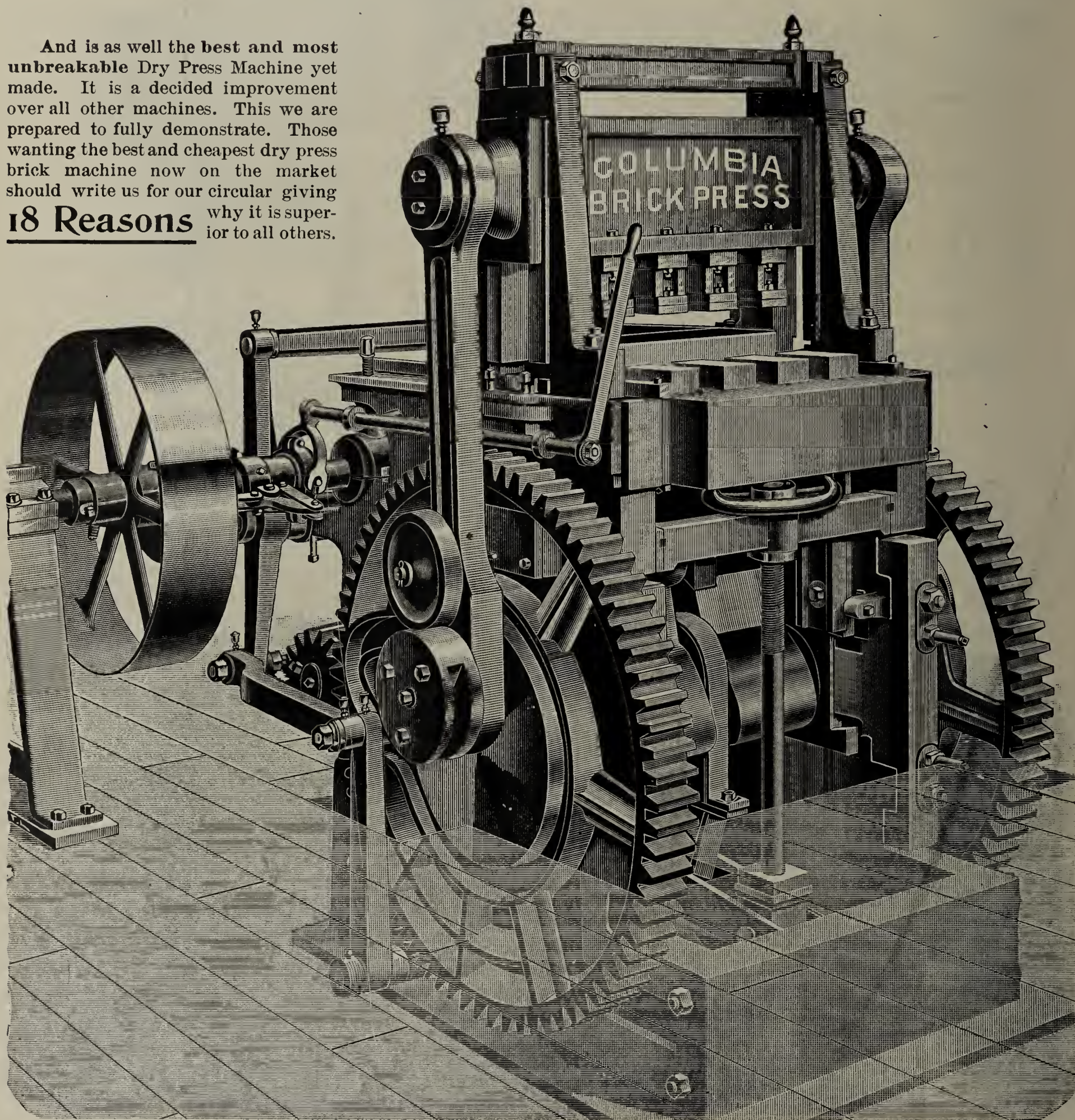
❖ THIS ❖ PRESS ❖

IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF

# FINE ORNAMENTAL BRICK

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving

**18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,  
**COLUMBIA MANUFACTURING CO.,**

Send your clay and we will test it and send you the results....

**2119 N. Ninth St., ST. LOUIS, MO.**



# THE SIMPSON BRICK PRESS.

THE only American machine receiving official recognition from the authorized judge on Brick Machinery operating in Machinery Hall at the

## World's . . . Columbian Exposition.

It is replete with time and labor saving devices, and is pronounced by experts to be the most successful dry press brick machine, from mechanical and practical stand-points in existence.

We are also manufacturers and dealers in full brick yard equipments, and are prepared to estimate on and construct complete plants.



For prices, terms and other information address,

**THE SIMPSON BRICK PRESS CO.,**

Agents for Canada:

**WATEROUS ENGINE WORKS CO.,** Brantford.

**415 Chamber of Commerce, CHICAGO, ILL.**



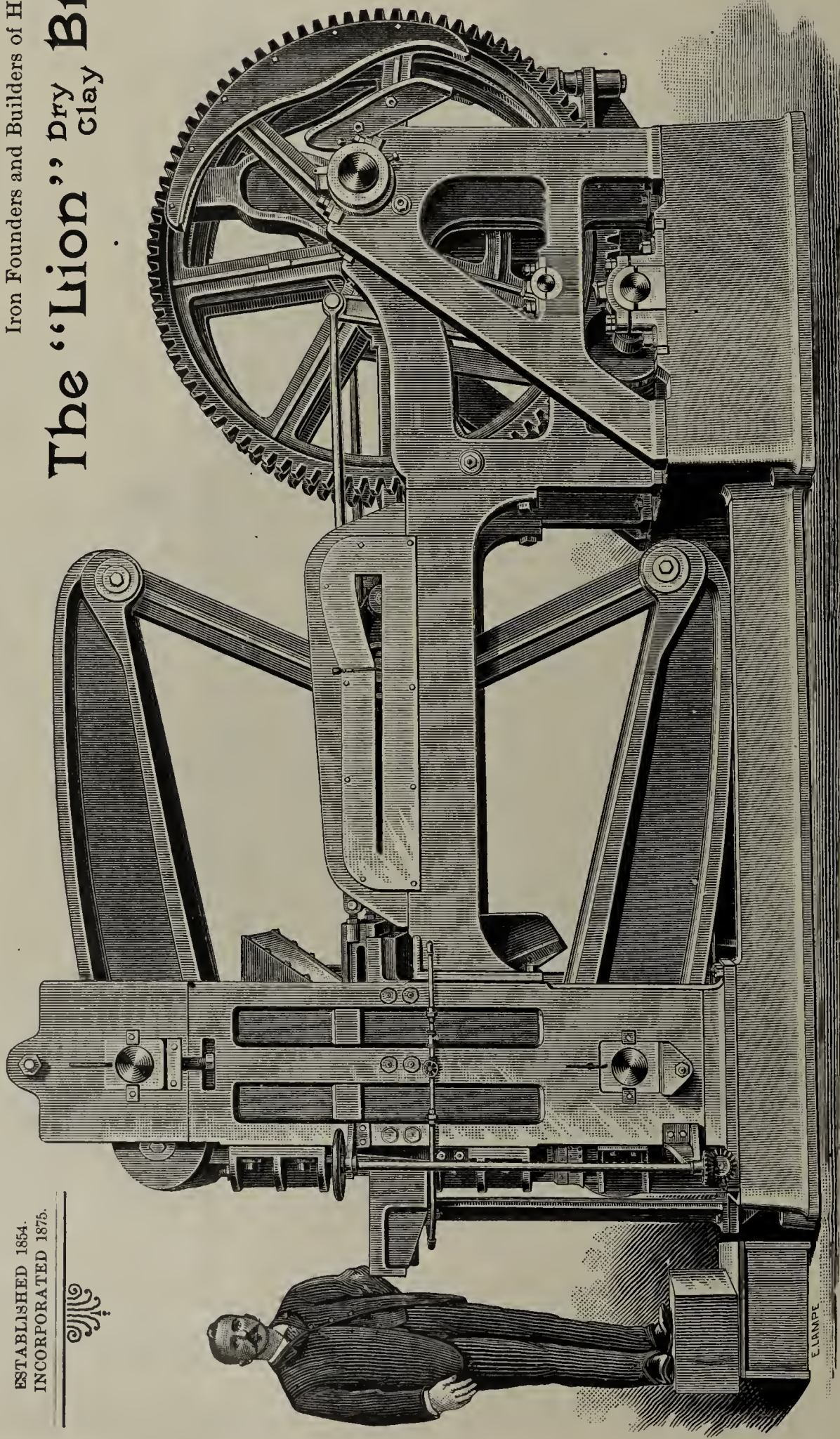
# ST. LOUIS IRON AND MACHINE WORKS.

ESTABLISHED 1854.  
INCORPORATED 1875.

Iron Founders and Builders of Heavy Machinery.



## The 'Lion' Dry Clay Brick Press.



Weight, 44,000 pounds.

Capacity, 25,000 to

30,000 pressed

bricks per 10 hours

Pressure, 200 Tons on Five Bricks.



### WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain. 2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press, to a minimum. 3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do. 4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time.

Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given.

If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 good brick, with little or no cost for repairs. We make this press now in two sizes—25,000 to 30,000 capacity and 10,000 to 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepays the freight charges. For circulars, price and other particulars. Address

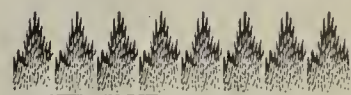
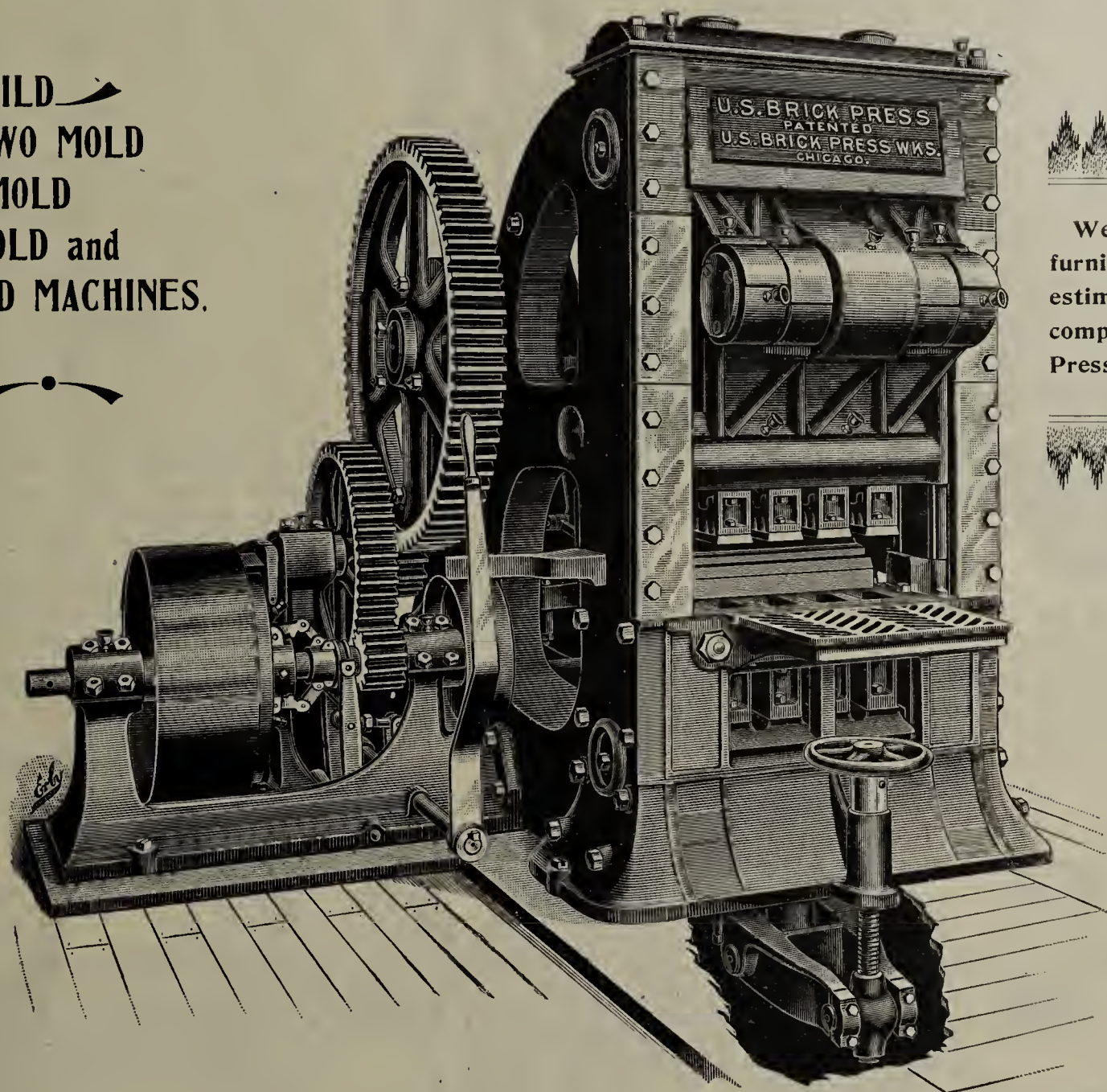
**ST. LOUIS IRON & MACHINE WORKS, Main Street and Choteau Ave., St. Louis, Mo.**



# OUR AWARD

*Comes from PRACTICAL and SUCCESSFUL BRICKMAKERS, who are using the U. S. Brick Press, and who are making and SELLING FINE BRICK at a GOOD PRICE.*

**WE BUILD**  
**TWO MOLD**  
**THREE MOLD**  
**FOUR MOLD and**  
**SIX MOLD MACHINES.**



We are prepared to furnish drawings and estimates, and to equip complete Semi - Dry Pressed Brick Plants.



❖ WHEN YOU WANT ❖

To make perfect Plain, Ornamental, and Roman, or Pompeian Brick on a modern machine, particularly adapted to that purpose, it might be well for you to write for prices and terms to the

**U. S. BRICK PRESS WORKS,**

OSWALD KUTSCHE, Proprietor,

Office at Unity Bldg., 79 Dearborn St., Suite 1111 and 1113, CHICAGO, ILL.



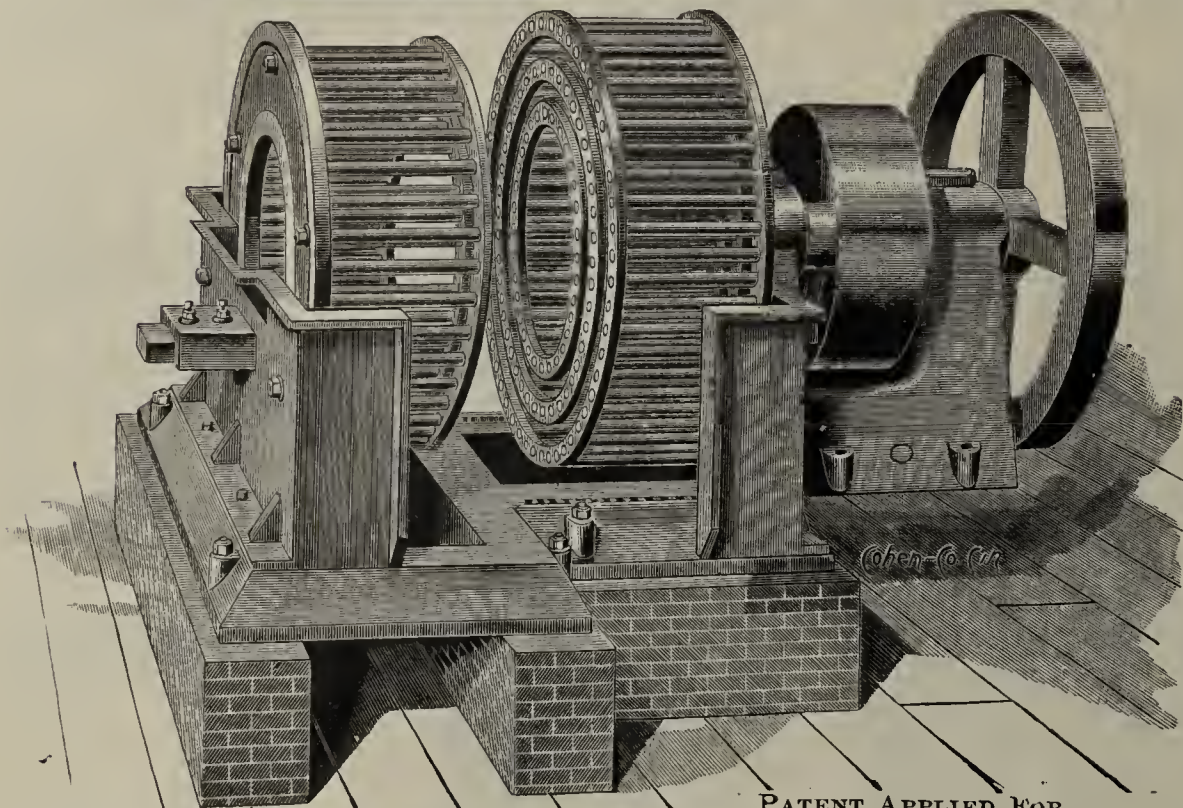
## Description.



This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

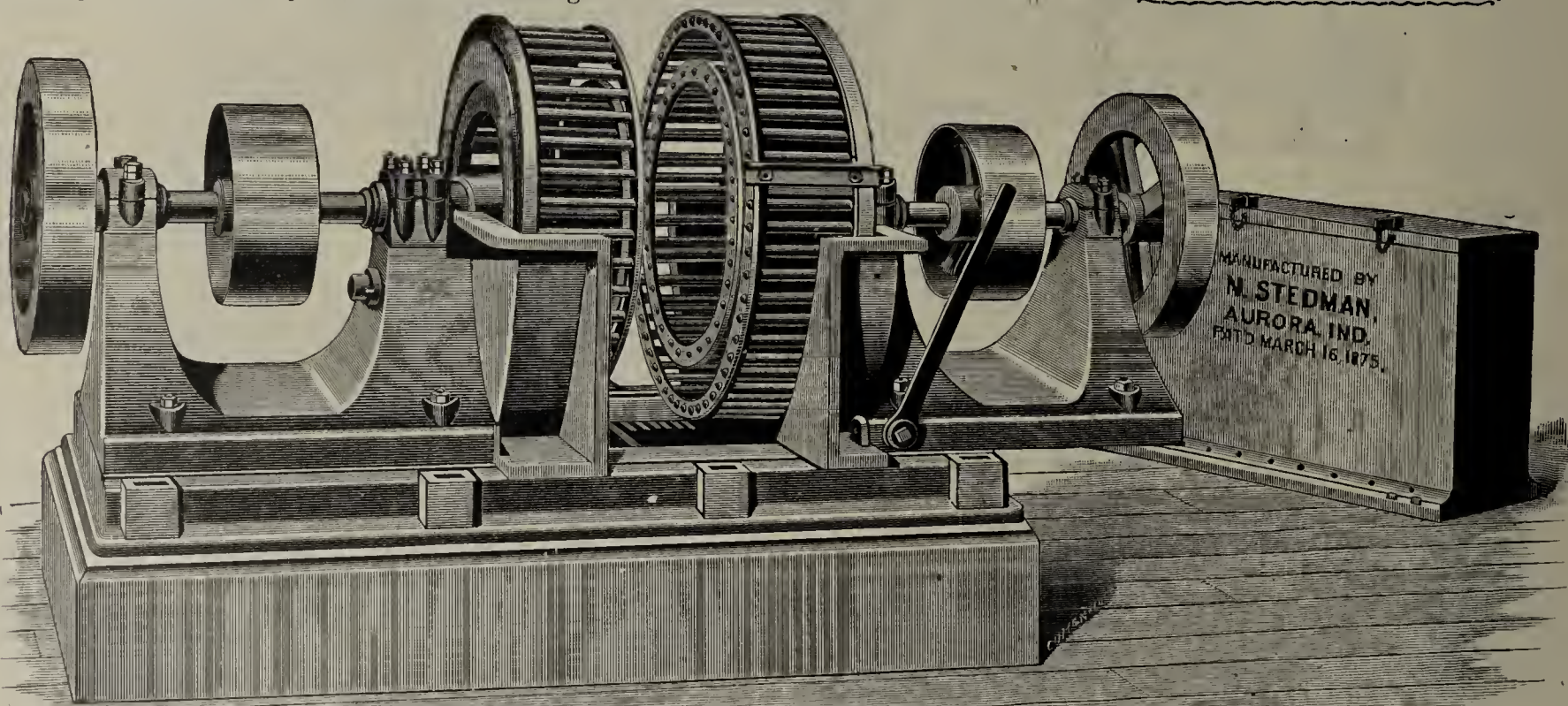
The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



PATENT APPLIED FOR.

**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**

Mention the CLAY-WORKER



# — AN EXPLANATION OF — COLD FACTS!

Draw Your Own Conclusions.

**I**N the discussion of kilns in the N. B. M. A. Convention at Chicago, for special purposes, it was noticeable when an up-draft kiln was referred to, some one would remark that an up-draft kiln would not answer the purpose for the reason that the cold air coming in contact with the bricks in the arches would damage the ware." We wish to call attention of brickmakers to this point,

The bricks in the arches or bottom of our up-draft kilns are as thoroughly protected from cold air, as are the top brick in a down-draft kiln.

So much for this; now we maintain that we can obtain a more uniform degree of heat from top to bottom with an upward draft which is natural, than can be obtained with a downward draft, which is forced and unnatural, and with an arch over an up-draft kiln a larger per cent. of hard building brick can be produced; without an arch two courses only on top are salmon.

Now as to comparative cost of putting in the down and the up-draft kilns.

|                                                                                                 |          |
|-------------------------------------------------------------------------------------------------|----------|
| The average cost of a first class up-draft kiln to hold 200,000 brick, is.....                  | \$ 1,500 |
| The average cost of a first class down-draft kiln to hold 200,000 brick, is.....                | 5,000    |
| Saving to the brickmaker in first cost on one kiln.....                                         | 3,500    |
| Saving to the brickmaker on three kilns this size, (which are necessary for a small plant)..... | 10,500   |

We are ready to verify these estimates.

For the best and cheapest kiln in use to-day for burning building bricks, the "Morrison Up-draft Kiln" with late improvements is unrivaled.

If you have any doubts about it, address

## R. B. MORRISON & CO.,

PROPRIETORS,

ROME, GA., U. S. A.

For further proof. —————



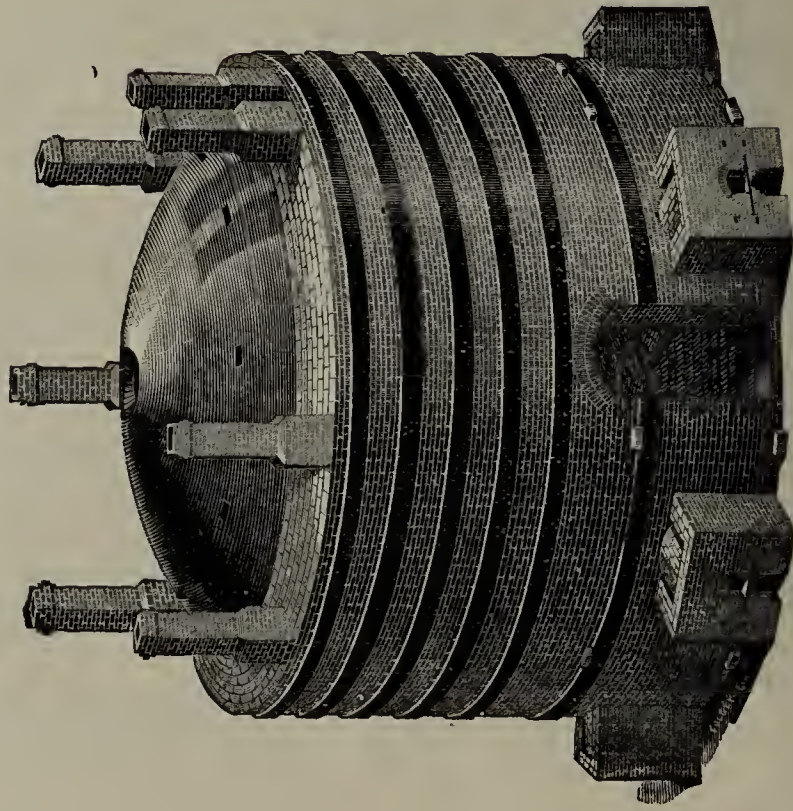
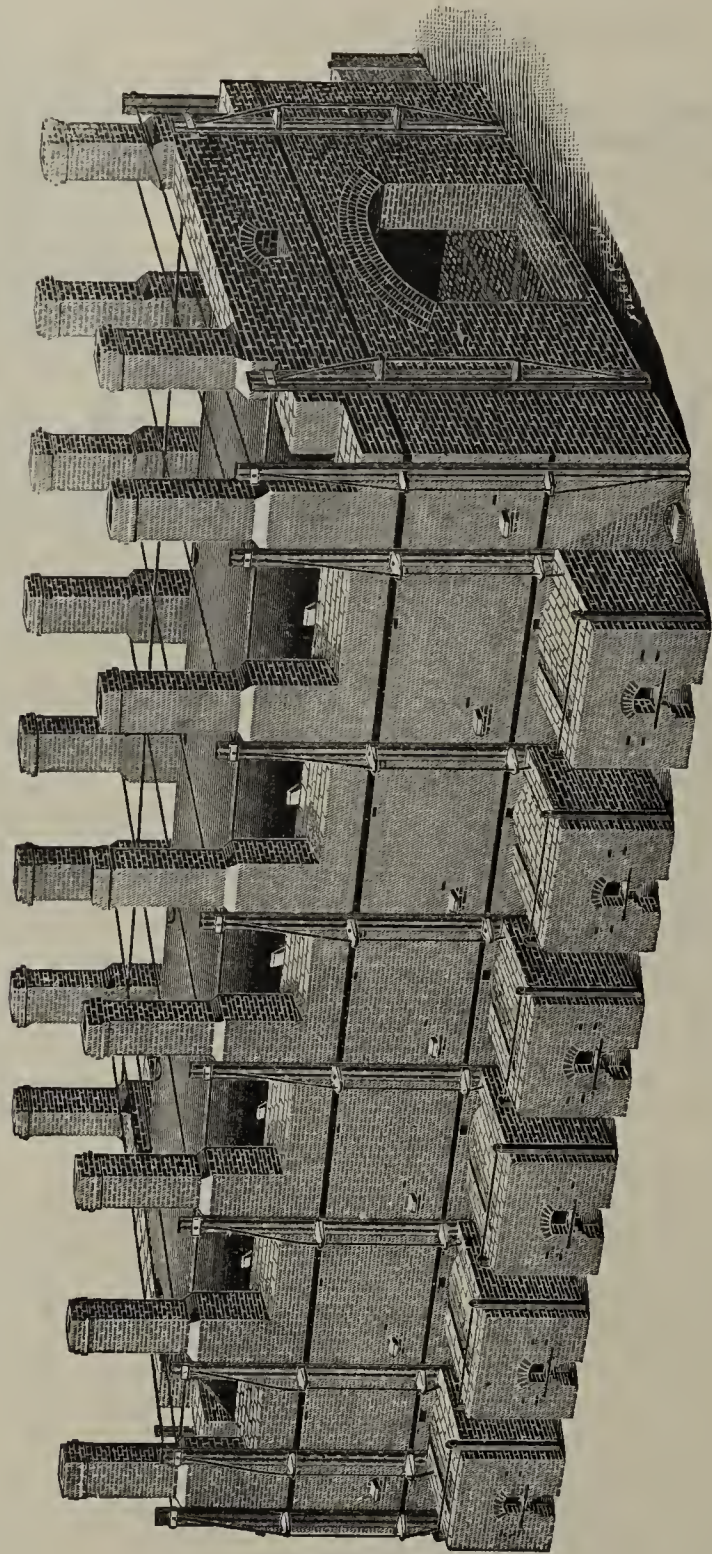
# The Eudaly Improved Down-Draft Kiln.

MR. W. A. EUDALY, Cincinnati, Ohio,  
LINCOLN, NEB., January 18, 1894.

*My Dear Sir:*—I take great pleasure in recommending your Kiln, after investigating and experimenting with most every Kiln on the market. It is a very true saying that "a man profits by experience." This I think I have had in the past few years at a cost of thousands of dollars. I have burned in your Kilns over sixty millions of Paving Brick in the past six years. I cheerfully and truthfully say in my opinion it is the best Down-Draft Kiln on Earth, for the following reasons: Easy to operate the Kiln at all times being under the absolute control of the burner; easy to fill and empty; as economical of fuel and labor as any Down Draft Kiln; cheaper to construct than any Down Draft Kiln having same capacity, and same amount of material in its construction, as the Brick are all common stock sizes. This testimonial I give you for the benefit of some poor brickmaker who has not been through the mill, and if some day in the future I find that I have saved a fellow brickmaker from paying out thousands of dollars in experimenting, I will have been well repaid for expressing my views on this subject. Wishing you and your Eudaly Kiln continued success. I am as ever

Yours very truly,

J. A. BUCKSTAFF.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings,  
Cincinnati, Ohio.



## THE · KILN · OF · THE · PERIOD.

## THE "PERFECT KILN."

Sercombe's Patent.

Designed on Economic and "Common Sense" Lines, for Burning Brick, &amp;c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
 Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

## NOTE WHAT THE USERS SAY.

Sample of English Testimonials.

From Messrs. W. T. WRIGHT & CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

To MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT &amp; CO.

Third kiln now ordered.

From Messrs. WILLIAM THOMAS & COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

## UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

## GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

## AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,

Fulton Fire Brick and Mining Co.

## FROM CANADA.

MESSRS. SERCOMBE, OSMAN &amp; WARREN.

DEAR SIR:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular (Extract.)

Yours truly,

CARROLL, VICK &amp; CO.

N. B.—Messrs. Carroll & Co. are erecting one kiln, and contemplating erecting others.

TORONTO, February 28th, 1893.

References can be given to over Forty first-class firms already. For further particulars please apply to

SERCOMBE, OSMAN &amp; WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER,

AGENTS FOR CANADA R. H. PYNE &amp; CO., Yonge St., TORONTO.



W. H. KELSO, President.

PAUL BOEHNCKE, Treas. &amp; Sec'y.

MAX A. TH. BOEHNCKE, Gen'l Mgr

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

## BOEHNCKE'S

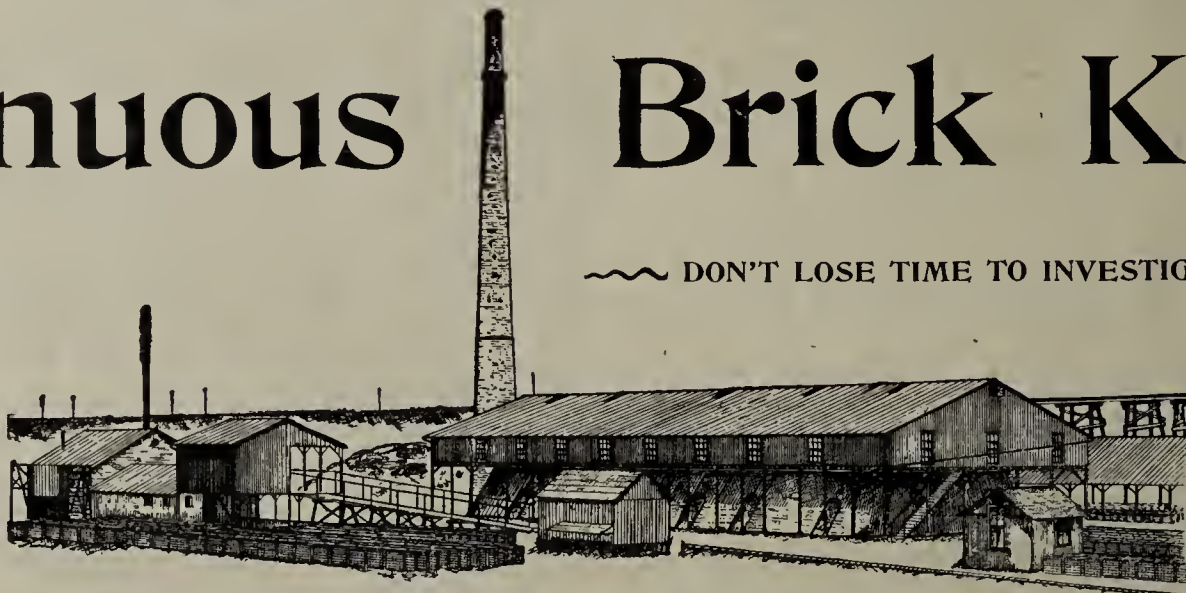
Several other U. S. Pat-  
ents applied for.

### UP AND DOWN DRAFT

# Continuous Brick Kiln.

12 Kilns in Operation  
...in the...  
United States.

5 Kilns in course of  
construction  
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

DON'T LOSE TIME TO INVESTIGATE.

Beware  
of  
Infringe-  
ments.

### ADVANTAGES OF THE KILN.

1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

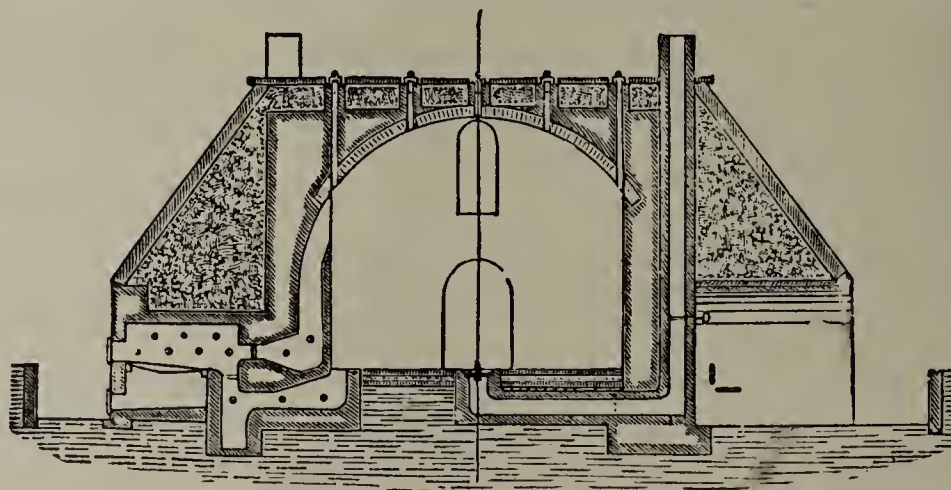
Write for Circulars to

Centinela Brick Kiln &amp; Drier Co.,

Box 35,

Centinela, Cal.

COMMON SENSE KILN.



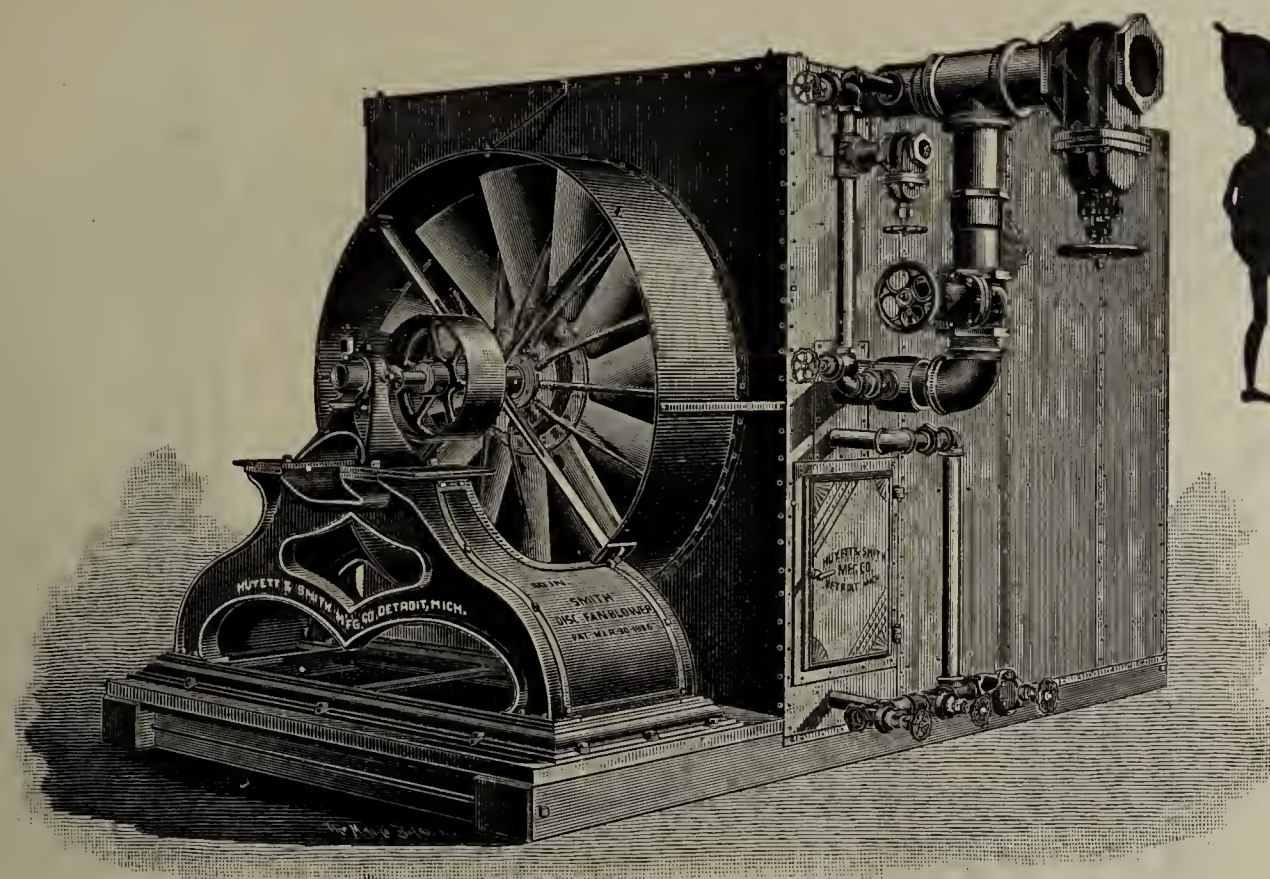
Patent No. 475,433.

FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

## A NEW BRICK DRYER.

We have also Boehncke's Brick  
Drier, which is very economical





## A Good Dryer

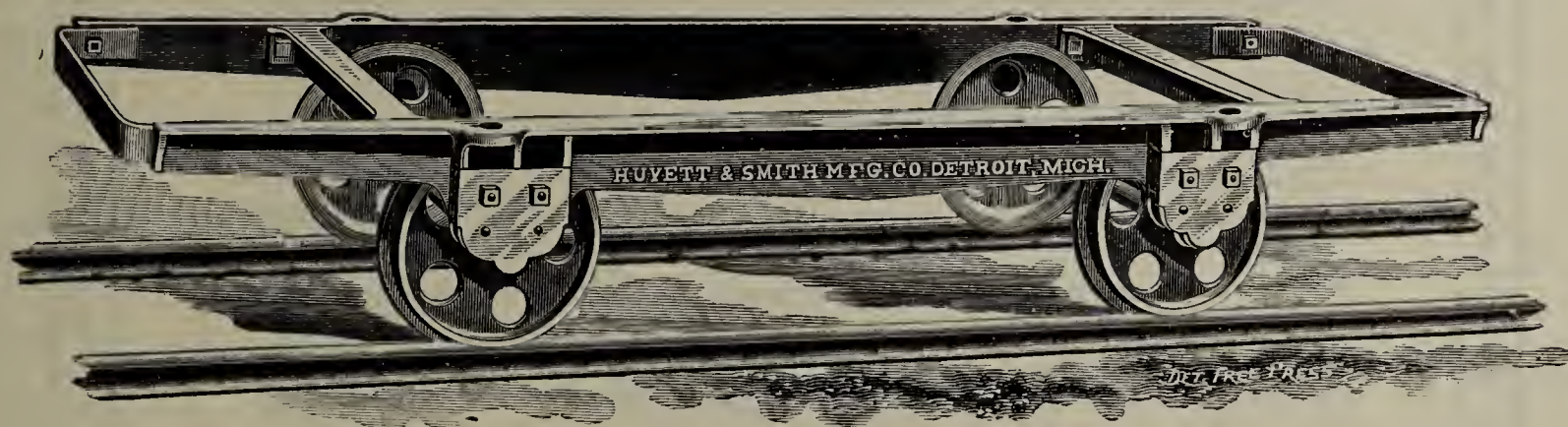
Is a cheap Dryer  
but a cheap Dryer  
is not always a  
Good Dryer.

We do not claim to have  
the cheapest Dryer as to  
first cost, but do claim it to be  
the cheapest to the purchaser when  
**EFFICIENCY,**  
**ECONOMY IN OPERATION**  
and **DURABILITY**  
are taken into consideration.  
Give us a chance to explain it  
to you.

The Huyett & Smith Mfg. Co.

— DETROIT, MICH. —

# SMITH HOT BLAST BRICK DRYER



Speaking of our *IMPROVED BRICK CAR* a prominent manufacturer  
says:

"I have used several other makes but never saw anything to compare with this. We only have a fall of one inch  
in eight feet in our tunnels; with the other cars we had to use a windlass and several men to move them down, but now  
one or two men alone handle them with ease."

WRITE FOR PRINTED MATTER.

## The Huyett & Smith M'f'g Co.,

Main Office and Works, 1,400 Russell St.,

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# The Vital Point . .

OF DIFFERENCE BETWEEN \_\_\_\_\_



## THE STANDARD NATURAL DRAFT BRICK DRIER

And all others, is that adequate provision is made to change conditions, to secure that combination of drying influences necessary to properly treat each particular kind of clay;—whereas in others, they are fixed, unalterable.

Then too, the distribution of the heating surface and manner of admitting the air thereto is such that a positively uniform degree of heat is gotten at any vertical plane of the Drier. Result—thoroughly and evenly dried product.

THE PHENOMENAL SUCCESS attained by THE STANDARD DRIER is easily explained when its SPECIAL FEATURES are understood.

Send for Printed Matter and Get Posted.

**The Standard Dry Kiln Co.,**  
INDIANAPOLIS, IND. . LOUISVILLE, KY.

Main Office and Warerooms, 184 So. Meridian St., INDIANAPOLIS.



# THE CLAYWORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXII.

INDIANAPOLIS, IND., MARCH, 1894.

No. 3.

Written for the CLAY-WORKER.

## MACHINERY AND THE ARTS.

HERE are those of us who decry the use of machinery in the production of things artistic. There are those among us who deny that the artistic can be produced through the intervention of machinery. They affirm that the artistic which is in the mind can find expression only through the intervention of the tool which is in the hand and which is propelled and directed under the guidance of the artistic mind.

Certain grades of sculptural work and certain kinds of carving may always have to be done by hand. That is our opinion. We may be mistaken, yet we are certain that many decorative motives and many features can be produced and reproduced, as well through the agency of the machine as through the agency of the hand. It is the artistic impulse of the mind which guides the hand which produces the result. Then, why may it not be true that the same artistic impulse and the same mind which guides the hand may also guide the machine? This is capable of proof.

There are many manufacturers of

molded brick who are producing by machinery very clumsy and very awkward designs. The mind which guides the machine, the mind which produces the mold from which these clumsy forms are made, is a clumsy, untrained mind. The hand which would give expression

to the thoughts of that mind would be equally clumsy. It would multiply ugliness. Another illustration: A manufacturer of molded brick has employed one of the greatest sculptors in this country to make the models for his molds. What have we? A reproduction

at a moderate cost of most magnificent decorative forms. The hand which produces the molds which make the brick never did anything better when working with the modeling tools or the chisel and hammer. Thousands of these brick are reproduced and sold at a moderate cost, whereas the method of working directly with the tools, only a few feet of the same decorative form could be produced in the same time, and at a cost infinitely greater than it is by the machine.

Some of our people would disassociate the idea of low cost from the artistic. But a beautiful form must be beautiful, because it is beautiful, not because it is expensive. Things are not beautiful because they are artistic, but they are artistic because they are beautiful.

There are those of us who immediately lose interest in a beautiful form because it is frequently



A DOORWAY OF THE SIXTEENTH CENTURY.



re-produced by a machine. Such an idea is not creditable to anyone. The frequency of re-production of a truly beautiful design does not effect its beauty or its interest. The Greek honey-suckle ornament has been in use for the past twenty-five hundred years, and its repetition has had no effect upon its beauty or the appreciation of it by the public. Certainly its re-production has been largely through the direct agency of the human hand, but that hand has often been as much of a machine as any device in a clayworking plant.

The use of the Acanthus leaf comes down to us from the early periods of Greek architecture. It was universal in the Byzantine and the Roman architecture. There were traces of it in the Gothic, and it springs to new life in the renaissance. Yet its re-production by the machines, called men in the Roman times particularly, has never had the effect of lessening its interest to the artistic mind. No decorative form has ever been produced a greater number of times than the Acanthus leaf. None is more beautiful to-day. It is a form which will give happiness to generations to come.

A form which was re-produced an infinite number of times during the period of the Roman and the renaissance architecture and which we see on every hand to day is the egg and dart molding. It was never formed any better or in more graceful outlines than is done by one of the manufacturers of molded brick to-day. It is none the less artistic because the machine which produces this form is one of iron and steel and is propelled by steam or electricity.

The accompanying engraving shows a doorway of the sixteenth century. In it the ambitious decorative clayworker will find many forms capable of re-production through an intelligently constructed and an artistically guided machine of his own creation. If he were to put a bad clumsy hand to the re-production of a doorway like this, he would have a clumsy, inartistic result. If he were to give to a highly refined educated artist the task of arranging and guiding the work of the machine, he would have a correspondingly artistic result. The machine tool is within certain limitations capable of artistic results in the same sense as is the hand tool.

LOUIS H. GIBSON.

#### CONVENTION BRICK DUST.

“WE have met the Chicago brickmakers and we are theirs.” In the first place, as we arrived, we were swallowed up by the Auditorium, and some of us never found our way out for three days and three nights. It is a veritable whale and we were Jonah. It not only swallowed the N. B. M. A. completely (for we were only “blue points”), but took in its menu, regular customers absorbed the Chicago Real Estate Exchange as a relish, but deserted on the, Robert Burns annual banquet, all at one sitting, and still it was not full (as some of the brickmakers); but let us proceed to business and see who was there to greet us.

President Ittner called the members to order. He is too well known to need an introduction. Integrity and strength of character is depicted in every lineament of his face. He stands like a sturdy oak before the storms that sometimes sweep over our convention. A better presiding officer we will never have. He was succeeded by a gentleman worthy to wear the mantle of his honored predecessor, Mr. Alsip, the dignified and courteous president of 1894.

Master of ceremonies, toast master, chairman of entertaining committee, Mr. D. V. Purington, was kept busy, but not too busy to cordially greet all his old friends and a host of new ones, or to take a lively interest in every detail of the proceedings. Successful brickmaker, magnetic leader, loyal to his friends, and their “name is legion,” may he live to participate in the celebration of the semi-centennial of the N. B. M. A. Our ex-presidents: My friend Eudaly, handsome and courteous, ever ready, with wit and diplomacy, to steer our association clear of the rocks of discord; even “cold facts” cannot disturb his serenity. Mr. Adams, a mighty man, physically and mentally, with a heart great enough to take in all the brickmakers, and ample room to spare for the ladies. There is only one thing about friend Adams that saddens his host of friends—they can’t fail to note that at each recurring meeting his face grows longer. Ex-President McAvoy failed to answer to roll call. His genial face and towering form were sadly missed. Don’t fail to come next year. Frank, however, is a team himself

and has too much individuality within him to be, simply, “the son of his father.” This stalwart young brickmaker is an important factor in our deliberations, always ready to acknowledge his mistakes and stand by his honest convictions; if he does set his brick wrong sometimes, he don’t propose to make a business of it. Capt. Craft enjoys a racket, especially with a Philadelphian, and I look for a lively scrimmage. Now, gallant captain, reef your jib-boom, clear your deck for action and give the “land lubber” a broadside. We will enjoy it, whether you and Frank do or not; for we expect to get our share of the “prize” money.

By the way, friend Gates gave me an affectionate invitation (I say affectionate, for I noticed a pearly tear sparkling in one eye and there must have been a twinkle in the other) to go up Friday to see his new brick house built out of terra cotta. Friday came, but William came not, so I went not. Do you get on to the twinkle in that off eye? If he had taken my new hat I wouldn’t have felt as I do now feel. Verily, William, I fear you are getting no better fast.

Chaplain Flood can stand cold facts, but draws the line at conclusions, especially when they are emphasized by Secretary Randall. Randall remarked that he was glad he didn’t have to make after-dinner speeches and get jumped on. He forgot that he got jumped on for the way he read another’s speech. Some of us didn’t like it a bit because he didn’t get a chance to be jumped on. Where, oh, where, was Brother Elsom? Did the effervescent effervescence at Louisville extinguish him? Don’t fail to rally and come up smiling next year, Professor, we miss you.

Brother Orton covered himself with glory, in his paper on training schools for clayworkers, and shared the honors with my esteemed friend Richardson in securing the passage of a resolution asking some of our colleges to establish a department of ceramics. This was the most important work of the Chicago meeting—laying foundations for future greatness of our calling.

I hope to compliment others who deserve humble mention in the near future.

CHARTER MEMBER.

Lives of rich men all remind us,  
“We can make our own sublime,”  
And by liberal advertising  
To the highest summit climb.



Written for the CLAY-WORKER.

## CHIMNEY AND FLUE AREAS.

D. W. STOOKEY.

THE difficulties in proportioning furnaces and flues, or air passages, and determining the proper dimensions for chimneys have been met by all who have attempted to build down draft kilns for burning clay goods. Uncertainty and guess work have often been the only guides available. Doubtless many furnaces are being burned at a great disadvantage, and are incurring much unnecessary loss in fuel, because of the improper dimensions and capacities of the flues and chimneys which serve them. Every thinking man who has charge of furnaces often wonders whether he has too much draft or not enough; whether he is admitting too much or not enough air into the furnace above the fire.

Combustion is a chemical action and chemistry is an exact science governed by immutable laws. The laws relating to combustion are well known, but the practical application of them to the construction and manipulation of furnaces is rather difficult.

Carefully conducted experiments supplemented by mathematical calculations, have revealed very nearly the amount of heat that may be produced from a given amount of fuel, the amount of air necessary to its complete combustion and the amount of gaseous products resulting from the burning. The volume and weight of each is well known to those specialists who have made this a study, and yet the practical difficulties are such that much of the work done by the furnaces in general use is imperfect and inefficient, because the provisions made for the introduction of the air necessary, and the removal of the products of combustion, are not properly arranged and proportioned.

It is not the intention in this instance to enter into a mathematical demonstration or exposition of the methods to be employed in the designing and building of furnaces with their attendant air and gas passages, but rather to treat the subject in a general way and give a few broad conclusions that may, at least, suggest the ends sought for.

In designing a furnace with flues and chimneys it is necessary that the requirements be known before the proper proportions can be determined. In this case let it be supposed that it is known how many hours will be necessary to complete the burning after the water-smoke is off, and how much fuel will be necessary to finish the kiln within this time. Experience has shown very nearly how much fuel is required to burn a thousand brick, and the number in the kiln will indicate the amount of fuel required.

The question now simply resolves into the calculation of the proper sizes



L. J. HOWARD, OF EVENS & HOWARD, ST. LOUIS, MO.

and proportions of the furnaces and air passages to burn this known amount of fuel completely and economically within the given time.

### GRATE SURFACE.

The rate of combustion of coal in a furnace is usually stated in pounds per hour, burned per square foot of grate surface. The amount varies with the style of the furnace, the draft and the skill and attention of the stoker.

With chimney draft and furnaces in which a small part of the air utilized is admitted above the grate, it will probably not be far wrong to assume that twenty pounds of coal will be consumed per hour for each square foot of grate

surface. As one of the known quantities with which we started was the total amount of coal to be consumed, we can readily estimate the total grate surface necessary.

### AMOUNT OF AIR.

It is generally accepted that twelve pounds of air contains oxygen sufficient for the complete combustion of one pound of coal. In practice it has been found advisable to supply an additional amount of air to dilute the gaseous products of combustion, which would otherwise prevent the free access of air to the fuel.

Careful experiments made for the American Government by Mr. Johnson, have led to the conclusion that in ordinary boiler furnaces, where the draft is produced by a chimney, the weight of the air required for dilution is equal to that required for combustion. From this it appears that twenty-four pounds of air are required for the combustion of one pound of coal under the conditions named.

Rankine states that the best possible draft is produced when the temperature of the hot gas in the chimney is about 600 degrees Fahrenheit above the temperature of the external air, or nearly high enough to melt lead.

The volume, at that temperature, of the hot gas discharged by the chimney is about 650 cubic feet per pound of fuel, or 26 cubic feet per pound of the hot gas itself. From this it appears that the total volume of gas to be discharged through the flues and chimneys is found by simply multiplying 650 by the number of pounds of fuel consumed, and

and the capacity per hour is found by dividing this total amount by the number of hours occupied in burning the given amount of fuel.

By taking one square foot of grate surface as a basis, we have the following results: Twenty pounds of fuel burned in one hour produces twenty times 650 cubic feet or 13,000 cubic feet of hot gas per hour for each square foot of grate surface.

### CAPACITY OF FLUES AND CHIMNEY.

The flues and chimney must have a capacity per hour of as many times 13,000 cubic feet as there are square feet of grate surface. Their capacity depends upon the sectional area and the



velocity of the hot gas passing through them.

In the CLAY-WORKER for January, 1892, under the heading "Chimneys and Drafts," page 22, we stated that the velocity of the ascending current of air in the chimney is the same that would be acquired by a body falling a distance equal to the difference between the heights of two columns of air of equal weights and at the temperatures of the outside air, and that within the chimney. The formula given there is theoretical, and in practice it is necessary to introduce several corrections which complicate the work of calculating dimensions and capacities of chimneys and flues. The friction of the gas upon the inner surface must be considered. This depends upon the form of the passage, its length and the structure and condition of the inner surface. A factor of resistance for the passage of the air through the grate and the layer of fuel above it must also be considered.

The chimney and main flue leading from the kiln to the chimney should be of the same sectional area in cases where only one kiln is attached to the chimney at once. This becomes apparent when it is remembered that they are simply conduits for the gaseous products of the furnaces, and are subject to the laws applying to the flow of fluids through pipes. In practice it is well to make the flues of larger area than the stack to make allowance for their partial obstruction by the accumulation of dust. If the flues are long their sectional area should be increased to compensate for the greater friction due to the length.

The rule has been given to make the area of flues at from one-fifth to one-seventh of the grate surface. Bends should be made with as long radii as possible, and the size of the channel should be made larger at these places in order that the friction may be reduced to a minimum.

A conical or pyramidal chimney may, without sensible error, be treated as if it were cylindrical or prismatic, with an uniform sectional area equal to that of the opening at the top.

While it may be advisable to build chimneys with conical or pyramidal forms externally through considerations of strength and symmetry, but little, if anything, would be gained by giving these forms to the interior.

The conditions and requirements of the furnaces, flues and chimney are so different at different stages of the burn-

ing that it is impossible to give them the proper proportions for each stage. If this were done they would necessarily have to be made of variable dimensions and their relative capacities would need to vary from time to time, as the burning advanced.

At the beginning, small furnace or heat producing capacity would need to be connected with large flues and chimneys in order that the watersmoke and large volumes of air used in this process may be carried away. As the burning progresses these relative proportions would need to gradually change. The other limit would be reached when the watersmoke is all off and the furnaces are closed and being worked to the best advantage in the production of heat. During this last stage in the burning the flues and chimney are only required to carry the products of combustion. Owing to the high temperature of the gases their velocity in the passages is accelerated, and this increased velocity adds to the capacity of the flues and chimney, and gives another reason why their size might be reduced.

In the earlier stages of burning a kiln of clay wares the conditions are so varying and the relative amounts of heat and chimney capacity so changing, that no definite rules can be adapted to the proportioning of the various parts. The presence of watersmoke in indefinite quantities in the flues and chimney, necessitates the adoption of approximate proportions for these earlier stages. There are two methods in which the relative proportions of the furnaces and chimney may be varied to suit the changing conditions met as the burning progresses, and both have been practiced experimentally and with varying degrees of satisfaction by practical burners.

Either the intensity of heat developed in the furnaces may be varied by graduating the fires and the amount of cold air admitted above the fires, or the capacity of the chimney may be varied by the use of a damper.

As it is a question in the minds of many as to the probability of ever having too much draft, the use of the damper is seldom used to check the draft while burning.

Cedar Rapids, Iowa.

#### SOUND DOCTRINE.

THE MAIN elements of success in this world are good sense, good temper, and minding your own business.

CHAUNCEY M. DEPEW.

Written for the CLAY-WORKER.

#### BRICKLAYING.

##### Fourth Paper.

AS WAS hinted in the last article, piers are used to rest or support the ends of the timbers or joists that abut against the building wall. Where there are girders or binding joists, these piers occur at intervals, but sometimes when there is a series of timber ends, as where the floor joists all rest upon the same, the piers are connected and become a continuous footing.

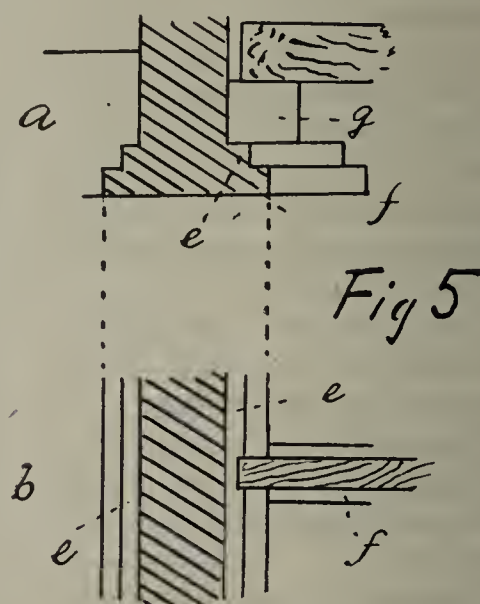
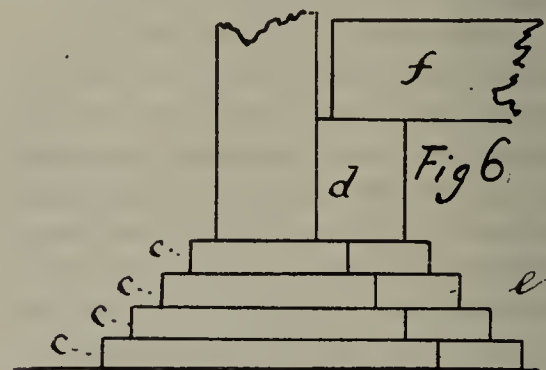


Fig. 5 illustrates the construction of a plain pier. In this, *a* is the section of the construction, and *b* the plan. The footings *e* are continuous along the wall, and at proper intervals, a pier *f* is carried beyond the footing. Upon this is placed the bearing wall *g*, which projects an ample distance from the wall proper to give a good bearing surface, and which, by the by, ought to be about nine inches deep. This, however, is not the allowance made by many layers, but should be insisted upon by those desiring good



construction. The upper surface of this bearing wall should be above the surface of the earth in order to make a space between the ground and the wood floor. Two steps at least should be needed to rise from the ground to the lobby of the house, and even more are preferable. This ensures an ample space beneath



the floor, and a dryness in the timbers that will ensure them years longer wear. Of course, in basement house construction, this rule is of no avail, but from the proper sanitary standpoint, the basement is all wrong. It results from the selfishness of man entirely, and is not a natural construction. Were it not for the artificial values of urban property, the basement house would never have existed, for it is a direct step back to the period when man occupied a hole in the ground, and any manner of finishing and furnishing will not conceal the fact that the basement is an artificial cave.

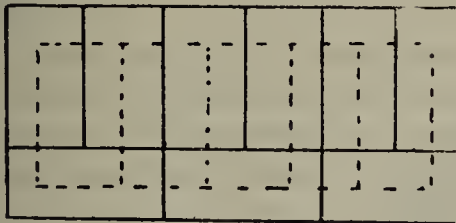


Fig 7.

Fig. 6 illustrates the same construction of piers in a wall of wider dimensions, and with deeper footings. In this case the offsets *c* are four in number, and consequently the number of bricks in the pier *e*, the bearing wall *d* supporting the timber *f*. This latter is a favorite construction in the case of true piers, or piers that are placed at intervals. The continuous pier, such as is used where the floor joists rest directly upon them, and are numerous, is more in the nature of an extended footing.

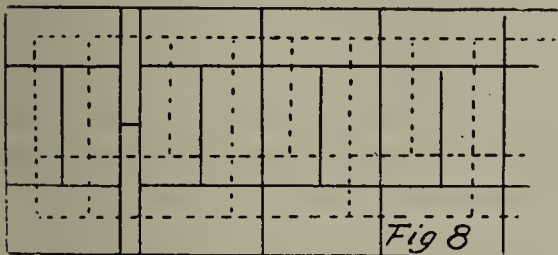


Fig 8

The footings or rather the construction of the same will vary somewhat with the size of the wall. In Fig. 7 we give the plan of footings for a one brick wall, or one nine inches in thickness. The upper wall or wall proper is shown in dotted lines, as resting upon the first footing, the latter being shown in detail. The courses of footing are made up by a line of stretchers *b*, with a set of headers *c*, placed at right angle to the same, this making a course equivalent to a brick and a half in thickness. This is the first offset. The next offset is shown in plan in Fig. 8, the dotted lines representing the lines of the offset num-

ber one. The course in this latter figure is equal to two bricks in width, and consists of two rows of stretchers, between which is placed a line of headers, at right angles. It will be noticed that near the end of the wall, two half brick closers are introduced to carry the course a proper distance beyond the end of the course that has gone before



Fig 9

In Fig. 9 is shown the next following footing, the one that has gone before being marked by the same dotted lines. The course is two and a half brick wide, and is made up of two rows of headers, between which is a line of stretchers. The stretchers are finished with two half brick closers, between which is placed a quarter brick closer. The headers also contain near the end, a half closer, all of which is shown more clearly in the illustration.

In Fig. 10 we have still another footing, the last being likewise shown in dotted lines. This is the lowest one of a four course footing, and is made up of three distinct rows of bricks, each composed of two stretchers alternating with a header. Half brick closers are introduced near the ends of the wall in order to form the foot.

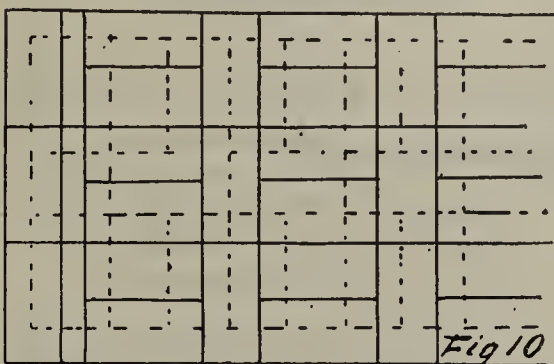


Fig 10

These illustrate the best methods of working out the footings, and if more than four courses are used, the same rules may be repeated to advantage.

"NIMBUS."

TAKING it all in all, isn't it somewhat singular that, during all the season of financial difficulty, no large advertiser has failed? It goes to prove that wisdom and foresight enter into advertisers' plans.—*Profitable Advertising.*

Written for the CLAY-WORKER.

## HINTS ON BRICKMAKING.

No. 85.

BY R. BRICK.

SYSTEMATIC MANAGEMENT OF FACTORY AND OFFICE (CONTINUED).

PAY rolls should be made by the time-keeper and approved and signed by the superintendent, or manager, of the works. From these pay sheets the paymaster pays the employes, checking amount due each one as they receive it. These pay sheets should be properly labeled and filed for future reference, where they can be readily inspected at any time by the directors or officers of the firm. At the end of each month the manager reports total pay roll for that period, together with output for same time, as well as any special repairs or improvements that have been made during the month. From the data to be obtained from these reports, comparative cost of production for the month can easily be arrived at, which is of great value to the manufacturer from an economic standpoint. If properly arranged the making of these condensed reports involve very little labor or time.

The proper management of the finances of a manufacturing plant is just as necessary to success, and equally as important as the proper management of the plant itself. Any carelessness or lack of ability in the office is fatal to success. The same careful methods must prevail and the management of the office should be subject to the same scrutiny, and straightened by the same checks as that of the plant. The office should make to the directors a monthly report embodying the plant report also, showing the results of the month's transactions in a concise and intelligible form. If this plan was strictly adhered to, no firm could be unexpectedly confronted at the end of the year by heavy balances on the wrong side of the ledger. They would know just what to expect and be prepared for it. There would be no false pay rolls or cashiers thousands of dollars short in their accounts.

Such things are the results of gross carelessness or incapacity on the part of the directors and executive officers. There should also be constant communication between the plant and the office. There should be, as far as prac-



ticable, complete harmony. A thorough understanding should also exist in order that blunders and mistakes be avoided, in sending orders from one to the other, and, receiving reports as well.

The right kind of bricks should be loaded for shipment at the proper time. Correct and prompt filling of orders will do more to build up trade and establish an enviable reputation among consumers of brick than any other point. Let the bricks be carefully counted before shipment, as it is unpleasant as well as unprofitable, to be compelled to make allowance for shortage in settlement, and it makes the purchaser suspicious. To meet competition, it is necessary to produce first-class brick. It is also necessary to have a representative on the ground, to make sales and to present fetching arguments in favor of your ware. The collecting of the money for the bricks, however, should not be lost sight of while hustling to sell. A sale should never be made if there is doubt about getting pay for the brick. It is always better to have the brick, than to have, instead, a bad account. If a stranger sends in an order for a lot of bricks and forgets to give reference, in a majority of cases it would be best to call for reference before shipping. In hard times, when orders are scarce and competition sharp, we are tempted to take chances of collecting, and sell. It is better to lose the sale and keep the brick. Good collecting in the brick business, like all other business, is one important element of success, and successful collecting is a matter of persistence and watchfulness.

On the other hand, while you are diligent in collecting, try to be just as prompt in meeting obligations. Pay all bills monthly, meet your paper when due, and you will not only establish your credit, but will be able to buy your material and supplies for your business at the lowest market price.

Another point that is noticeable: You will hear brickmakers say they are behind their orders, cannot supply the demand, and yet you find the wheels standing still. There is something radically wrong. Machinery should not be idle when the demand is greater than the supply. Some men allow trifling matters to stop production. An accident occurs that care and foresight might have prevented; at least the delay might have been avoided by having a duplicate part on hand. The very best way to prevent costly delay,

is to put in machinery that is built strong enough to do the work without breaking. It is better, and in the end, cheaper to pay \$2,000 for a machine properly built, than to buy one of equal daily capacity for \$1,000.

The writer knows of a machine that run 18 months and made more than ten millions of bricks without a single break. Machines, like men, should be judged by their record in practical brickmaking. It always pays to get the best. First cost is a secondary matter.

Another point. The prime object in operating a brick plant is profit to the owners. Therefore, however imposing may be the plant in appearance, however numerous the array of officers and directors, however great the capital stock, if the stockholders receive no dividends the enterprise is a failure.

#### A NEW IDEA IN BUILDING MATERIAL.

THERE is no doubt in the minds of those familiar with the great advances made in the clayworkers art during the last decade, that it is the coming material for the construction of dwellings, if not of the more pretentious church and municipal construction. One of the later steps in the art is a veneer of terra cotta, that permits the use of other and stronger materials for framing, and at the same time retains the impenetrable clay front.



Fig 1. Grooves in edges of the tile, which register, and are filled with cement.

The style of these terra cotta tiles are best shown in the illustrations. They are not shingles, but tiles that are perfectly tongued and grooved in the manner of weather boarding. In tiles, however, the long length of a weather boarding is not practical, so that the sections must be made of such forms as to permit a thorough conjunction of them into one whole. The method of doing this is shown in the sketch. The edges of each tile is provided with a triangular groove, and wherever two tiles come together, a lozenge shaped

hole is formed between them. Into this a proper cement is poured, this at once making a perfectly tight joint, and keying the sections firmly together.

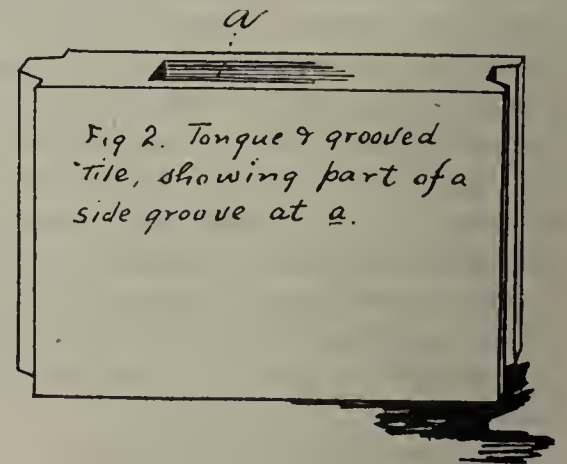


Fig 2. Tongue & grooved tile, showing part of a side groove at a.

The method of manufacturing these tiles is as interesting as the finished product. A semi-plastic auger machine is provided with a die of proper form to cut the tongue and groove. The sections as they are cut from the continuous clay body, are revolved half a turn upon proper tables, and a cam motion operates a set of knives that cut upon either edge of the tile a deep groove. The action is entirely automatic, and the mechanism quite simple.

#### PERTINENT POINTS.

Some buyers order their advertising as some newly-made millionaires order their libraries—by the yard of shelf occupied.

Some buyers gauge the value by what others pay, and chuckle when they believe that James T. Pyle paid a higher price, or that Sapolio "got left."

Some buyers buy because they measure the value of the space, not by the opinion of others, not by its glamor, but by its value to their business only.

Why need a buyer of space bother his wits about Tom, Dick and Harry and their "bargains," if he buys by his own rule of value and converts advertising into profit.  
—Artemus Ward in *Fame*.

#### LEGAL EFFECT OF RENEWING NOTES.

The renewing of notes from time to time, the Supreme Court of New York holds, in no way extinguishes the original debt, but simply extends the time of payment, and changes the evidence of the debt, while all collaterals pledged for its payment will remain as security, notwithstanding the extension of the time of payment.



Written for the CLAY-WORKER.

## UTILITY OF BURNED CLAY.

### First Paper.

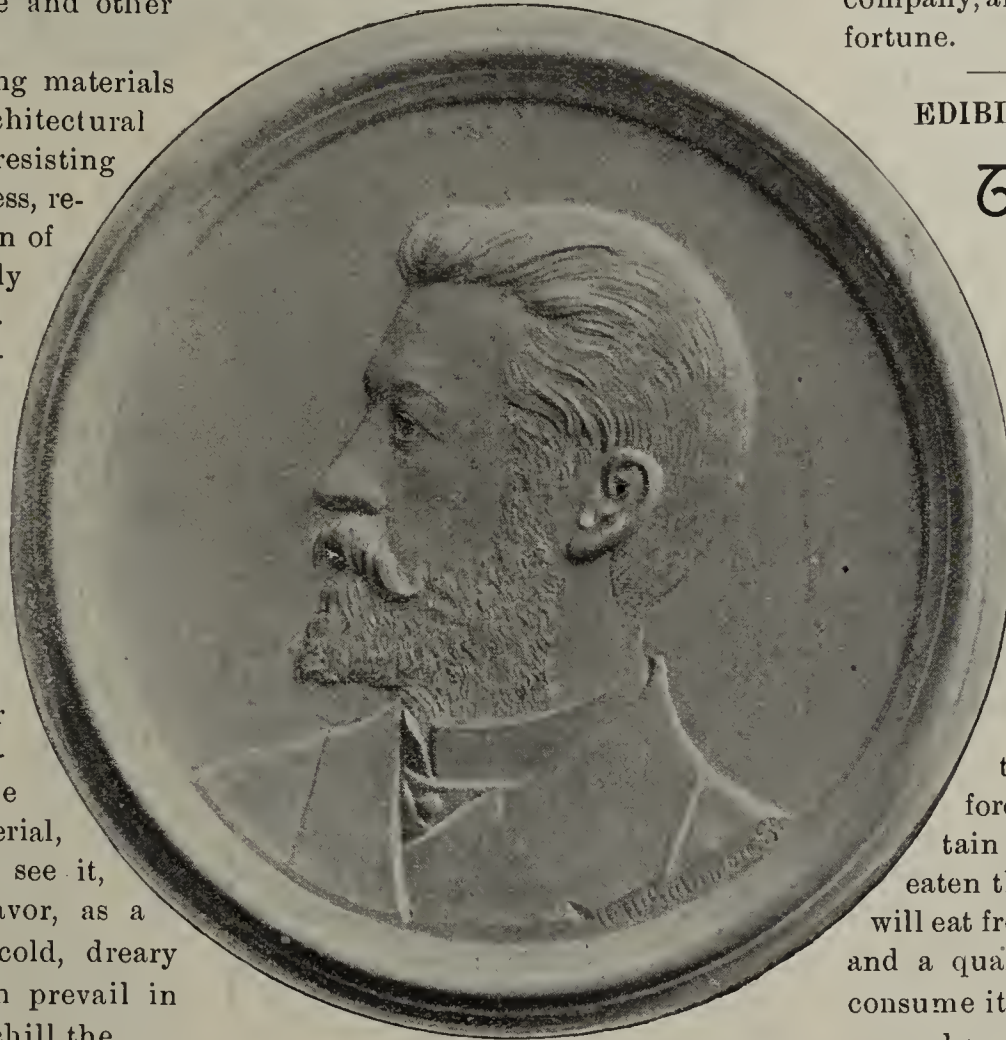
#### EARTHENWARE TOMB STONES.

**N**EARLY two hundred years ago earthenware tomb-stones were made to some extent in certain parts of England, and many of them are still standing in old grave-yards in an excellent state of preservation. Though crude in form, they have successfully resisted the disintegrating action of the elements and survived head-stones of marble, slate and other more perishable materials.

One of the most enduring materials for out-door purposes is architectural terra cotta. Its weather-resisting properties and great hardness, resulting from the vitrification of the body, make it especially suitable for cemeterial uses. It also possesses other advantages over sculptured stone, in its plasticity before burning and in the relative cheapness with which it can be manufactured. An objection which might be raised against the employment of terra cotta for grave-stones or monuments is its deep coloring, but to very many the warm, red tint of the material, as we are accustomed to see it, would be rather in its favor, as a grateful relief from the cold, dreary marble ghost-stones, which prevail in a modern cemetery, and chill the hearts of all visitors. Those, however, who still cling to the time-honored custom of marking the resting places of departed friends in white,—the emblem of purity (alas, how often is the white defiled by the stains of time and soil, and the insidious encroachment of unsightly fungi) can find a fitting substitute in the white terra cotta, which is now produced by several of our prominent manufactories. This variety possesses substantially all of the qualities of the darker tints and closely resembles marble in appearance, but the corroding tooth of time will leave it untouched long after the brittle marble has crumbled away and left an undecipherable inscription.

The superiority of terra cotta over natural stone is best demonstrated in the ease with which the former is

worked while in a plastic state. It can be formed in moulds with rapidity and at trifling cost, or can be modeled by hand into any design required. The lettering of the inscription can either be impressed, inlaid in a different color, or raised above the surface, and with as satisfactory results as by the laborious and slow process of chiseling in granite or marble. By the preparation of a variety of moulds for the tablets and a series of alphabet dies for lettering, an order could be taken in hand promptly the design prepared at once and the



Edwin Atlee Barber

AUTHOR OF THE POTTERY AND PORCELAIN OF THE U. S.

piece sent through the kiln at the next firing. Thus the advantages of architectural terra cotta tomb-stones over marble would be greater durability and cheapness, and a considerable saving of time in production.

Mortuary monuments could also be designed and modeled into any form desired and such symbolical sculptures added as might be selected. Memorial shafts of any size could be made in terra cotta, in sections which could be readily handled by two men, and laid in mortar of the same color so neatly that the joints would not mar the beauty

of the finished whole. The cost of constructing such monuments would be but a small proportion of that of the same design in stone.

Experiments have already been made in this direction by several terra cotta companies in the United States with most gratifying results, but no effort appears to have been made to introduce the innovation. We venture to predict, however, that architectural terra cotta will come into general use for these purposes at a not very distant day. Here is a new and extensive field for an enterprising company, and an opportunity to make a fortune.

EDWIN A. BARBER.

### EDIBLE EARTH AND CLAY.

**T**HE peculiarity pertains to the Otomaes, in Northern Brazil, of eating earth habitually without its working deterioration to their health or appearance. The earth is an unctuous, almost tasteless clay of a yellowish-gray color, and is collected by the natives with considerable care, as they discriminate between the flavor of different kinds. The clay is kneaded into balls of from four to six inches in diameter, which are then baked before a slow fire until they attain a reddish color, and when eaten they are moistened. A native will eat from three-quarters to a pound and a quarter of this clay a day, and consume it as food in the rainy season, when other food is difficult to be procured, and as a luxury at other times. This earth-eating habit is, it seems, more prevalent in the warmer regions of the earth, but, with the exception of these Otomaes, proves injurious to health.—*Exchange*.

### SOUND SENSE.

**U**SE the best paper first and take enough space to make the ad. effective; use all you profitably can in that paper before you consider any other. I would rather have one good ad. than two poor ones. Two short poles are not as good as one long one when you're after persimmons."—*Charles Austin Bates*.



Written for the CLAY-WORKER.

### DECORATIVE BRICK.

GOING back to the sixth century after Christ would appear to be a long ways in search for ornamental brick designs, yet here are designs brought from that period.

Nothing can be truer than the statement that a good design for ornamental brick work costs no more to mould it, dry it or burn it than it does to do this for for on ugly design. Is a mere matter of knowledge. The fact remains that the catalogue designs of nearly all manufacturers of ornamental brick are crude and ugly. None of the best architects will use these designs as ordinarily met. The cause of the art in brick work is being harmed every day by the use of inferior designs. It is true that really very beautiful work, work of the highest artistic merit, may be done by the use of well designed, ornamental

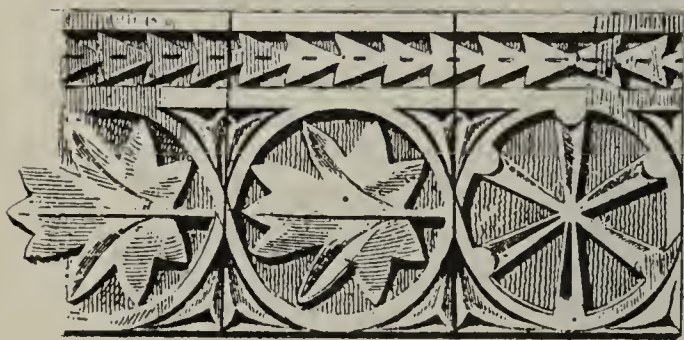


FIGURE 1.

brick designs. It is with the view of adding to the artistic, and hence the material, value of clay work that we present these designs taken from the Byzantine architecture of the period of the sixth century after Christ.

Figure 1 is a conventionalized design which may be combined in a way to add some variety to a pattern. It may be seen that this design is in low relief and that it is readily capable of execution in clay. The character of the pat-



FIGURE 2.

tern with its border is such that it will have an interesting and refining effect upon any structure where it is used.

A very interesting diaper pattern is indicated by figure 2. It is difficult to

conceive of a design more readily pressed into form in clay than this one, and, as the name implies, it can be repeated without limit and cover large wall surfaces in an interesting way.



FIGURE 3.

We have the joint marked on the cut in a way to make the construction of this pattern perfectly clear.

Another design of the same character, and one capable of endless repetition is indicated by figure 3. It is a geometrical design worked out in a way, however, which does not show the mechanical qualities which so frequently belong to designs of this character. The plain surfaces between the serpentine lines have the quality of disturbing the hardness of the effect so frequently noticed in strictly geometrical designs. The general form of the entwining lines and the naturalistic qualities of the central leaf figure give it a quality more suggestive of the naturalistic than what is strictly geometrical. The freedom from the geometrical effect is more in appearance than in fact; because, in truth, nothing could well be more geometrical than this design.

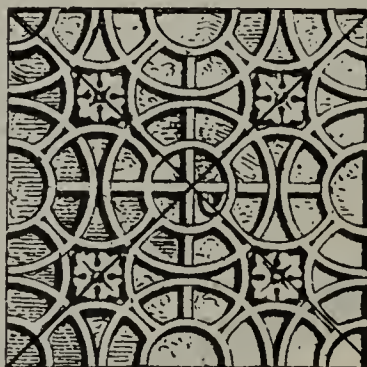


FIGURE 4.

The compass and square are altogether responsible for the design represented by figure 4. It is a kind of pattern which was very common in old Byzantine architecture. This particular design comes from Saint Sophia in Constantinople; one finds the same character of design in mosaic floor and wall decoration. It was a practice, however with these early designers not to repeat a single design literally, but rather to

alternate it throughout the different squares of a surface with other geometrical designs of the same general character, though with varying detail. The size of the squares is the same but the

actual design different. In this connection it may be well to understand that these particular designs were originally constructed in stone, though anyone who stops to consider their general design may understand how readily they are capable of execution in brick.

Wall surfaces, large and blank and oftentimes uninteresting, may be made to show to much better advantage through the occasional use of such a design as is indicated in figure 5. It is shown that the outside margin of plain surface forms a kind of border to the design proper, and renders it unfit for use in diaper pattern. It has, however, distinctive and valuable use in the way suggested above. The composition of this design is exceedingly beautiful. In the center is a maltese cross surrounded by a circle, and the circle again enclosed by a vine and leaf design of a conventionalized character which possesses rare beauty.

Figure 6 is rather unique as a brick pattern, having as it does a convex surface. It not only presents a generally unique appearance on this account, but possesses the additional merit of presenting some variety in design owing to the difference in character of pattern used. A design of this type should have a molding above and below it when

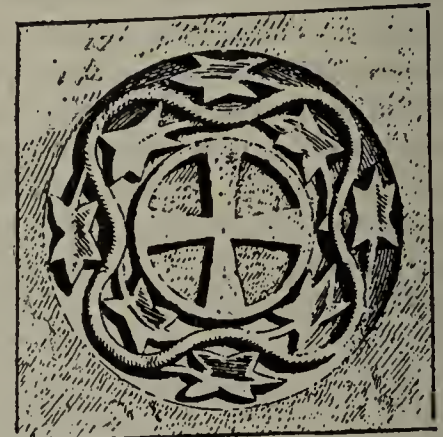


FIGURE 5.

used in actual construction. If not on a convex surface, the appearance of the wall in case of the moldings not being used would be far from satisfactory.

It is lamentably true that any of



these designs can be spoiled by careless handling on the part of the bricklayer or through unwise suggestion, on the

dried, is at last ready for the finishing operation which is to render permanent and enduring the form and beauty so



FIGURE 6.

part of the architect. In case any of our friends should use these designs they should first be modelled very carefully in clay so that they may be formed and reformed until exactly the proper design be secured.

Written for the CLAY-WORKER.

### THE CLAYWORKING INDUSTRIES OF OHIO.

#### Third Paper.

BY EDWARD ORTON, JR., E. M.

THE first two papers of this series deal as fully as the space allows with the primary questions about clay as a mineral: What it is and how it was formed, and what its properties are.

This information is interesting to a student on its own account, but to the practical man is valuable only in the light of what he may gain from it in solving the problems of his daily work.

A knowledge of the composition and properties of clay as a mineral must be supplemented by a study of how this mineral is affected by heat, before one is entitled to use his information in forming estimates of the value of clays for any special use.

#### THE CHANGES OCCURRING IN CLAY BY BURNING.

As we have seen by a study of the analysis of a clay and the use of the oxygen ratio we can form a fair idea of its refractory powers and the temperatures which it will probably require to develop its best results. But in attempting to develop by fire, these qualities which its composition indicates, any clay may be utterly ruined or beautifully perfected with almost equal ease. What then are the changes which all clays must undergo before they become articles of value to us?

A mass of clay, having been made plastic with water and having been molded into some desirable form and

easily made or marred in the early stages. When it first feels the effect of heat in the burning process it begins to lose the water which was added to it to make it plastic and soft. This water, having been merely mixed with the clay and having no chemical ties to break in coming out again, is amenable to the usual laws which influence water; and, therefore, it evaporates at all temperatures, and at 212° F. it is vaporized into steam. The first precaution which it is necessary to observe therefore is to apply the heat so gently that all free water shall have an opportunity to escape before the temperature of 212° F. is reached, for the production of steam in the interior of a piece of unburnt clay would, of course, tend to destroy its shape, crack it or otherwise ruin it for the purpose for which it was intended.

After this moisture has been thoroughly driven out the heat may be applied much more rapidly without danger to its future quality.

If for purposes of illustration, the clay be weighed carefully at this stage and then weighed again at frequent intervals as the heat is slowly raised, it will be found to remain constant from the time when all the moisture is thoroughly expelled while the heat is raised successively to the melting point of tin, lead, zinc and antimony, and that it is considerably above this latter point, probably not far from 1,000° F. or a low red heat, hardly perceptible in daylight, but easily seen in the dark when the clay next begins to lose in weight.

This change is due to the expulsion of the water, which has so far been chemically united with the clay. It is not like the water used for tempering; it is a real constituent part of the clay, and when it is driven out by the heat the clay becomes lighter by this amount, and, moreover, the plasticity of the clay has been forever ruined. Nothing can bring back plasticity to a clay which

has once passed this critical point.

The amount of this combined water is in direct proportion to the clay base or kaolin which the clay contains; a pure kaolin loses about 14 per cent. in burning, and other clays less accordingly.

While the loss in weight of clays at this stage of the burning is always due to the expulsion of the combined water there may be a greater loss of weight than can be attributed to this cause. If any organic matter, like coal, or asphalt, or petroleum compounds, or even vegetable matter like roots and mold be present, they will usually disappear at this point—even sawdust, mixed with the clay to make it porous, begins to burn at this heat, but is not completed until a higher temperature is attained.

Also, if sulphide of iron is present it begins to change its condition, one-half of the sulphur being driven off, and in the presence of the super-heated steam and air it is speedily oxidized to sulphuric acid.

An easy illustration of the order of these chemical changes can be had at any time in frosty weather by watching the chimney of a down-draft kiln. The first steam begins to come very soon after the fires are lighted; after a while it nearly stops, then as the heat increases a second crop of vapor begins to come off; this is the combined water; if the clay contains organic matter or sulphur or both, this second flow of steam will be mixed with a blue or brown or reddish permanent smoke which floats away as the steam is absorbed by the atmosphere.

The steam gradually disappears, but the flow of permanent sulphur smoke generally keeps on for some time after; when finally no further flow of vapors can be seen, except the smoke of the fires when newly replenished, the weight of the clay will have become permanent.

#### SHRINKAGE.

While these chemical variations have been in progress the clay has been undergoing an equally perceptible physical change. As soon as the combined water begins to come off, the molecules of the clay begin to shrink and settle together the pores begin to close up, and the body of the clay becomes denser, harder, stronger and heavier in proportion to its bulk.

The expulsion of these gases, as has been explained, does not begin until a



low red heat is attained, and it will proceed at this temperature, or with very slight raise, until it is complete. But if the heat is increased rapidly at this stage of the burning the shrinking and closing up of the pores of the surface of the clay proceeds faster than the inside, and the gases from the interior of the mass, struggling to escape through the denser outside, causes the inside to swell up like bread under the action of yeast.

#### BLOATING.

This action, which we shall call "bloating," and which is known under a thousand names to the clayworking fraternity, manifests itself in many ways and many degrees in the different products of clayware.

It is by a failure to recognize and obey this simple precaution of allowing full time for the gases to escape before allowing the temperature of the clay to sensibly increase, that 90 per cent. of the difficulties and losses of burning clayware occur. All clayworkers appreciate in a general way the importance of burning slowly at first, but most of them fail to understand that the damage is not done early in the water smoking process, it is only done after the kiln is at a dull red heat, just the time that many burners think best to begin to hurry up the process.

The real time to hurry up is before this heat is attained or after the gases have all gone out. As a matter of fact there is NO TIME when clay burning can be advantageously hurried; each stage requires a certain time to do it justice, but the one stage that *cannot* be hurried at all without disaster is the point at which the gases of the clay are expelled.

Bloating is naturally much more likely to occur in the burning of large masses of clay like fire blocks, gas retorts, glass pots, tiles, etc., than in thin sections like sewer pipe, fire proofing or pottery. The action may occur in so slight a degree as to be indistinguishable to the unassisted eye, or it may be plainly visible by some change of color without any ill effect on the form of the ware, or it may cause any degree of deformation until at its worst stage, the clay has swollen to several times its size and become so light and porous that it will float.

The too rapid expulsion of combined water has been mentioned as the commonest cause of bloating, and, beyond all doubt, this is true. Sulphide of iron and organic matter have been men-

tioned as accessories to this action, but there remains one other substance which is possibly the cause of a share of the trouble. This substance is sulphate of lime.

If the clay has been safely brought through this stage of the burning, and the gases have all been driven off so slowly and quietly as to make no damage in the physical structure, except the shrinkage and general consolidation of its molecules, there is generally no further need for fear in burning it. The heat may be increased as rapidly, or even variably, as is convenient, without ill effects, until the limit is attained, beyond which the refractory qualities of the clay forbid us to go.

#### VITRIFICATION.

As the heat is raised, after the expulsion of the gases has been completed, the chemical union of the various constituents of the clay into one compound silicate goes on. The successive stages of this action are illustrated by the constantly increasing hardness and density, by the tendency of particles to be obliterated in the formation of larger particles, by the change in the color, and by the shrinkage. As the heat becomes nearly as great as the clay can endure, these changes have usually so altered the structure that instead of a rough stony fracture, the clay will break with sharp edges like glass, and will no longer absorb water, which, in the early stages, was greedily absorbed. These changes are usually described together under the term *vitrification*. To vitrify is to render glassy, literally speaking, but as the meaning is applied to clayworking, it means this incipient fusion or fritting together of constituents by heat, without at any time going to the actual point of fusion. It must not be held that a clay is not vitrified because it is not glassy in fracture; it is partially vitrified if its constituents have begun to unite by heat into a compound silicate, and the perfection of its vitrification increases as the heat is raised. The best measure of this condition is the degree to which the clay has become nonabsorbent of water, Glass will absorb none; a perfectly vitrified clay will absorb none; and the less vitrified it is the more it will absorb.

#### THE FINAL ACTION.

The temperature at which vitrification begins depends, of course, on the fusibility of clay, but it will undoubtedly begin and go on at temperatures not far above the point where the gases

are expelled and a good deal below the fusing point. As the latter limit is attained the clay begins to indicate its inability to retain its form. Pressure applied in any direction causes it to flow like a viscous liquid. The logical end of the process of vitrification is fusion. But while clays act with much uniformity during all their reactions under heat up to this point, they here show a decided difference. The last stage may be fusion or it may be just the reverse, a swelling up or bloating into a porous cinder. The clays which are hardest to affect by heat can usually be actually melted if the requisite heat is applied. But clays which are vitrified at low temperatures usually indicate their distress by swelling or bloating up.

The bloating produced by excessive heat is not to be confounded with that which comes from the expulsion of the gases. One great distinction can always be found between these two. The latter agency begins in the center and works out; the former begins on the outside, first, as the outside of the clay must necessarily receive the excessive heat before it can be transmitted to the inner portions. As the heat is maintained the bloating action will proceed into the inside portions until the whole mass is affected.

Naturally this bloating is accompanied by expansion in all directions; the limit of size cannot be given, but cases have been seen of clays which will swell to two or more times their original bulk.

The reason why some clays melt and some swell up has never yet been satisfactorily explained. The fact that the clays which most commonly indicate excess of heat by bloating are shale clays, and that they contain large amounts of iron oxide, as well as other impurities, is of interest. Purer clays are more likely to melt. The finest fire bricks, made from our most refractory clays, when used in positions of great exposure, are generally found to be like lumps of glass when they are removed, they have become fluid enough to unite so that even the bricks have lost their identity.

#### THE INFLUENCE OF CARBON.

Besides the actual quantity and intensity of heat, the kind of heat has great influence in determining its efforts on clays. The atmosphere may be either oxidizing (clear and bright) or reducing (smoky and carbonaceous).



The former condition has been supposed to exist in the preceding statement.

A reducing or carbonaceous atmosphere has the power to affect the metallic oxides present and change them from the higher oxides to the lower oxides. Iron, especially, is sensitive to these influences, and it will be remembered that the lower oxide of iron combines with silica while the higher does not. Hence a reducing atmosphere naturally tends to lower the fusing point of the clay by making the iron salts act as a flux, which they would not so readily do as long as the atmosphere was kept oxidizing.

The sensitiveness of the iron oxides to this influence is very marked. The colors which the higher oxides produce are all clear and bright, ranging from yellow to red and brown, while the protoxide is indicated by a darkening of the clay to black, blue or greenish tints. The production of a reducing atmosphere in a kiln is not often maintained for any length of time, but it is a quality characteristic of iron, that after it has been reduced from a higher to a lower state of oxidation, that it is much more susceptible to further changes of the same kind, and it generally happens that the atmosphere

burning of clay have on it are thus seen to be very great. While the composition of the clay limits the qualities which can be obtained from it, and while no amount of skill in burning can make a bad clay into a good one, yet, unless the burning be substantially right the finest clay in the world can be easily injured or ruined.

Unless these principles of burning be understood, either practically or theoretically, the business is bound to remain a lottery, as it now is in so many places.

No one, from the burner down to the office boy, knows what a kiln is going to turn out, and the only thing that can be confidently expected is a steady and

Written for the CLAY-WORKER.

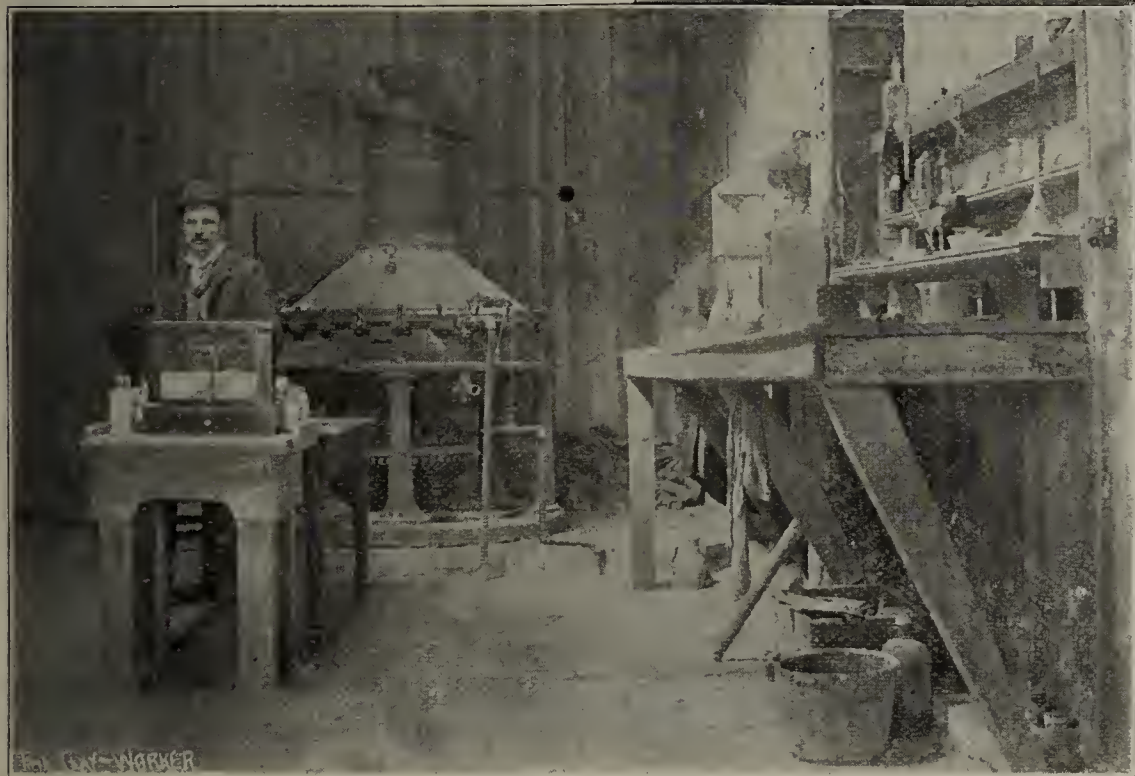
### STONE BRICKS.

A New Building Material Now Being Made at Washington.



A VERY short distance of the United States Arsenal in Washington, the nation's capitol, there

is a large brick structure into which few of the populace are admitted, and then only in company with an interested party. There is an air of secrecy about the place, and yet from the outside there



LABORATORY AND WORKSHOP OF MR. E. C. BRICE.

varies from one to the other condition, the iron changing with it. These changes are detected by the changes of color which the clay undergoes, samples being drawn at different stages of the burn show oxidation and reduction to follow each other in frequent and rapid sequence. The influences which the

large average loss of overburnt and underburnt ware.

On the other hand, if these principles are understood and obeyed, and the universal rule of giving each step all the time it needs, the burning of clay speedily becomes a matter of comparative ease and security.

may be heard the hum of industry and labor. One day not long ago, your writer, overcome with a natural curiosity, effected a quiet entrance into the place, and with the CLAY-WORKER as a watch word, soon extracted all of the secrets, as they are now set forth.

The building that already has been described as large, and which is decidedly blank and unexpressive from the outside, is devoted to the manufacture of stone brick. I can see some of my friends, the brickmakers, smile at the idea of stone bricks.

The genius of the stone bricks is Mr. E. C. Brice, of Ohio, and who is, by the way, a first cousin of the noted millionaire Senator from the same State. Mr. Brice is a pleasant man, this side of forty years of age, and is a chemist, not so much because it is a lucrative profession, as because of his fondness of the



science. For many years he has been particularly interested in that branch of chemistry that deals with the building trades upon the one hand, and geology and the kindred sciences upon the other.

In the building before referred to, Mr. Brice has established a temporary laboratory in which he is now conducting experiments in enamels and glazes. This is an interesting room, filled with retorts and furnaces. Before going on with the stone brick proper, which is now in the stage of a commercial success, let it be stated that this enterprising chemist is continually at work over members of the silicon and aluminum groups of metals, and that he has produced many of the valuable stones, as well as those of a more common nature. These are all composed by the same method, viz., an analysis of the principal base and synthesis of the other ingredients of the proper formula. So much for the laboratory.

The remaining portion of the building, as has been hinted, is devoted to the stone brick. At this time a great amount of new machinery is being placed, and there is an air of disorder about the place and the manufacture is at a stand still. However, the plant is for no other purpose than to educate others into the methods of the manufacture and to demonstrate upon a large scale the economy of the material.

The process is, to a chemist, a simple one, and we will try to follow it through in an intelligent manner.

Mr. Brice in commenting upon the system, spoke to some length of the immensity of the building trade, and the fact that radical improvements in that line were at once promptly taken up and munificently rewarded. Years ago, this line of thought had a strong influence upon the trend of his work in chemistry, and it did not take him very long to work out the broad principle, that our builders are leaning towards a permanent material for their construction, and one that is, at the same time, easy of construction and cheap. But that of these three features, the latter would become the prime factor of choice, and this with an acceleration as time passed. Thus to-day, cheapness is the ruling quality demanded in building. In response to this demand, we have seen the use of bricks increase in a wonderful manner, and to-day, the clay industry is one of the great industries of the period. A wonderful advance

has been made in methods of manufacture, and the cost of bricks as a building material has responded to the demand for cheaper materials far more rapidly than either stone or wood. These are the considerations that moved Mr. Brice in the line of his research, and which cheered him on in his work.

The requisite of durability in an ideal building material led the chemist to first look over the stones which were already in use, and even those that were not. The silica rocks were, without a doubt, the most refractory of all materials. Quartz is imperishable, and granite next door to the same. If these things could be made to bend to the will of man in their forming, they would make the ideal building material. Both, however, are of expensive procurement, but their prototype, sand, is found at every hand. The process, and by the way, Mr. Brice holds patents covering every phase of the same, then, begins with sand. 15 parts of sand are placed with one part of pure carbon into a proper retort, and the whole brought to a temperature of 800 degrees, Fahrenheit, and care is taken that there shall be no oxygen or air in the retort. The sand, which is an oxide of silica, is reduced, and pure silica and carbonic acid gas are formed in the reaction. The latter is carried off, while the pure silica is placed in a huge vat, ready for the next step in the main process. In the meantime another reaction has been taking place in another retort, namely, the familiar formation of chlorine gas, by the action of sulphuric acid upon common salt mixed with oxide of manganese. In this reaction, chlorine is formed, and also sulphate of soda, the latter in quantities sufficient to become a marketable commodity. The pure chlorine is carried to the pure silica, and the two in union form a silica chloride, which is a liquid in form. The addition of proper proportions of water to this, causes a peculiar reaction, in which there is formed muriatic acid, and a hydrated silica, the latter being of a jelly-like consistency, and the former of sufficient purity to be of commercial value.

While we were speaking of this silica hydrate, Mr. Brice reached into a barrel and pulled out a handful of the substance to illustrate what he was saying. It is white and translucent, and quivers very much as calves foot jelly. It is remarkable to think that this is nothing more nor less than gelatinous rock, and

that is the name that has been bestowed upon it.

From this point, the process of the manufacture becomes of a nature more familiar to brickmakers. A combined pugging mill and auger brick machine come into play. The gelatinous rock is placed in the mill with three times as much sand, clay and similar substances, all of these for the purpose of forming a doughy body proper, for the semi-plastic machine to run off into blocks. The proportions of these bodies can be varied somewhat, and according to the materials that are used. Those that are given are, as Mr. Brice has found, successful in the making of plain building bricks. The blocks as they are taken from the mill, are placed upon pallet cars, and run into the drier and thoroughly dried. From the drier, they are taken to a pulverizing mill, and reduced to a fine powder. In this condition, the material is ready for the dry press and is in practice elevated to the second floor of the plant as is the custom with clay powder.

The dry press used with the material must be of extraordinary strength, as there is little elasticity in this combination of hydrated silica with sand and earths. A well known two mold dry press was used in the experimental stages, and was broken before the maximum pressure was reached. This illustrates very well the refractoriness of the composition. When the dust has been pressed into the final shape, it is still in a warm condition, and may be further cut or carved in whatever manner may be desired. But an exposure to normal temperature and air for the period of half an hour, sees the brick become of extreme hardness, and in this shape it is ready to be introduced into the building wall. There is no burning.

The finished brick from a chemical standpoint is very much of the same composition as the sand when the process was begun; in other words, an oxide of silica. To the practical brickmaker, there would appear to be expensive features in this outline of manufacture, but it is not so. The process is essentially an economical one. It combines with the production of a building material, the manufacture of two important articles of commerce, muriatic acid, and sulphate of soda. In practice, the receipts from these two articles alone are sufficient to more than pay for the chemical re-agents used in the system. So that we are brought down to



an outlay for the crude materials of sand and earths of which the brick proper are composed, and the labor of production and the cost of machine plant. None of these are more expensive than confront the clay brickmaker, and some of them are cheaper. And finally, there is not the expense of burning, and loss of product that occurs in that part of the brick process. So I am warranted in stating that the cost of production of the stone brick is such as to make it a successful competitor in the market with the ordinary brick.

Then the stone brick presents the advantage of great structural strength. It not only rivals brick, but even the finest building stones. New Jersey trap, and Staten Island Dolerite will sustain a pressure of 24,000 pounds to the square inch. These are the strongest stones known to the American builders. Virginia granite sustains 21,250 pounds, while that of Rhode Island only bears 17,750 pounds to the square inch. The other stones used in the building trades follow in their proper order, but all less than the granites. Mr. Brices's stone, made in his experimental plants, has sustained a crushing strain of 80,000 pounds to the square inch.

From a financial standpoint, the stone brick is a success as well. A firm in Chicago paid \$80,000 bonus, for the entire right west of the Mississippi and in Illinois, with a royalty of fifty cents per thousand bricks sold. Other territory has been sold at terms as satisfactory, and more is in negotiation. The plant in Washington is being placed to fulfill some contracts that will in all probability be closed with the National Government for construction in the capital city, more especially the new Post Office Building that is being erected upon Pennsylvania Avenue.

E. C. WEAVER.

Written for the CLAY-WORKER.

#### A GLANCE AT BRICK MACHINERY.

Their Advent and Progress. The Right Way to Handle Them.

BY J. W. CRARY, SR., BLUFF SPRINGS, FLA.

SIXTY-FOUR years ago, there was not practically, a successful brick machine in existence. I recollect well, the first attempts made in that line of invention. At first, all the old brickmakers looked upon the so-called brick machine inventors as cranks, and had no disposition to oppose or molest

them, but rather to make sport of them by irony and merriment. But it was not long before this turned to a sort of grim satire, and then, upon the first success of brick machines, the mob spirit was developed; notably so in Philadelphia. (I think about 1835.)

The opposition to brick machines, only tended to stimulate and encourage inventive genius in that line, and Woodworth, I think, (the inventor of the planing machine,) was about the first to put in operation a dry press brick machine. This was a direct pressure, or plunger machine, on the same principle as all the dry-press machines of this time. Woodworth acted on the false and unphilosophic idea, that clay is elastic and can be compressed to a uniform size or thickness, without reference to the weight in the dies. He tried to change his dies, with the same equal amount of clay, but that was impossible, as there would be an unequal strain on the plungers, and some part of the machine would either break or stop. Although this defect in plunger press brick machines has to a certain extent been overcome, yet all direct pressure plunger machine are more or less defective in making a uniform size brick with a perfect maximum pressure.

#### THE NEXT IDEA FOR A DRY PRESS BRICK MACHINE WAS A ROLLER PRESS

This machine was first tried by placing a circle of dies, or molds, on a suitable horizontal foundation at the surface of the ground, these dies had a suitable lever for throwing out the brick. Dry clay was prepared and placed all around the circle of molds, and hands filled the dies with a shovel leaving more clay in the molds, than could be pressed into them. The pressure was simply a big wheel, with periphery broad enough to cover the dies. This wheel weighed 5,000 to 6,000 pounds. It was propelled by two good mules or horses. After passing over the dies, once or twice, if the dies were not filled, the top surplus clay was cut off by an expert hand, with a straight sharp-edged shovel. The brick was then thrown out and carried away on wheelbarrows. I saw tolerably good brick made in this way, but the pressure was not sufficient and the whole process, was crude and not profitable.

#### THE MOST PRACTICABLE EARLY DRY PRESS MACHINE WAS THE "CULBERTSON,"

Generally known as the "Scott and Culbertson, dry press brick machine." The dies of this machine (8in number) were placed in a horizontal table, oscillating

on rollers under the table in a suitable cast iron frame. Over the dies was properly placed a stationary roller, or press wheel, about three feet in diameter; around this press roller was fixed a hopper to hold dry clay, this hopper was kept full of clay and when the machine started, the press roller gathered as it impinged on the oscillating molds just clay enough to make a perfect uniform pressed brick, and surplus clay, not needed to fill the dies was moved forward, the press roller adjusting itself with exact uniform certainty, to the maximum pressure required. Every brick had the same density, and the roller exerting a kneading, or stirring action on the clay, filled every part of the dies, to uniform perfection. I regard this process of dry pressing of clay, as the only true, scientific way, of making a perfect, dense, uniform dry press brick. I say all this, from actual personal experience.

This kind of machine, can be so improved and constructed, that it would easily make one hundred brick in one minute, ready to set in kiln.

The soft mud machinery dates back to earliest improvements in brick machines, about 1828. The first was made to work by hand, the machine only pressing the mud into the molds. The first automatic machine of much note was put in operation about 1850; since, they have been steadily improving, and of course their friends claim that they are superior to all other modes of making brick. Some of their arguments are good, and for certain kinds of clay they are unanswerable.

#### THE STIFF MUD, OR PLASTIC CLAY BRICK MACHINES

Are comparatively of a recent kind, their makers and friends claim great superiority for them, and as in case of the soft mud men, or dry press men, with a certain kind of clay, the stiff mud process is the best. Here I think, is where the brick machine men, as well as those who often deal with them, make a great mistake.

#### NOW LET ME ADVISE THE DRY PRESS BRICK MEN.

If you want to insure success, have a first class brickmaker to decide where and how you shall place one of your machines. Don't say to every man who wants to make brick, "we have just the very machine you need;" but ask him to let you know what kind of clay he proposes to use. Have him give you a fair and minute description of his clay



bed. If it be a heavy deep homogeneous clay bed, comparatively dry and pulverulent, not waxlike and tenacious; then send your expert brickmaker to make a full and reliable examination of the clay bed, and place proposed for the plant, and if he reports that the clay is of that peculiar kind, that is best suited for dry press brick, then proceed to make a contract for putting up, and operating your brick machine. Your contract should give you the entire control of the work until you have made, set and burned two kilns of brick at least, and you should fully guarantee, both the excellence claimed for your machine, and the brick you have burned. If possible, after you have done all this, have a first-rate brick setter and burner, employed by the purchasers of your machine, to continue the setting and burning. If you take this advice your success is perfectly assured, and the big show of pictures, displayed in calico colors, and the prodigal waste of adjectives, in the superlative, to characterize your machine, can all be dispensed with.

I notice that a well known Chicago firm advertises to act on the principle I have suggested, but I fear that they do not in every case, have the right kind of an expert to examine clay beds, and put up, and operate their machinery. All the "big money" is in this man, and if he can be had at a big salary, by all means have him.

#### THE SOFT MUD MACHINE MEN NEED NOT BE SO CAREFUL,

Any kind of clay that will make brick, can be profitably used, by a good soft mud machine. Perfect pugging, proper drying and good setting and burning, are the main wants and requisites, but I will say here, that for all kinds of brick machines, the clay should be dug out and thrown in large piles, at least a month before it be used. If for dry pressing it should be put under a shed.

#### THE STIFF MUD MACHINE REQUIRES TOUGH OR TENACIOUS CLAY.

Brick machine men advertise for samples of clay intended to be used by those who apply for a machine. It is natural to send the best specimen, and it is natural for the brick machine man, to use the clay so as to show the best possible result for his machine. The brick is burned and sent to the man who wants a machine, and so there is a sort of mutual deception, which in most

cases, turns out badly for all concerned. If the brick machine man had sent an expert brickmaker to examine the clay bed, he would have known exactly what to do. In fact, it is not sensible business, for brick machine men to sell their machinery without all possible assurance that they will be properly used in the right place and in the right way. It don't do to say "We guarantee our machinery, and refer you to parties using them." Do you ever refer to the parties, who tried to use them and failed? You should never sell a machine to a novice in brickmaking, who is about to start in the business, unless you thoroughly investigate the whole situation, and then see to it, that the first two kilns made and burned are first rate.

The brick craft need more thoroughly well skilled, practical, professional brickmakers, whose services should be appreciated and well paid for.

#### Written for the CLAY-WORKER. PROPERTY RIGHTS.

##### Reservation of Title to Machinery.

##### FIRST PAPER.

**I**N all manufacturing lines, it is a custom more or less prevalent, to sell machinery on time, and to secure the payment of deferred balances, either by mortgage, or reservation of title in the seller. The latter, if legally done, is by far the simpler method, as it does away with legal formalities incident to the foreclosure of a mortgage. But in doing this there must be a technical compliance with certain legal formalities, or it will avail nothing. The presumption of law is that every man owns the personal property which may be found in his possession. This was enacted by the statute known as the statute of frauds, and was found necessary early in the upbuilding of the law, to protect creditors from fraudulent claims of the transfer of property in the hands of a debtor, prior to a levy upon it. As to third persons, this presumption is absolute, and has given rise to the modern maxim as to the personal property that possession imparts title. Therefore, when personal property, for such a machine is, is delivered by the seller to the purchaser, the change of possession, as to creditors of the buyer, is equal to transfer of title, and it may immediately be levied upon by such creditors, as the property of the buyer,

although nothing has been paid thereon, unless they have notice that the title is not in him.

There is some doubt in some cases as to whether a notice to the effect that title is reserved to the seller, if affixed to the machine itself, is enough, but in all States a method is prescribed for giving construction notice, which is as effectual, in matters of property, as actual notice. It is universally the rule that every man is presumed to know the contents of the public records, and if the contract be to the effect that title in a thing sold is reserved to the seller until paid for, a notice to that effect, filed as provided for the filing of chattel mortgages, is notice to the world. With a proper notice of the reservation of title in force, no act of the buyer or his creditors can affect the rights of the seller and owner. The creditors of the buyer may, if they choose, step in and take what interest the buyer may have in the property, and, upon satisfying the interest of the seller by making the payments due, take whatever rights the buyer would have, had he made the payments.

So far we have proceeded upon the assumption that the machine was personal property. It was formerly the rule that such machinery as was attached to foundations built into the ground, or permanently affixed to buildings so attached to the realty, became thereupon a part of the realty itself. This gave rise to some complications, where the ownership of the realty was diverse from that of the personalty, or where the realty was held subject to a mortgage. That, however, has very generally been abandoned, as a doctrine, by the courts, and it is the general rule in the modern decisions, that the intent and nature of the use determine very largely whether the attachment is a fixture, rather than the arbitrary mode of affixing.

With these general observations the subject will be left, for a more particular review of the specific position of the different States on these questions, in a future paper.

#### A "PSALM" OF BUSINESS,

"Life is real! Life is earnest!"  
And the man who hopes to rise  
To eminence in any calling  
Must expect to advertise.

"In the world's broad field of battle,  
In the conflict of real life,"  
Advertising is the magnet  
Of achievement in the strife.

—Exchange.



## A RUSSIAN BRICK WORKS.

*Editor ClayWorker:*

AT last take the liberty to forward you an illustration and a short description of my brick works, for use in your valuable paper—the CLAY-WORKER. The works were built by the present owner, W. Taylor. They lay on the river Aa in Courland, Russia. Five million brick are made each season. First-class pressed brick, both plain and ornamental, are also made by the semi-dry system with a powerful Screw press from Messrs. Clayton, Howlett & Venable of London. A soft mud brick machine from Jonathan Creager's Sons of Cincinnati, Ohio, is also used. Their machine makes a much better brick than is made by hand in this country. The remainder are made by hand and are dumped on the ground and dried in hacks, nine courses high.

The rack and pallet system of drying is used for drying the brick which are made by the above mentioned machines. Brick are very large in this country, averaging 10 by 4 $\frac{3}{4}$  by 3 inches. Everything made is burnt of good quality, in the two continuous kilns. Wood only is used as fuel; same is cut in lengths from 4 feet to 8 feet, and is a mixture of birch, elm and pine, the greater part being pine. 343 cubic feet of this wood is sufficient to thoroughly burn one chamber, which contains 12,000 of our large brick. The clay is hauled a third of a mile with horses and side-tipping wagon on a twenty-two-inch gauge railway from the clay pits, which are 15 feet deep.

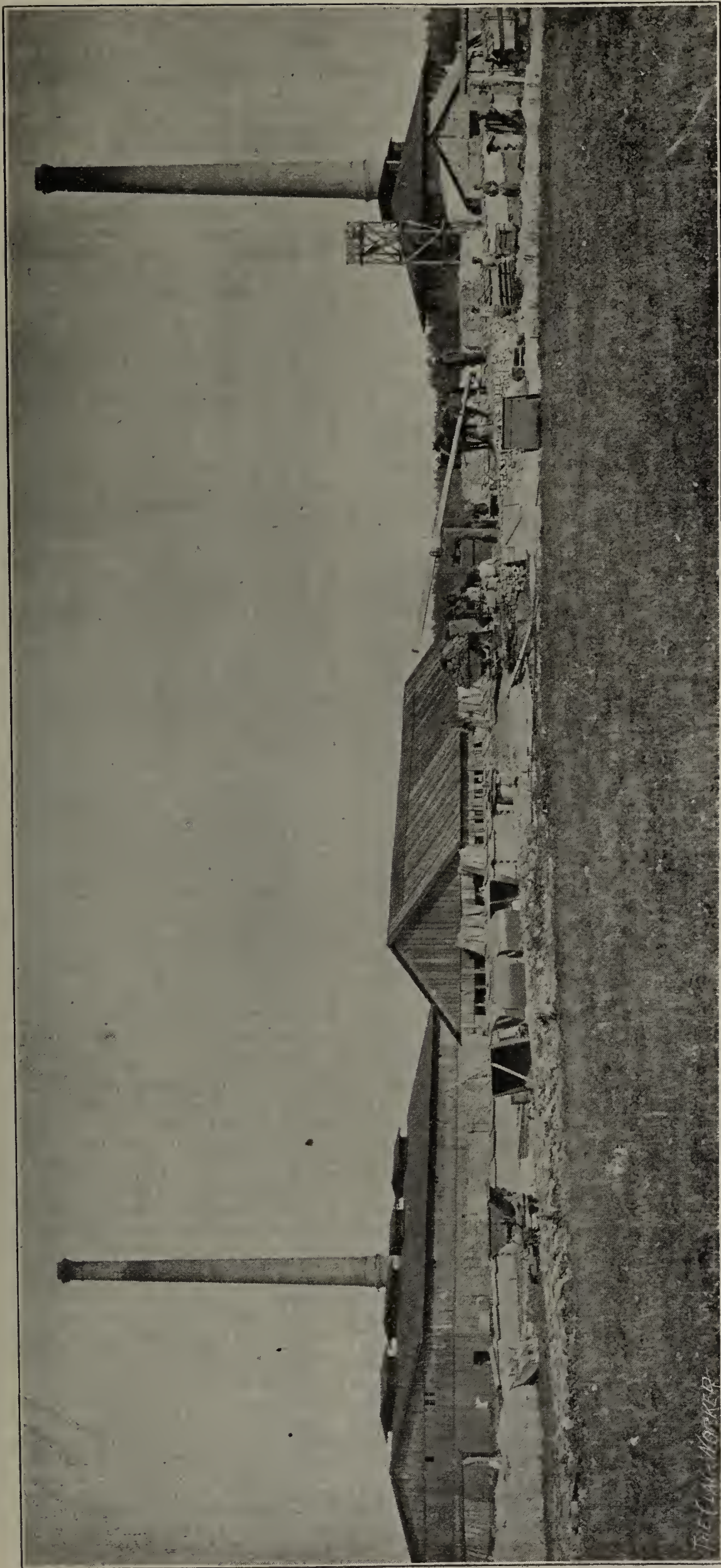
The works have a system of railroads of nineteen-inch gauge; some are partly permanent and partly transportable. Transportable turntables also are used in connection with same. All brick made, burned, or unburned, are transported on this system of railroad—wheel barrows are not used. The brick are transported to Riga, a distance of fifty miles, by barges and steam tug boat.

The works are usually operated about eight months in the year, turning out 5,000,000 brick, and eighty per cent. of hard brick, uniform in size and color, are burned in the continuous kilns.

WM. TAYLOR.

Mitau, Russia.

MANY men spend so much of their time in criticising the actions of their neighbors that they have no time for action themselves.—*Exchange*.





## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

## Button Hole Talks - Second Round.

*Editor Clay-Worker:*

At the convention I made the humiliating confession that there was little meat to the remarks I had to offer, and then learned further that I could not even make a noise. Since then I have realized that I could not even take a picture, even Purington's shadow is rescued from the piratical look it used to wear, but mine is buried in fog, and I am worn out and run down by the remarks of my friends about it. I shall bear up however, for I feel sure of the pity of all my friends and shall only hope it may be kept out of the hands of my customers, thereby destroying my trade.

It was, I believe, the day following the banquet that one of the good brothers who dresses quietly, runs a good paying business and *always* wears a normal sized hat, and whose good sense and friendship I esteem most highly, attached himself to my button hole and proceeded to literally draw me out.

He said: "You Chicago fellows made a real nice spread and showed your hospitality in a right bountiful way, but there is one thing I didn't like and I know you well enough to talk it right up to you." Then he went on asking me questions as to what was really the most gentlemanly line of conduct at a banquet—pausing and disclaiming suddenly as he caught a look in my eye, "No I don't mean the political slip; that has been and is being talked of and explained enough and I'm not after you on that."

"Now" said he as he settled me back in a corner "Did my eyes deceive me or did I see you in full dress last night." I blushing explained that I didn't do it often and that I only wanted to see if it would still fit; that it was the suit that did duty years ago when Mrs. Gates was captured; that all the Chicago boys wore them that night, etc., etc. He heard me through, smiling quietly, and then remarked "It's not so bad as I feared for I can see you are ashamed of it."

He then went on to reason that the members came from a long distance—with hand baggage—for business with a good time and little fun thrown in, but *not* for a good time and fun with a little business thrown in, and that under these circumstances it was impossible for them to come loaded with dress suits. He told me quietly and pleasantly, that I was one of the hosts and ought to have been specially considerate of my guests' feelings, and should have thought of all this, and knowing so many of them would certainly not appear in full dress I should have refrained, and thereby have added to their enjoyment without detracting from my own.

He insisted that if these gatherings became too formal and lost the old time freedom, the hearty good will would disappear and we would trade solid comfort and rare good fellowship for stiff formality. "Now" he continued, "I don't lay it up against you, Gates, for I don't believe you thought of it in this way. In fact" said he, looking me square in the eye "I don't believe you thought at all; that fellow that writes your speeches does that for you." Then speaking heartily and considerably he went on, "Don't do it again anyway; you have shown the outfit off and we all know you have got it, or had it, or borrowed it, or hired it, or—well, anyway we saw you wear it and your point is gained, but in the future DON'T." Then he begged me to

think it over carefully and talk it over with the "other boys" and try to get them out of the notion too.

Now I don't want to comment on this button hole lesson much, for I was gunning for points on clay working and not on politeness, still I remember that when I used to go hunting snipe, if other good game came along I put it in the bag. I can't get over thinking of this most level headed button holer's advice as being worthy of attention and most respectfully submit it here for the consideration of the brethren. Meantime I have packed away my relics with double rattlons of moth powder so they may keep a long time. As ever yours,

WM. D. GATES.

## That Special Convention Number.

*Editor Clay-Worker:*

I read it with interest. My first impression was that the industry was fast being lifted out of the "mire and clay" and fast reaching a stage where the old brickmaker and his blind horse were "lost to sight, though to memory, dear."

I was pleased with the indications of mingled intelligence and good humor of the members who participated.

In an editorial you said, "We are proud of this our Convention number, etc." This calls to mind a thought that I have often expressed. It takes a smart man to do a smart thing, a good man to do a good deed. They do them intentionally and rationally, and they know as well as others what they have done and if they are human they will enjoy the knowledge of having performed commendable acts. They used to tell us that we should not show self-appreciation, should not praise ourselves, that "self praise is half scandal." Now those are good old ideas, and they are all right but why should we, who are but human, be denied any of the pleasure to be derived from approbation? That remark was very modest when compared with the brazen boastings to be found in modern advertisements.

Farther on you said that it is "handsomely illustrated." I turned back through it again and looked for the illustrations. I found that they consisted of a series of pictures of the officers and members. I pondered as follows: The work is handsomely done. Yes, "Handsome is as handsome does." You are right, the illustrations are handsome. The men have done handsomely. I did not find the picture of the dear old fellow who eased up his kiln with bats and plastered it with his hands, because he thought that it could be done better that way than with a trowel. Instead I saw the familiar faces of several, whom I personally know, who have been educated for a profession, and who left it for "the new brick-making," because they saw that it was equally as respectable, fully as fascinating and more surely remunerative.

I said that the illustrations were handsome and now I want to prove it.

Intellect, well cultivated, gives an interesting and artistic look to one's face, happiness adds light and brightness, enthusiasm gives it life, while truth, honesty and goodness make it beautiful. These men are intellectual and cultivated, else they could not successfully conduct the enterprises in which they are engaged. They are happy through gratitude to the giver of all good for having so favored them. They are enthusiastic, else they would not have left their homes, some of them in the Sunny South in midwinter to attend the convention. The statements that they made as to their methods and their freedom in giving the results of their experience to others, attest their goodness. Hence I also say that the Special Convention number is handsomely illustrated.

I desire to add to the joys of the members the knowledge of the fact, that their beauty and

its causes are seen and appreciated by those who are not biased. This is not idle flattery. (If they care to look up my picture they will see that I am too handsome for flattery.) It is said in all earnestness, and if it adds to the joys of the gentlemen illustrated and acts as a stimulus in urging others to strive to become handsome by the same means, it will not have been written in vain.

D. W. STOOKEY.

## A Brickmaker's Tribulations.

*Editor Clay-Worker:*

Your journal is one of the things looked for, because it always contains matter of interest to brickmakers. In the December number we note the "Familiar Voice from Colorado," and we are attracted to it. We second Bro. McCain's motion to establish a school of instruction, and if some of the "old cranks" therein referred to will put into practice the questioning of the "two-year-olds," in which class we are, we think we could absorb considerable learning, and might be able to give out some little information which would benefit those seekers after knowledge who privately (like us) button hole those of the alumni who are known to possess greater experience, and who are *supposed* to know more about the making of brick than the freshmen.

If circumstances were alike in any two cases in the same locality much might be learned at home, but so far as our experiences go, there are no two yards in *our* section that have the same material, the same labor, or the same facilities for doing business; and then the common jealousies which do, and always will, exist among immediate competitors for the same business, actually prevents that closer intercourse and consultation which can be had so freely from brother manufacturers who are not rivals, and therefore we would like to see that "school of instruction" well founded and with a *full* faculty of professors, because what would be plain English to one might be tougher than Sanskrit to another, and some decisions might have to be made by the entire bench.

In this connection we would like to give a chapter on dryers, from the experience of a brickworks with which we are somewhat acquainted. It is situated near a thriving town in a beautiful valley. The citizens are enterprising and progressive and the buildings for business and for residences are handsome and well kept up and betoken a fairly prosperous community. About the only thing behind the times was an old brickyard which made very common brick and seemed to be satisfied with so doing, but it rarely had what was required, so that, for all the better class of work, the brick had to be imported from neighboring towns. This did not seem exactly the correct thing to do, and so, after a while, several of the citizens put their hands in their pockets and agreed to erect a new plant, from which they had been led to believe a fair return for their investment could be realized, as well as to improve the grade. They spent some money and considerable time in preliminary examination and fairly investigated pretty much everything from the original Martin to the recently introduced dry press, and finally purchased a soft mud machine (and a very good one it is), and put up their buildings and machinery, with a good prospect that they could not make brick for the probable demand, especially as the season was wet, and then it was concluded that they must have a dryer, as all first-class yards were having dryers put in.

They have fine yellow plastic clay, free from stones, and the report from those who examined it was that it was surely first-rate, and there would be no trouble in quickly drying it. The agent of the firm who manufactured "the only successful dryer in the country" examined and tested it and pronounced it very good.



Well, to make the matter sure, a visit was made to several concerns which had these dryers, and in the company of the indefatigable and persistent agent aforesaid, they learned then and there that "the method was successful and they couldn't do without it," etc. They have since remembered that these favorable reports were always made in the presence of said agent. They never heard any allusion to a failure and mentally concluded that, so far as the dryer was concerned, there was "no such word as fail," and then, after what was believed to be a thorough investigation, a contract was made with this ever-present agent for the furnishing of heating apparatus, cars, tracks, etc., and for its erection under the system of this celebrated and successful dryer company. The buyer had to build the foundations and furnish and put up the building complete, and also furnish the common labor. The contract stipulated that 25,000 soft mud brick should be turned out dry enough for setting every day. The buyer furnished a boiler 14 feet long, by 60 inches diameter, and agreed to keep up 60 pounds of steam for the use of said dryer. In the course of time the dryer was finished and the steam turned on, and the bricks began (after thoroughly drying out the tunnels) to come out. Instead of getting 25,000 per day, barely 15,000 could be drawn out in fit condition for setting. Two weeks or more were spent in trying to make it do as per contract, but it wouldn't do any better, and as the directing engineer, sent by the dryer company, had to go elsewhere to put up another job, the salesman returned, and he "monkeyed" with it awhile longer, and finally said it was "no go." Then he made a suggestion that he would furnish additional cars, track and steam pipe sufficient to complete another tunnel four-fifths of the size of the other, and as they had the plant arranged for his system, and it seemed reasonable to expect that if 15,000 could be got off of five tracks, that 25,000 could surely be obtained from nine tracks, he obtained that contract also, but at a greatly reduced price. It was soon completed, and with great surprise, it was quickly ascertained that 20,000 per day was the utmost it could do, and then there was another hitch, and this time the "boss" came; but this part of the chapter need not be continued.

After awhile another *dryer man* came along. He sneered at the dryer, said it was no account; also said there was only one successful dryer and that was *his*. He was patiently listened to. He said they must undo, at their own expense, all the pipe-fitting that the other fellow had done; that the excavations under the floors must be filled up flush with the track, and then he would take the pipes and fit them up in *his* way, and that he would warrant a success at a price equal to one-third of total original cost. The warrant was probably financially good, but in reply to a question, he stated that if it failed, the buyer must take it out, and that his dryer company would not put the plant back into its original condition. As that was clearly an avoidance of the warrant, no bargain was made with him, and the trade fell off.

Then along came still another "pilgrim" who knew all about dryers. He said his house had "the system" that always did better than the guarantee, and as the price was seemingly reasonable, and his system commended itself to the judgment of the anxious brickmaker, a bargain was struck with this party who had so impressed the buyer that he was surely the right man, and in fact, "the only fellow who so fully understood that particular business that this firm always sent him when they had intricate, first-class jobs to handle;" and here the buyer lost part of his experience, which ought to have taught carefulness, and he omitted to demand that the plant should be replaced in its original condition in case of fail-

ure. One thing, however, was done, although it amounted to but little. A provision was inserted in the contract that the limit of "checked" brick should be 3 per cent. The party selling had previously stated that 2 per cent. was the maximum they ever had under their system, but to make it sure, 3 per cent. was agreed on. It was also verbally stated that the expense which the buyer would have to bear to get ready for this addition would be merely nominal, and the buyer was "green" enough to believe it. Well, the apparatus arrived. The fan was set up in a new building over a large air duct, both expressly erected for it at the buyer's expense, which began to show up heavy, but that was offset (in the buyer's mind) by the expected sure success of the "system which had never failed." So, presently the steam was turned on and the system which provided a low temperature and a strong current was demonstrated to be unmistakably a failure, to the utter astonishment of both buyer and seller. Not only did the stipulated quantity of dry brick fail to appear in twenty-four hours, but they didn't appear in forty-eight hours. Then the system was reversed—a high temperature and slow current was applied. The hot end was run up to 210°, with the upper end not far behind, and the brick came dryer, it is true, but so fearfully and wonderfully checked that on many of the cars only from 6 to 50 out of 360 were fit to set, and the rest had to go back into the clay bank, and thus that dryer which had "always done better than the guarantee" ignominiously failed and caused the prospective buyer serious loss. The fan and its attendant heater were removed. The plant stands nearly in its original condition, but the new engine to run the fan, the air duct, the building, the belting and extra steam lines, to say nothing of loss of time and brick, bear costly testimony to the gullibility of the brickmaker.

Now, if this "school of instruction" could be instituted, perhaps at some session the owner of the aforesaid works could get some absolutely correct information that would put him in a way to correct the trouble here related. In the owner's opinion there is only one way to do it, and that is to increase his tunnel capacity to at least 60,000, and 70,000 would better. Then, doubtless, 30,000 per day could be gotten out, but here the expense is so great as to forbid it. As it is, the dryer stands at a cost of over \$6,000, and that means 18 cents per thousand on a yearly output of two million bricks, and that is on the dryer alone, and as competition is sharp, every dollar, or every dime, added to the expense makes a difference that is manifested at the end of the year.

This long epistle is offered in the hope that some discussion may follow from which some knowledge may be gained that can be practically applied to cure the complaint without too great an expense.

To go back to Bro. McCain's letter. The writer thinks that the tribute which he pays to the memory of Bro. Siner is well worthy of place in the records of the N. B. M. A. It is one of the most touching and prettiest things which one man could say of another. "Honest and honorable in every transaction." "A staunch friend." "A splendid workman," and the hope that when he presents his work for inspection that it will be "accepted by the Supreme Architect above," etc., etc.

Now let us hope that the devoted wife of Bro. McCain, who, like him, is a member of the N. B. M. A., will speedily recover her accustomed health and that John himself and the balance of the "old crouks" as well as the "two-year-olds," will continue to be heard from for the mutual benefit of all. GREEN BRICK.

Readers will confer a favor on both the publisher and the advertiser by mentioning the CLAY-WORKER when writing for circulars, etc.

## The Captain Explains.

Editor Clay-Worker:

Did my well-beloved friend McAvoy think I was such a contumacious ass as to keep on with moulds of the same proportion alluded to in my remarks. Also, had I reduced the length when I increased the thickness, as he would seem to advise, by inference, I should have made a smaller brick but proved a bigger donkey.

I don't like to be bitten more than once by the same dog, or get drunk more than once with the same liquor. A proper proportioned brick in the first place is better than to draw in setting, as then it will not depend on any setter's judgment as to how far apart to set them.

My experience in burning with coal is that brick used to be set with more space between the brick than when you burn with wood.

Our moulds are now or in future,  $8\frac{7}{8} \times 2\frac{1}{2} \times 4$  inches.

I am glad to find that the remarks on organization for the sale of brick are bringing forth an inquiry as to how our sale and collection exchange is formed, and we are posting, as far we can, the seekers of information.

I see you start your Button Hole Talk with "Gates ajar." Don't shut them!

S. P. CRAFTS.

## Down-Draft vs. Up-Draft Kilns—Reply to Crary, Sr.

Editor Clay-Worker:

In the February issue of the CLAY-WORKER I notice that J. W. Crary, Sr., has again come in the ring, but only on the *defensive*. How he can claim to be on the defensive is more than I can make out, unless it is a case of crawfish, which I think is the most probable. I am of the opinion that, if Bro. Crary understands the science of brickburning as well as he does the art of egotism, he must certainly be in the front rank. I can imagine the size of his sarcastic smile when he asks for information "that will make the scales of his obtuseness fall off," that he may also see the beauties of down-draft," but I cannot understand why (after three or four down-draft experts have timidly ventured the required information) he should practically ignore them, charge them (without knowledge or understanding) with "not being practical bricksetters or burners," and asks, with tragic innuendo: "Have these specialists for down-draft ever seen or tried a kiln such as I have described in my writings?"

For myself (as one of the accused) I am sorry to say, I have not, never having been in Florida. If our premises are false, then Bro. Crary's are doubly so, for he says: "They give no reason why their way of setting and burning is better than my way." He certainly cannot have read his late CLAY-WORKERS. The discussion has not been on setting brick at all, but on the respective merits of down and up-draft kilns. Every intelligent brickmaker (be he 65 or 25) knows that unless his bricks are set right in *any* kiln, the burn will be a failure in proportion as the setting is relative to perfection.

Bro. Crary's "full, fair, intelligent test" case would cause no end of bother. It would be easy to pick out the best up-draft expert, but when it comes to finding the best down-draft (my pen fails me), I should think myself certainly the man for the job, but it hurts me like everything to think that there are over 500 others who *know* they are, (the same chaotic condition would prevail when it came to which kiln, settle, etc.); so, as "that is the only way to finally this question of supremacy," I am afraid we shall all have to crawl out of the same hole we came in at, and leave the settlement to the next generation; but in the meantime, my unfortunate down-draft friends, you



cango on burning your kilns, getting your 95 to 98 per cent. hard, *straight* bricks (using so little coal that the coal dealers threaten to boycott you), and laying away those clean, crisp bills that beat an umbrella all hollow for a rainy day.

I will invert one of Bro. Crary's aphorisms and close. "But until this (the test case) is done, it is all mere assumption and dogmatism to claim great perfection in up-draft and imperfection in down-draft kilns."

Fraternally, J. W. CARSON.

### Philadelphia News.

Editor Clay-Worker:

The unusually fine early March weather, has induced the brickmakers in and about the city, to manifest considerable activity in preparing for the coming season's business, which promises to be a good one, judging by the number of building permits that have been issued during the Winter and Spring.

I had the pleasure of looking over the new plant of Webster, Gillespie & Co., located at 23rd St. and Passyunk avenue. It is just 51 days since work was commenced upon it, and they are now making bricks. They have a machine house 80 x 80 which is an extraordinarily fine one; two 100 horse power boilers and one 100 horse power engine; two "Martin" machines, 40,000 capacity each; a "Standard" dryer 20 tracks, 100 feet long; three 10 arch kilns 225,000 capacity each; they intend adding five more kilns as soon as possible. Hand-made, stretchers, pressed and ornamental bricks are to be made. This firm consists of Messrs. Harry Webster, Thos. Gillespie, Jr. and Wm. H. Gillespie. And a better team of practical brickmakers could not be found between Maine and California.

The Norwood Brick Company, a new organization, has purchased and taken possession of the brickyard at Norwood, formerly conducted by the Briggs Company, which recently failed. The new company will run the works to their full capacity as soon as the weather will permit. Several other firms have already commenced to make brick.

QUAKER.

### Enameling Brick.

Editor Clay-Worker:

I have read with a great deal of interest the many articles on "Enamelled Brick" which have appeared during the last year, in your valuable paper. The articles by "Manager" which I believe headed the series, were particularly interesting from the fact that they promised to give much information on the subject. The later articles I notice with regret have deteriorated either into special pleas for particular methods, or recipes, or else into mediums through which to sneer at or condemn all that is outside the writer knowledge.

If you will allow me the space I would like to take up the enameling question as a whole, and will try not to permit my belief in my own method, to prejudice my statements in regard to other methods.

I approach the subject with great hesitation, knowing that no one man is competent to deal with a subject embracing such a multiplicity of facts and details, and do justice to them all. If I am led into error in some of my assumptions or deductions, due to lack of experience in any particular branch, I hope, some of the many who know more about it will correct me. In a secret business of this nature any one person can see the matter only from his stand point. Where the materials that may be used are so numerous and different, as well as the methods, he cannot possibly have investigated all of them, and he must necessarily draw his conclusions from the investigations he has made, with very slight help from others. Under such circumstances some of his conclusions

are likely to be incomplete or even incorrect, due to incomplete data. Having paved the way for a graceful retreat, I will now attack my subject.

I propose to divide it into heads, giving first a slight dissertation, from a semi-scientific stand point, on slips, enamels and glazes, crazing, its cause and prevention, shivering, peeling, and blistering, as the subject develops. I may afterwards take up the practical application of the theories advanced.

Much that I say will be as old as the hills to many of your readers. This cannot easily be avoided, in writing about an industry, which with its kindred industries, has a history extending back several thousand years. If I say even one little thing, which helps my fellow worker, in ever so slight a degree my object will be accomplished.

In order that the reader may not be imbued with the idea that the thoughts here given are those of an impractical man, I state that they have been generated by practical working and experimental investigation during sixteen years, at the cherry red heat of the decorator, the average heat of the "majolica" kiln, the yellow heat of the "carthern ware" kiln, the white heat of the "enameled brick" kiln, and the brilliant white heat of the porcelain kiln. Experiments and practical work on slips and glazes being carried on at all these heats, except the decorating kiln, and experiments and practical work on enamels, at all of them, except the "porcelain" kiln.

#### SLIPS, ENAMELS AND GLAZES.

As applied to clay are so far as known to me, compound silicates of more or less complexity. Some of them are largely mere mechanical mixtures, others attain to the dignity of satisfied chemical compounds. Omitting those slips which will not fuse at a heat within the command of man, they all pass through the same physical stages and largely through the same class of chemical changes. Each has its raw or unburned condition, its partially burned condition, its point of vitrification and its point of fusion.

In order that there may be no misunderstanding between the reader and myself. I will give my ideas or definitions of "slip," "enamel" and "glaze." A slip is any silicate simple or compound that is not carried beyond the point of fusion, it may be brought to it, but must not be fused. An enamel is any silicate that is fused, and when fused has the property of remaining translucent or opaque. A glaze is any silicate that is fused, and when fused becomes transparent. Then we have that great borderland of "semi-transparent glazes," "semi-enamels" and "slips" bordering upon the "enamel."

This article is not intended for those who claim that the slip must be made of clay, clay and flint, or clay, flint and spar—or who will not admit that any, or every known ingredient may enter into its composition, so long as they are in such quantities as not to interfere with its characteristics. Nor is it intended for those who claim that the "glaze" must contain lead or any other ingredient or set of ingredients or that the enamel must contain tin or any other specified material. With such people I will disagree at many points.

I do not know of a single natural or chemical compound that belongs distinctively to the slip, the enamel, or the glaze; it may exist but not to my knowledge. Tin seems to be the nearest and might be claimed by some, as a distinct enamel ingredient, but there is nothing to prevent its use in the slip, or in limited quantities in the glaze.

As we pass up the thermometric scale, we encounter at the different heats, distinct classes of slips, enamels and glazes. The practical man working at a cherry red or orange heat, would be surprised at the compounds

used by the one working at the white or brilliant white heat. One man's slip might become the other's enamel or glaze and vice versa.

As we approach the white heat we meet with many interesting facts. Lime, which at a low heat was one of our strongest resistants, becomes one of our strongest fluxes. White lead or any lead compound which is a good flux at a low heat is almost useless at a high heat as it volatilizes and dissipates. Potash seems to work quite steadily throughout the scale. Compounds containing much lime are specially peculiar from the fact that often a very few degrees of heat change them from "bodies" that look as though they would stand almost any amount of fire into thoroughly fused glazes. Barium, strontium and magnesium may come under the same head, but never having experimented with them to any great extent I can not say.

Take the oxides of silicon, aluminum and calcium (or silica, alumina and lime) with these three materials alone we can produce, the slip, the enamel or the glaze, combine with them potash or soda, magnesia, barytes, or the fluorides and we have the same rule. Produce a slip and you can produce its corresponding enamel or glaze. Produce the enamel or glaze and you can produce the corresponding slip.

We will look at a practical recipe and see what facts we can learn from it.

|                          | POUNDS. |
|--------------------------|---------|
| National China Clay..... | 20      |
| English " " No. 7.....   | 25      |
| Flint.....               | 85      |
| Feldspar.....            | 100     |
| Paris White.....         | 8½      |
| Total.....               | 238½    |

As it stands it is a slip or body below a white heat, at a white heat it vitrifies and at a strong or brilliant white it fuses into a beautiful transparent glaze, add "Paris white" and the mixture will pass through the enamel stage, it probably will not make a fine enamel, but it will as stated pass through the enamel stage.

Slips, enamels and glazes may be made with clay or without clay, with much clay or with little clay, consequently the slip, the enamel or the glaze may be given any degree of contraction desired, within reasonable limits.

In nature we find clay as a compound silicate of more or less complexity and following many of the variations which we give to our artificial slips, enamels and glazes.

These clays burn at different heats and many of them pass through the stages of vitrification and fusion.

Unfortunately old "Dame Nature" is not always kind, and the enameler has to enamel the clays or mixtures of them as it pleases her to furnish them, occasionally the "old lady" furnishes a clay of such nature that the enameler has to give it up, but as a rule he adapts his mixtures to his clays.

If he has a low heat clay he will probably attempt to "enamel" it, if his clay stands a high heat he will probably use the "slip and glaze" method or he may use the enamel. He may use two burnings or accomplish his purpose with one. In any event he does the best he can and is not particularly fond of being told his method is "no good." If he is a thoughtful and hard working individual he will investigate his clay thoroughly, ascertain all its tricks at the press, in drying and in burning and will elect whether to "enamel" while wet, while dry or when burned, or whether to "slip and glaze" while wet, while dry or when burned.

It is utter nonsense for one man who does not know how to do a thing, to tell or even imply—to the world at large and the man that does know how—that it cannot be done. This is especially true in clayworking. What does a man know about a clay he never saw or heard of? Almost nothing. Some clays will



stand almost anything, others will play some trick if handled the least improperly, others are good in some particulars but bad in others.

While on this subject I wish to condemn strongly the tendency for the enameler to run down slip and glaze, or for the slip and glaze man to run down the enamel.

There is no reason in the world why the man whose "compound silicate" fuses in an opaque condition, should not have just as good qualities in it, as has the man whose "compound silicate" fuses in a transparent condition.

Arguments supported by facts are always more convincing than the unsupported argument. I do not wish to put on the appearance of bragging but do not see how to support my position, without stating that I have slipped wet and dry to a large extent, slipped burned to a limited degree, enameled dry and burned to a small extent, enameled wet to the extent of 100,000 brick, glazed wet and dry up into the millions. Glazing burned is too common to need mention.

The enameler may then go on with his work secure in the knowledge that his method, as such, is correct, and the only thing he need look out for is, whether he has properly adapted his method to his clay, or whether his method is the proper one for the clay he is using. To some clays, no method seems applicable at present, to others the "slip and glaze" method could be made applicable with great difficulty. I cannot imagine a condition of clay—provided it can be enameled at all—that will not yield to the genuine enamels, though it might not yield profitably.

Some clays are easily handled in one burning others require two burnings, as a rule however this question is simply one of economy and utility.

ARTEMUS.

(To be Continued.)

## The New York Market.

Editor Clay-Worker:

All manufacturers are awaiting developments of the trade for the coming season, not alone for what the demand may be, but more especially what may be done to help the trade by the manufacturers as a body, by some measure that will be the means of equalizing supply and demand.

The past three months have not made a very high record in the consumption of brick. The weather has been of such a nature that work has not been continuous, which leaves on the first of March a still larger amount of brick on hand than at the same date last year. The weather is worse at present writing (March 1), than it has been at any time in the past three months. The Hackensack river is frozen over, and the Hudson is closed to shipment at Haverstraw. Long Island is sending a few brick to the New York market. South Jersey is for the present closed with ice. The masons in New York and Brooklyn cannot lay brick.

The usual time of the commencement of the brickmaking season is about six weeks off, and no agreement has been reached as yet. Some of the manufacturers are in the same position as the old lady's husband who died. She said, he did not want to die, but he was "obleged to." There are a number of manufacturers who are "obleged to" make a certain quantity. If their lease did not call for such obligation on their part, they would not turn a machine.

Under the present state of the trade and the outlook for the coming season, it is no wonder that each meeting of the fraternity is anxiously looked forward to, to see if some plan cannot be devised to help in a measure all engaged in the manufacture of brick on tide water.

### WILL THEY AGREE?

It would require one gifted with second sight to say positively that they will, and why they do not is beyond comprehension.

Take the figures given in the February CLAY-WORKER of the number of brick made the past year, nine hundred million, with over three hundred million on hand on the first of the year. This shows that six hundred million would more than meet the demand. The cold facts are these, taking last year's consumption of brick as a basis. The number of brick afloat and unsold, with stock at principal points, there is enough now on hand to place on the market from the first of March to the first of August three million brick daily. The old saying "desperate diseases require desperate remedies" is certainly applicable in this case. Certainly the trade has reached a desperate state, and one would say that wisdom should teach the manufacturers that a regard for their own safety should lead them to an agreement.

The bee that buzzes in the bonnet of some whispers "form a trust." Others wish a curtailment of production. Is a trust feasible? We are told that nothing is impossible. But as one looks over the situation carefully, it would seem that the formation of a brick trust, and carrying it to a successful point of operation, as the advocates of it say has been done with oil, cordage, sugar and other products, is as likely of realization under the present programme as perpetual motion.

The proposition is that the trust assume all leases, and take all individual property, paying in stock, with common at the rate of seventeen per cent. and preferred at the rate of eight per cent. While one would question whether there would be any who would accept such a proposition, there are some that are strongly in favor of it. The readers of the CLAY-WORKER know that in churches, young converts are given great latitude, as their zeal is sometimes greater than their discretion. Just so in the present case. Those that wish to boom the trust say, "why, look at the saving that will be effected under single head management. Take the towing alone. We will own our own boats, and do all our own towing, thereby saving one million dollars a year."

In cold figures, the total cost of towing on the Hudson in the brick trade for last year was one hundred and eighty thousand dollars. Rather a bad case of young convert.

### A MEETING

was held at Newburgh, on the Hudson river, February 8th, with the object of getting the Up River men, with those from Haverstraw and New Jersey. The result was there were too many present who had different views. The representative from the Fishkill side of the river was a strong advocate of a trust. When addressing the meeting, he said: "See what a saving can be accomplished in one item alone. Under the present system each yard employs a foreman and second hand. Under trust management, those two men could supervise five or six yards." In the section where he is manufacturing, there are about six yards to the mile. As brickyards are run at present, they would be well "supervised." His is only a worse case of young convert. I may say his experience in the manufacture of brick is of but recent date.

The senior manufacturer from Hackensack, Mr. N. Mehrhof, one who has learned the art from practical experience, remarked that in his "observation and knowledge, when a man superintended the making and burning of four or five million of brick a season he had enough to do." In other words, the saving clause of this argument was impenetrable. Mr. Mehrhof knew what he was talking about, while the other speaker was like Tom Watson; he did not know "where he was at."

Another manufacturer, from the vicinity of Newburgh, advocated Trust first, last and all the time, and he would go in nothing else. His action surprised no one, as he was never known to go into anything that would be a benefit, but is always ready to take advantage of the others who curtail their output by increasing his own. He said he would not enter into any agreement tending to restrict manufacture, as in times past he had seen that such an agreement would not be complied with. In 1879, this same man, when making brick in Haverstraw, would not join with the others when they made and kept an agreement to restrict, but run his yard to its utmost capacity, and offered a premium for men. Three years ago, in New York City, at a meeting of the New York and New Jersey Association, this same gentleman said: "All I want is that the association protect me so that I can make brick; but I will not agree to curtail output." Is it any wonder that he is an advocate of a trust?

### THE SITUATION AT PRESENT

does not look toward any definite plan. No conservative business man will sell out his yard and take in payment stock that I may say has no value. To buy out all the yards in this vicinity, paying for them in cash, would take a few millions. Just as soon as the management had arranged the output so that a paying price was obtained, new yards would be started, as there is unlimited material at hand with capital to be had to carry it on, so that the supply would be more than the demand. The result of this would be the passing of the dividends, thereby placing a very uncertain value on the stock.

If the brick industry of the Hudson and adjacent points had the whole of the United States to consume their material, as is the case of sugar, cordage and oil, the brick trust might be successful. As it is now, it is a case of eggs all in one basket. All stock must go to the one market—New York City.

The hope of help must be looked for in the curtailment of the product, and this has rather a dark aspect at present. The middle of May seems to be the time set to start manufacturing. I only wish that it could be so arranged that you could have the returns from all brick made and sold this season, from the time some will start until the middle of May. You would be beyond the danger line of want for the rest of your days.

### THE MARKET.

On the first of March there were fifty barges awaiting sale, some of them having been on the market for the past two months. The schedule price of \$6.00 per thousand is still adhered to by some of the manufacturers. When the dealers require that certain grade, they will pay that price for them, but they can, as a rule, get all they want for less than \$6.00.

Each day of March brings more brick on an already full and overflowing market. The prices now stand about as follows:

New Jersey, hard, \$4.50 and \$5.00; New Jersey, good, \$5.12½ and \$5.25; Long Island, good, \$5.25; Hudson River, hard, \$5.50; Hudson River, good, \$5.75; Hudson River, fine, \$5.87½; Hudson River, choice, \$6.00; Hackensack, \$5.12½.

A. N. OLTIMER.

Hackensack, N. J.

## Kiln Building.

Editor Clay-Worker:

I am a new subscriber and should be glad to receive information regarding a brick and tile kiln I have been using as an up-draft, but which I would like, before next season, to convert into a down-draft. It is fifty feet by eighteen by eight, inside measurements, with a crown in it, and we have put in a flash wall



five feet high. There are nine fire-holes on each side, with a nine-inch space between the main and flash walls. Would you kindly advise me what size of flues and chimneys, also height of chimneys, I ought to construct, also whether chimney would be more satisfactory if built in the wall or entirely outside?

If I am not taking up too much of your valuable time, there is another question I should be pleased to receive light upon. Why will tile not burn the second time the same as pottery? My clay is all white, with a foot of loam on the surface, then a very small seam of limestone in some places, but the remainder is entirely free from stone and about twelve feet deep. The clay has been taken out of the bank for pottery, as brick or tile, and works well. At first I thought it was because they had happened to get a little damp, after being taken out the first time, but I have tried a few which were in the bottom of the kiln, without taking them out at all, but still cannot get them to come out sound.

Any other information than that I have asked regarding a down-draft kiln would be considered a special favor. A NOVICE.

### Queries and Answers.

Editor Clay-Worker:

I frequently receive letters from readers of the CLAY-WORKER asking for information on matters pertaining to various little details of the work about a brickyard. I take pleasure in replying to such queries as my time will permit, though it entails more labor and trouble than it would with many who are fortunate enough to be able to command the services of typewriters. It occurs to me that many of these letters may be of interest to other craftsmen generally. I submit the following, and will send more in the future if these pass editorial inspection.

Mr. W. F. T., —, Indiana:

From what you say in your letter to me, your clay-bed is very shallow. You say, you "cut your clay two spades deep, eighteen to twenty inches, and that it is very tough;" you propose to put four inches of sand on the clay and mix all together, so as to prevent cracking in drying, and you want to know if that will prevent the cracking. If the clay cracks in drying, you should add sand free from soil, until the cracking ceases, in an open shed. Very strong clay will take an equal amount of sharp, clean sand, and make good brick if thoroughly tempered together. You must experiment until you find the right thing to do. If you dry brick on an open yard in the sun, they will crack much more than if dried under cover, or on pallets under a shed. You may learn something further about the kind of clay that cracks most, and the cause and remedy for cracking, by reading "Brickmaking and Burning," published by the CLAY-WORKER.

YOU WANT TO KNOW IF "HEADS" OF KILN SHOULD SETTLE BEFORE "MIDDLES."

If you want to make sure of a good burn, "watersmoke" slow, get fires out all over the top, before you put a settling heat in the arches. Then close your furnace doors, and let the "heads" get a little more heat than the "middles" until they start to settle. Then keep the heat about the same all the way through the "arches," closing your furnace doors occasionally, so that the heads will settle close to the clamp or walls of kiln. As soon as the heads begin to settle, if the clay settles under a low heat, cover the deepest settled places with damp, fine clay.

As soon as you begin to cover the settled and well burned places the fire will leave them and go to the spots needing it, and soon the whole kiln will be settled; and all must be

covered with clay excepting the corners. If you burn in permanent kilns and your clay settles much, the kiln will leave the walls, and a crack will be seen all along the heads. This must be filled with brick and the clay covering put on close up to the walls.

THE ONLY CRITERION FOR A GOOD BURN IS HEAT ON TOP OF KILN.

A settle is deceptive. The brick at bottom of kiln may be heated too quick and too much, which will show a settle of the kiln when the main body of the kiln is only salmon brick. If a kiln be set and burned right, the heat under the first course of brick on top has the same appearance and intensity as the heat in the arches.

YOUR IDEA OF PUTTING TWO COURSES OF PLATTING ON INSTEAD OF CLAY,

is not practicable. It is not only a hot, bad job, but it is more expensive than using clay and cannot produce the same result. It is unreasonable, to say the least, to ask questions for which common sense suggests the answer. I have fully, repeatedly, at different times and places, tried to plat kilns with brick instead of using clay, and found it troublesome, costly and inefficient. It is my interest and purpose to recommend the very best results of my own personal experience. All that I advise has cost me time, study, labor and money, and yet a novice in brickmaking will give me his *notion* of a thing about brick, and ask me if his *notion* is not much better than my experience and advice. If you are sick and send for a doctor, and then prescribe for yourself, the doctor will charge you the same for his visit and you will be called a *crank*.

There are many who think that my plan for controlling the heat on top of an open brick kiln by using clay instead of brick is all wrong. These fault-finders say that "the dirt or clay will fall down into the kiln and discolor the brick." They have never tried my plan and know nothing about it. They think that I use dust when I prescribe "fine, damp clay." Now a little common sense and practice will show you that if you take a *loamy* clay, throw a little water on it, crush the large lumps, and throw it up in a pile, it soon becomes damp enough to adhere and form a *cake*, if pressed a little with the foot when thrown on the kiln.

A man can take a half bushel of this clay in a bag, and in a moment step anywhere on a kiln and cover about two feet square, some times more, with his half bushel of clay. He spreads it with his foot; he does not suffer from the heat; he covers effectually the spot burned, prevents further waste of heat, and forces the draft and heat of kiln to places that are not burned. When the kiln gets cool enough to open, an expert hand will take a shovel and run it under the platting, taking up all the clay, and throw all down a *chute* or trough into proper places alongside of kiln. If the platting be of whole brick, they can be *hacked* in the right place and be used again. Bats can likewise be used, if necessary. It is impossible to effectually cover a bat brick kiln with brick. If the kiln were covered with whole burned brick and the brick laid tight together, it would so *dampen* the kiln that the heat passing off would form down-draft currents or crack side walls of kiln, or both. If the platting were of *green* brick, they would shrink too much and would break to bats when taken off. If the platting were put on, there would be cracks or open spaces left. These would have to be covered with clay, so that the clay covering is the cheap, easy, quick and effectual way to control, distribute, retain and economize heat in an *up-draft* brick kiln, and thoroughly anneal and burn the brick.

I have here answered all of the main questions sent to me lately by several persons, in

different parts of the country, as stated above. I shall continue to answer questions sent to me about brickmaking, through the CLAY-WORKER, unless the questions are for my own private, personal consideration. I try to talk plain without being personal. My main purpose and desire is to be useful to the *Craft* I have served with for the last *three-score-and-ten*. Respectfully, J. W. CRARY, SR.

### Out of the Usual Order.

Editor Clay-Worker:

Enclosed please find money order for \$4, to pay one year's subscription for two copies of the CLAY-WORKER. I lately bought the Houston Brick and Tile Works, at Houston, Texas, and am adding dry press brick machinery to the works there. I am putting in a Columbia four-mould press, together with disintegrator, elevators, etc.—a complete outfit for manufacturing dry press brick. The clay will be elevated and dumped into the drying and storage sheds, by means of a winding drum, in dump cars, on rail track, and no teams or scrapers will be used for gathering or hauling the clay. The brick business has been pretty good in this section and the outlook for the coming year is favorable. I have been operating my yard here all winter and have been behind orders all year. Other business is and has been quite dull, A. THAISSON, Laredo, Tex.

### Tests of the Strength of Building Material at the U. S. Arsenal, Watertown, Mass.

A series of tests has been inaugurated at the Watertown Arsenal for the purpose of ascertaining the strength of building material representing the resources of the different States and Territories in respect to the strength of timber, clay products, including building and paving brick, tile, terra cotta, and other fire-proof building material; also stones from the various quarries, and cements.

It is expected from the scope these tests will assume that eventually the natural resources of the country will be fully illustrated in this investigation. Those interested are invited to assist in carrying out these tests in the contribution of material, or by aiding in the collection of such as represent the building material of State or vicinity.

The results of tests, on their completion, will be forwarded the contributors of the material, and will subsequently appear in the Annual Report of Tests of Metals, made at this Arsenal, a public document.

The transportation charges, by freight, to Watertown Arsenal and the expenses of testing and reports of results, will be defrayed by the government. The cost of material and its preparation into specimens according to the appended specifications, will be borne by the contributors.

The material contributed should be suitably marked for identification and a description forwarded, stating, if the material is brick, the name of manufacturer and address, and if made by a special process, mention the fact; purpose for which brick are used, building, paving or fire brick, and same for other clay products.

Forward such of the above called for information as may be known, together with three to five full-sized brick, of a kind representing hard and soft burned material, or different degree of vitrification. *Terra cotta, terra cotta lumber, and other fire-proof material*, rectangular shapes, full-sized, three to five specimens of a kind.

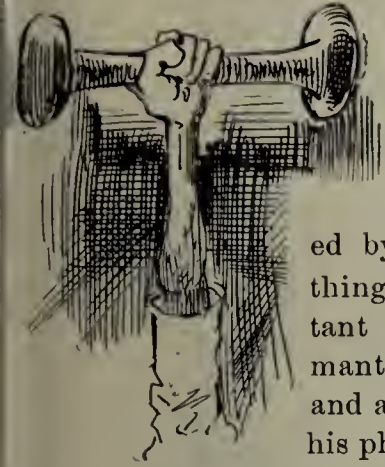
Those who intend to send material for testing will also please forward at an early date a statement of the amount of material which they expect to contribute, and about the time its shipment may be expected. The material should be shipped addressed to the Commanding Officer, Watertown Arsenal, Watertown, Mass., as early as expedient to do so, and not later than will secure its arrival at this Arsenal prior to June 15, 1894. J. W. REILLY, Major Ordnance Dept., U. S. A., Commanding.



Written for the CLAY-WORKER.

### THE BRICKYARD BOOKKEEPER.

An Exercising Tale of a Vainglorious Athlete.



HAT J. DeLaney Blotter aspired to become an athlete was a surprise to his friends. He was not apparently intended by nature for that sort of thing. Blotter was first assistant bookkeeper for the Adamant Carmine Brick Company and a model man except as to his physique. In fact, Blotter's wife was his superior in weight, as well as years, for she was 38 in the matter of



summers, while his winters had numbered a half a score less, and while she tipped the scales at 180, his avoirdupois was unable to extend the indicator at a greater point than registered 119½ pounds. What he lacked in flesh he made up in amiability. He was a general favorite with the people he came in contact with, and it was no wonder that when an athletic club was started in the town of Clayrionette, that he



was invited to become a charter member. It was an epoch in Blotter's life.

Visions of immense personal strength rose before his mind. He began the life of an athlete—a miniature Corbett.



He no longer permitted his wife to bundle him up when he went to his work, and poo-hood her warnings not to get into draughts, or stand on the outside of the street car.

He became a changed man. Nothing short of two hours a day with dumb-



bells and Indian clubs would do him; he even neglected his fireside, much to his poor wife's distress, who was quite in love with her pocket-edition hubby.

There was something almost weird in the change that had come over Mr. Blotter. From a creature the reverse of robust and who had to be constantly looked after to preserve his vitality, he blossomed forth into the most ultra-athlete. Of course, it was after hours that he became thus metamorphized, for no man seeing him in the pursuit of a column of figures would take him for a disciple of muscular development.

But at home it was apparent. He entered the bosom of his family with his pockets bulging out with a great

variety of sporting papers, which he read, much to the neglect of his erstwhile favorite—the CLAY-WORKER. He

paid little attention to the arrangement of his hair, (which before had been a favorite occupation,) but expanded his chest to its fullest proportion and gazed critically into the looking glass.

Even on the street his aspect was changed, for he eschewed his overcoat, and wore a suit of strange, rough, dotty material, which gave an impression of increased bulk. He even exchanged his customary creep for a reckless swagger, which even impressed the brawny workmen about the brick kilns.

Then there came a time when he delighted to point out to Mrs. Blotter the wonderful development of his biceps.

All this went on for three months, at the end of which time Mr. Blotter's weight had increased three quarters of a pound, and he became very strong—too strong to work. He is looking for another job, and the man who has taken his place is a short, soggy muscled man, who spends his spare time in playing seven-up for the cigars, a man who hasn't weighed himself in ten years, and doesn't know an Indian club from a chameleon.

There is a moral in Blotter's latter career, but it would take a sectional "Jimmy" to get to it—and it wouldn't be worth the trouble even if it were found.

CHARLES LEDERER.





## THE MANUFACTURE OF DRAIN TILE AND BRICK.

BY F. E. DICKINSON.

The subject of this paper is broad and comprehensive. It is not my purpose to present an exhaustive thesis upon this occasion. For such a consideration, I would cheerfully refer to the excellent editorials and contributions in the files of the DRAINAGE JOURNAL and the *Clay-Worker*.

The manufacture of drain tile is a comparatively recent enterprise. It is remarkable that the art has attained so high a degree of excellence in so short a time. Usually a great adventure like this requires, from its growth from insipidity to full grown perfection, centuries of thought and experiment. The great utility of tile drainage has interested some of the most fertile brains of our day, and the result of their contemplation is seen in the sphinx-like growth of this new industry.

The manufacture of so many different sizes of tile by so many different men in divers places and manners, is a marvel of perfection.

The brick industry is different. The dust of the ages has settled so thickly over its history, that it is lost in oblivion. Its first cry comes from the darkness of ancient Egypt—a wail of pain and anguish as the birth-cry of the new-born babe at dead of night. Its history is the history of antiquity. In being preserved itself, it has preserved the record of ages. Marvelous indeed, has been the various methods of brickmaking from the days of the Egyptian straw bricks to the time of modern bricks without straw.

The task of the brickmaker has been continuous, and while the world stands will probably be unending. I am not sure but that the final burning will be firing of a vast up draft kiln of finely moulded and enameled brick and terra cotta for the building up and ornamentation of the New Jerusalem.

Not one generation or century has had the honor of lifting up this industry to anything like perfection. Its annals show centuries of gradual advance, sometimes long periods of retrograde movement, and yet, again rapid, forward strides of almost electric speed. Yet, notwithstanding all that has been accomplished, there remains for exploration an almost illimitable *terra incognita*.

Indeed, the excellence of the present is but an index to the greater possibilities of the future. With the increasing and more diversified uses of electricity, the discovery of subterranean oceans of natural gas, the new methods of using fuel oil, and new properties and uses of the most familiar substances, and also the discovery of new elements with new combinations of long known basis, there is the greatest encouragement to new and interesting departures in the manufacture of building material from the crust of the earth. Indeed, as it seems to me, the brick industry is yet wrapped in its swaddling clothes.

To him who walks this mundane sphere in future eons, our slop brick, stiff mud brick, stock brick, crackled, mottled, rock-faced and dry pressed brick, will no doubt be looked upon with as much curious interest as we now contemplate the relics of the almost mythical cave-dwellers. The machines, kilns, and methods of manufacture of our own day will perhaps awake the pitying scorn of the craftsmen of that day.

It might be interesting to pursue this speculative mood further, but as our subject has to do with the perplexities of the present, rather than the veiled mysteries of the future, we will wade out through the mud to the factory and look it through.

The first thing that engages our attention is the raw material out of which brick and drain tile are made. For just the same reason that there could be no first-class woolen goods without wool, so there can be no first-class drain tile and brick without an abundance of good clay. We are informed that as man differeth from man, and star from star, so also clay differeth from clay. Indeed no two deposits of this useful ore are alike in all respects.

The great dissimilarity of clays is largely owing to diversity of position and quality. Some clays are nearly pure, others are mixed with lime, iron, sand and all sorts of impurities. Some are plastic, others are not. Some are worked directly from the bed, others have to be weathered, blasted, broken, pulverized, ground and washed. Some crack easily while drying, while others stand almost any rapidity of drying without injury.

In order to work a clay successfully, it must be handled according to its nature. Don't stoke a cat the wrong way.

In former days every man did that which was right in his own eyes and worked his clay with his own, or his ox's feet, and moulded his wares with his hands, but not so now. Modern machines are a necessity. Owing to the varying nature of the material to be worked, there ought to be and there is a great variety of enginery for the purpose of clayworking.

It is readily inferred from the foregoing that a successful issue in any given case of drain tile and brickmaking there must be a wise choice of machinery and methods of manipulating the clay. Nearly all the clayworking machinery made is excellent, and yet, that man is fortunate who has made no mistakes in his selection.

Generally speaking, a machine should be recommended by its strength, capacity, and simplicity.

Anyone contemplating entering upon the brick and tile business, or remodeling old works, could profitably spend a few weeks and several hundred dollars in visiting a large number of factories in different localities, noting carefully elements of failure and success. The expensive experience and failures of others would become a source of great revenue.

When once the outfit is purchased, have faith in it, and with the utmost patience, seek by every possible means, to make it work satisfactory. After the machine, come driers, and kilns. The clay may be the best, methods of tempering seemingly perfect, and the *green goods* without defect, but if they are not properly burned the purchasing public will pronounce them counterfeit. While you may not, for making such goods with your die, be sent to the "Pen," you will surely get yourself into a "Box"—(hole).

Some will insist on your burning in up draft kilns, some in down draft, and some in continuous kilns. One man insists that thirty hours time is sufficient for burning, another says sixty hours, another advocates five days, and still another holds that fifteen days are necessary. One burns wood, another coal; his neighbor uses oil, and yet another requires gas. The variety of kilns is multitudinous, and so are the various methods of setting the ware, and the same skill must be exercised here as in the selection of the machine. Get the kiln and use the method that best suits your clay. The final result will be determined from experiment.

\*Read before the Indiana Tile, Brick and Drainage Association, Jan. 3 and 4, 1894.



To meet with success, good raw material, suitable machines, and excellent kilns, we know to be essential, but we must have some thoroughly competent men to supervise the entire process. The securing of these will tax your ingenuity to the utmost. There will be many applications for the positions. Trial after trial will perhaps result in complete failure.

A great many of your friends see your mistake in this particular, and *comprehend also clearly* just what you ought to do to turn the unlucky tide. It may be that they themselves or some friends of theirs, who just now providentially happen to be out of a job, is just the man for the place. Another change, result—failure, more expense, more disappointment. How to get out of this trouble, I don't know. If you do however succeed in solving this mystery, you will become a rich man.

There is another idea suggested by our subject, and that is the combined manufacture of drain tile and brick. Undoubtedly there are many tile factories where it would be unwise to attempt the manufacture of brick also, and the same is true in regard to some brick plants as regards tile.

There is, however, a tendency for large concerns to undertake to supply all the products that their material will produce. Armour's great meat packing establishment is a notable example of this drift. From a slaughter house have grown a large number of special lines, and it is impossible to foresee the end. The Standard Oil Company's magnificent display at Jackson Park bore testimony to their far-reaching enterprise. The thing that the managers of these colossal concerns seek to accomplish must commend itself to our careful consideration. There must be pecuniary profit to secure their interest. From this consolidation there results an output of commodities in almost every way superior to those produced by the old methods. What is true of the cases mentioned seems to be true also in regard to the clay business.

In the first place, the raw material for the production of good drain tile and good brick are the same or nearly so. The little variation between the two is, in itself, an argument for a combined factory. It is generally understood that a good drain tile clay is nearly pure, while that for good brick may contain many impurities, especially sand. These two varieties often overlap each other.

Many deposits of clay are in different layers. In some cases the sandy clay must be removed before the material for tile can be obtained, or it may be, that underneath the fine, smooth tile clay there is an extensive deposit of excellent brick clay. Other conditions being favorable, it is much more economical to utilize each product in the manufacture of that for which it is best suited, than to spoil your trade by the production of an inferior article out of unsuitable material; or to spend time and money in carting away the upper strata, or to allow the lower bed to lie unused.

The land also is spoiled for agricultural purposes after you have removed a few thousand dollars worth of tile. Hence, if in addition, you dispose of a large amount of brick you have enriched yourself by the profits of the extra production. So it seems to me that the part of wisdom is to construct your plant so as to use up all, and not a part, of your clay.

In the second place, the machinery used for the making of the two articles is very much the same. Indeed, in most instances, with the exception of different dies, they are in all respects the same. Even when the output of tile is so great as to keep the mill in constant operation, the pug mill, if one is used, could just as well supply a brick machine, and the boiler and engine will be used with more profit if they are required to drive at the same time, a brick machine.

A very large part of the expense of a plant is in the water supply, the boiler, engine, pug mill, and buildings for their protection. A few hundred dollars will purchase either a good tile mill for a tile factory or a brick machine for a brick factory, thus transforming either into a brick and tile plant.

I have seen a pressed brick plant where the clay was reduced with a dry pan and then passed through a mixer, part supplying the brick press and part a tile mill, and it seemed to me to be a profitable arrangement.

The arrangement of kilns need not be any different, as a good brick kiln is also a good tile kiln. Nor need it be a drawback if there is not sufficient kiln-room to accommodate the combined output, for the brick may be burnt in an outside common clamp kiln or cased kiln, with a good per cent. of profit.

In the same manner that there is economy in the use of clay, machinery

and kilns in the combined manufacture of drain tile and brick, so there is even greater economy in the employment of men in the joint production. After the plant is complete the cost of brick or tile, as the case may be, in the union plant is but little above cost of setting and burning. Engineer, superintendent and in some cases, other employes can operate for both commodities as well as for one.

Another favorable consideration in regard to the combined factory is, the judicious use of time. In small factories where there is not sufficient kiln-room or drying capacity to keep the machinery in constant operation, during fair weather, brick can be made and dried in the sun and set in an outside kiln. In this way the machine may be kept in motion. The work may be so planned that by making brick in good drying weather and tile in unfavorable brick-making weather, both men and machines will be constantly and profitably engaged. At the end of the year the men will be satisfied with their season's work, and the proprietor will be delighted in the fact that his yard is well stocked with just the goods that will greatly add to his bank account.

In every factory a great number of brick are usually needed annually for the repair of kilns and other purposes. It is much more profitable to use those of one's own make than to be compelled to buy of some other concern.

In the next place the demands of the trade are such as to encourage the production of a combined output. There are very few places where there is not a constant demand for a limited number of good brick. The trade in drain tile is largely confined to the fall and spring months. The demand for the brick is steady, and quite likely to be made at those seasons in which but few drain tile are used. Then it frequently happens that there is a dull or off year in either drain tile or brick trade, and the chances are that when there is no call for the one the other will be in great demand. The result of the combined factory is, that there is likely to be a constant income from the sale of both commodities.

The advantage of constant sale of goods is too apparent to need comment. Very often the success of the business depends upon a ready supply of cash to meet current expenses, and there is no surer way to obtain this than by a constant supply of good brick and drain tile.



While in this paper it has been my purpose to indicate some of the characteristics necessary to a successful business and especially of the combined manufacture of drain tile and brick, yet it is by no means certain that every man who tries to follow the hints will have a prosperous business.

It seems easy enough to take clay from the bank, wet it up, or grind it and press it into shape and burn it. It looks as though any one could do that, but experience has demonstrated that he who handles clay is liable to have trouble. It is said that the Creator made man out of clay, and behold! what an awful mess there has been. It has taken all the divine wisdom and all the infinite powers of heavens to make a presentable object of man. The fault is undoubtedly with the clay, and what can you expect when clay moulds clay?

In our business much depends on employes, much on machines and kilns, much upon the clay in the bank, but most of all depends on the quality of clay we are made of. Our constant aim should be to lift up and better the condition of humanity, more than to accumulate a mass of inconsiderable dollars.

Written for the CLAY-WORKER.

## CHEMISTRY FOR CLAYWORKERS

No. 20.

THE varying heat unit is only on a par with the varying size of brick, etc. All are reducible to a common standard by the application of a little arithmetic.

In all these varying units, water is the standard for all other substances, no matter which thermometer is used, nor what weight is chosen, it is invariably a definite weight of *water*; and this is designated 1.000. This is also called its *specific* heat, or you may call it its *capacity* for heat.

Substances vary greatly in their specific heats; nearly all are less than water. It will be found that the quantity of heat required to heat 1 pound of water 1° will heat nearly 9 pounds of iron 1°, or what is the same thing, it will heat 1 pound of iron nearly 9°. From this we may justly conclude that water and iron—weight for weight—have capacities for heat in the proportion of nearly 9 to 1, or to be exact, and putting water at the standard fixed on, viz., 1.000, we must put iron at .1138. This same unit of heat that will raise 1 pound of water

1°, or 1 pound of iron 8.77°, would heat 1 pound of silver 17.54°, or 1 pound of gold 30.82°, or 1 pound of ordinary building brick 4.54°. Tabulating these five substances according to the specific heat of equal weights we have:

|                  |        |
|------------------|--------|
| Water.....       | 1.000  |
| Iron.....        | .1138  |
| Silver.....      | .05701 |
| Gold .....       | .03244 |
| Brick about..... | .2200  |

You will perceive that an ordinary 4½ pound building brick and a pint of water require about equal amounts of heat to raise them to equal temperatures. This is an example you may very easily verify by taking a brick weighing 4½ pounds and warm it up to any convenient degree, say 100°, and keep it at this temperature long enough to be sure it is warmed equally all through. Now get a wooden pail or bucket with a bottom large enough to allow the brick to be flat, and pour into this bucket 8 pounds, or say, a gallon of clean water. Take the temperature of water with a thermometer, which we will assume to be at 60°, and this should also be the temperature of the room in which the experiment is conducted. Now put the brick in the water so that it is completely covered, and put a wooden cover down in the pail close to the water; through this lid insert a thermometer with the bulb at about half the depth of the water. Watch the rising of the mercury, and note the highest point to which it rises. If this experiment be carefully carried out you will find the water to rise only 4½°, or from 60° to 64½°.

The high specific heat of water accounts to a great extent, for the large amount of fuel required for water smoking a kiln of ware or brick.

If we mix equal weights of water at different temperatures, the temperature of the mixture will be the arithmetical mean of the two temperatures; thus, 1 pound of water, at 50°, mixed with 1 pound at 100°, would give us the bulk or 2 pounds at 75°. But the result will be different if we mix equal weights of water and benzine. (The specific heat of benzine is .4500.) If we take 1 pound of water at 50° and 1 pound of benzine at 100° the resulting temperature of the mixture will be about 65.5°; this difference will be better illustrated if we take 1 pound of mercury at 0°, or zero, and 1 pound of water at 100°, for in this case the mixture will have a temperature of 96.8°, the water in this

case loses 3.2° only, while the mercury gains 96.8°. If we reverse the operation, pour 1 pound of mercury at 100° into 1 pound of water at 0°—assuming, of course, that the water would be in the liquid state at 0°—we should have a mixture at a temperature of 3.2° only.

It should be borne in mind that *pure* water should be used in these experiments on specific heat; not merely clean bright looking water, but pure in a chemical sense.

What are we to learn then from the facts and experiments stated above?

First—We learn that some substances are much easier to heat than others, and, after deciding on a standard and unit of heat, it becomes very easy to determine *how much* easier. We thus arrive at the facts that, weight for weight, water requires 4½ times as much heat—or, in other words, *fuel*—as bricks; 8¾ times as much as iron; 17½ times as much as silver; 30 times as much as mercury, and 30¾ times as much as gold. These facts can all be verified by experiments, similar to the one above, with water and the brick.

Secondly—We arrive at the fact that the same quantity of heat will show that difference in intensity shown by the figures just given, when it is *confined* in the substances to which the figures refer; therefore, it is quite safe to conclude that the quantity of heat required to raise a pint of water from freezing point to boiling point, would, if confined in brickbat weighing half a pound, raise it to a good red heat, and, under the same conditions, melt half a pound of cast iron. Now, with a good table of the specific heats of various substances and a table of melting points, etc., we can determine the amount of heat required to heat bricks, melt iron, copper, lead, zinc, silver, gold, etc., also the amount that will produce boiling in any liquid when the intensity of the boiling point has been determined; of course we must always bear in mind that the *weight* of the material will always be an indispensable factor in calculating the *amount* of heat, whereas *weight* is out of the question when the intensity or temperature only is required.

It is a very fortunate circumstance that water has such a high specific heat, or, if you like it better, such a high capacity for heat. Most works on chemistry and physical science show up what dire disasters would ensue if water had no more capacity for heat than mercury;



during the day sunshine would set the water boiling, and during the night it would freeze rapidly for want of sunshine, and, of course, at once destroy all animal and vegetable life, constituted as it now is.

This high specific heat of water is of great importance to the sanitary engineer engaged in heating apartments in public and domestic buildings, and quite as advantageous to every other artisan who wishes to use warm air.

The specific heat of air is 0.25; therefore a pound of water giving out  $1^{\circ}$  to air, would warm 4 pounds of it  $1^{\circ}$ . Now water is 770 times heavier than air; so that if we compare equal volumes, a cubic foot of water, in giving up  $1^{\circ}$  of its temperature, would raise 3,080 cubic feet of air  $1^{\circ}$  for  $770 \times 4 = 3,080$ .

The high specific heat of water is one good reason why it is chosen as a standard for the thermal unit, and the low specific heat of mercury is equally as good a reason why it is used for making the thermometer, for you see it is quickly heated and quickly cools, thereby quickly acquiring the temperature—whether high or low—of the substance into which the thermometer is placed.

To me specific heat is a very interesting study, and I cannot dismiss it without calling your attention to the important fact of a beautiful relation existing between the specific heat of a body and its atomic weight; and this is true of nearly all the elements at present known. The law relating to this was discovered by M. M. Dulong and Petit, and reads thus: *The product of the specific heat of an element, multiplied by its atomic weight, is a constant quantity, viz., 6.4, or nearly so.*

If instead of taking a pound of iron, copper, silver, gold, mercury, etc., let us take the number of pounds representing their atomic weight; thus, 56 pounds of iron, 63.5 pounds of copper, 108 pounds of silver, 197 pounds of gold and 200 pounds of mercury; now, if we heat all these up to the same temperature, say  $100^{\circ}$ , and plunge them into separate vessels of water containing the same quantity and at the same temperature, we shall find that the rise in temperature of each vessel of water is exactly the same.

This simple and beautiful relation extends to the compound bodies as well, so far as specific heat is concerned.

Like numerous other laws, this has a

few exceptions, for example, carbon, boron and silicon are exceptions. It may yet be found that we have not discovered their true atomic weight.

WM. WAPLINGTON.

#### DRY PRESS HINTS.

##### Tenth Paper.

THE bulk of the literature pertaining to dry press brickmaking is found in the circulars distributed by the patentees and agents of the various styles of machines, and while they make very instructive and interesting reading, they must be taken "cum grano salis." I am not enough of a bigot to say emphatically that the dry press system is the only true method of making bricks, but I do say this, that if your clay proves suitable, after the tests previously recommended in these columns, you will not make a mistake by launching your bark on this sea of possibilities.

I said the *bulk* of dry press literature was on circulars, but I think the most valuable portions are the practical letters from practical men, to the CLAY-WORKER and others of our trade papers, and the papers annually read at our conventions; these possess the advantage of practice as against theory, the difference as between pilot and signpost.

I am not depreciating theory, because I believe a theory worked out on correct lines (thereby distinguishing it from a speculation) is a valuable aid to practice, and combined with practice, assures success in any venture, and for this reason alone the importance of our annual conventions and the CLAY-WORKER cannot be over-estimated. It is a deplorable fact that our trade, profession, or calling (as you like it), is the most meagrely represented of any in the matter of literature and text books, but brickmakers can blame only themselves for the deficiency. Some I know, who do not subscribe for any paper, have neither bought nor read any of the few good books that have been written in the interest of brickmakers, but who still are clamorous for the "elevation of the craft." These latter remarks apply to all branches of the vast clayworking industry.

It is an open and conceded fact that that the brickmaking of to-day and the brickmaking of twenty-five or thirty years ago are on widely dif-

ferent planes. To-day it is a science, a profession which includes men of intellect and business capacity second to none. Then it was a question of day labor and quantity; work, *hard* work, from sunrise to sunset, and subject to further call at any hour of the night. This progression shows us but an inkling of the possibilities of the future, possibilities made more probable as the dry press system unfolds and discloses its possibilities, and is better understood. Just take a look through the illustrated catalogues of some of the noted dry press brick manufacturers, and I think you will allow me, that "terra cotta" has a dangerous, if not successful, competitor.

The brickmaker need not be an architect, but, all the same, if he has an intimate acquaintance with the requirements of architecture, he certainly can take a more accurate measurement of his own business and its requirements. The brickmaker need not be an engineer, pure and simple, but if he possess a fair amount of engineering skill and an intimacy with its formulas, he cannot help but be a better brickmaker than one who does not. I claim, on these lines, that no brickmaker who wishes to keep near the head of the procession can afford to be without some current literature on the subjects mentioned; if he does, he must be content to travel in company with Ebenezer Jonathan & Co., who are so far back that they cannot even hear the band. It will do even a devotee of the dry press system good to read and follow carefully the articles on "mud" brick-making in our journal, and vice versa. A down-draft burner will not be in the least injured by reading an up-draft burner's views, and, also, vice versa; while those who are ambitious enough to wish to understand the composition and possibilities of their material will be rewarded by perusing "Chemistry for Clayworkers." The brickmaker ought to know something of the mysteries of *bricklaying*. Especially is this true of the higher branches of the business. Plans are submitted for a high-class building, requiring ground arches, flat, round or elliptical dormer windows, cornices, jambs and pillars, bricks, binders, angles and returns, etc., etc. Just as in engineering, the patternmaker must know something of foundry practice, so the brickmaker, to be successful, must know something of architecture. This almost looks like an in-



dorsement of the college scheme, doesn't it? Well, as I believe in that scheme as very practical, we will let the impression remain; but until the advent of that much-to-be-desired institution, we must be a college in ourselves, with our trade and kindred journals as text books.

Well, you ask, what has all this got to do with dry press brickmaking; and I answer, as the dry press system is so decided an advancement on the old method, so must we improve and advance our ideas and knowledge to keep pace with it, and to keep up with the requirements of the times, and the only present way of doing this is by the interchange of ideas and experience through the CLAY-WORKER, our local organizations and our annual conventions.

As I was told in a "button-hole," at Chicago, "Take a certain percentage of what you *hear*, mixed with a certain percentage of what you think you *know*, and you have a pretty good recipe for a successful business." PRESS.

Written for the CLAY-WORKER.

### CONTINUOUS KILNS.

#### Third Paper.

BY PETER YOUNG.

WE will now consider the specific functions which a continuous kiln is called upon to perform, and in so doing, I wish to draw attention to some advantages that this kiln facilitates, during the watersmoking stage that are not generally understood and which are not obtainable in the up or down-draft kilns.

It was observed on the first continuous kilns ever operated that the bricks burned in same to ordinary hardness possessed greater toughness than those made of similar material, under the same conditions, but burned in the old style kilns. This superiority was attributed to the uniform and even increase of the heat and the gradual withdrawal of same, after the burning was finished. That it is partially due to this there is no doubt, but I claim there is another factor in producing that result, that is of no small importance, and that is the method of expelling the extraneous water from the green brick, so as to prevent any uneven contraction of the exterior and interior of the brick.

It will be borne in mind that I am now referring to the burning of ordinary

hard bricks in particular, but at the same time I am confident that this method can be advantageously applied to the burning of vitrified pavers, providing the kiln performs the other functions necessary for burning such brick, and I will endeavor to support my theory with convincing arguments. It is well known by all brickmakers that if bricks are dried with a force current of dry air at a comparative low temperature, the surface of the brick is dried quickly, while the interior remains wet for an indefinite time; this causes the surface to contract quicker than the interior, and the brick cracks more or less, according to the composition of the clay, whether fat or meagre. These cracks may be so small that they are invisible to the eye, or they may be sufficient to entirely destroy the brick for all purposes. At all events, the natural crystallization and cohesion of the molecules has been destroyed and cannot be restored in the kiln.

If, on the other hand, the green bricks be heated without the access or free circulation of dry air or other absorbent medium, the drying or evaporating process does not proceed sensibly until the entire brick has been heated to a temperature 212° Fahr., or the boiling point of water; then the whole amount of water in it is converted into steam and the whole brick dried at once, evenly, causing a simultaneous contraction of the entire brick.

I will now proceed to show that the latter method of expelling watersmoke is the one employed in the continuous kiln when properly operated, and while objection to the application of my theory to this stage of the operation may be made on the grounds that the bricks do not settle perceptibly during watersmoking, yet we all know how sensitive they are during this stage, and that we are certain to have cracked and checked bricks in our kiln if watersmoke is not taken off very carefully, especially if the bricks are made very dense and compact, such as repressed or dry-pressed bricks.

If we inspect the operation of a continuous kiln we find that the products of combustion from the burning sections are carried forward a distance of one hundred feet, more or less, through bricks which are of a gradually decreasing temperature.

Immediately ahead of the active fire is a section of red hot bricks, then a section of black hot bricks from which

the watersmoke is not entirely expelled. Ahead of this the bricks are steaming freely, which we can ascertain by inserting a cold iron rod through one of the feed-holes and remove it again after a few minutes, when we will find it to be dripping wet, which proves that the gases are heavily loaded with steam. If we proceed further toward the exit passage we find the gases almost completely saturated with moisture, which leads to the conclusion that they absorb very little moisture from the bricks in the last section; but on the other hand, impart a portion of their heat to the bricks until the temperature of the same reaches the boiling point of water, at which time the water in the bricks is converted into steam, which then escapes with the other gases; this results in a simultaneous expulsion of the water from all portions of brick evenly. It is evident, of course, that the kiln should embody means for regulating the humidity of the gases to suit the requirement of the particular clay, which can be done by intermingling dry hot air with the direct draft between the sections under fire and the last watersmoking section.

I claim this to be one of the advantages of the continuous kiln over periodically operated kilns, because in the latter the initial humidity of the gases is "nil," hence they carry off the moisture from the bricks too rapidly, and if the draft is not reversible in such kilns, that portion of the ware which becomes properly watersmoked is so situated relative to the source of the heat that its proper burning is impossible.

In a good continuous kiln the humidity of the gases can be regulated so as to give every brick in the kiln the same treatment.

All continuous kilns, however, do not operate on the principle I have described, because it is claimed, steaming discolors the brick. And so it will, to some extent, if the humidity is not regulated, especially along the floor and lower portions of the kiln where the heaviest gases descend and offer greater resistance to horizontal motion.

The method of treating the green brick with dry hot air or heat under circulation until the watersmoke is all off is certainly not attended with the best results, especially if the bricks are difficult to dry, but a small amount of dry heat should be used on the green brick before they are admitted to the general run of the kiln, as it will prevent the



condensation of the steam of the saturated gases, which would occur if the same were brought in contact with cold green brick; but that pre-heating should be done under very slow circulation and the heat currents should be admitted into that portion of the ware where the greatest difficulty is encountered.

Before leaving the watersmoking section of the kiln we must consider the motion of the gases here relative to the top and bottom of the kiln.

It is most natural that when the products of combustion are advanced horizontally through the kiln, the hottest and lightest gases will ascend and find the highest place under the crown of the kiln, whereas the coldest and heaviest gases will traverse the lower portion along the floor. Now, these heavy gases along the lower portion of the kiln offer greater resistance to the horizontal draft, hence their movement is comparatively slower than the movement of the lighter ones along the top.

This inequality of circulation and temperature causes the bottom and lower portion of the kiln to remain comparatively cold and moist, while the top is thoroughly hot and dry, and will appear greater with a slow circulation through the kiln than with a rapid circulation.

Confining our attention for a few moments to the heavy gases in the watersmoking section, we see that the same are subjected to two forces, or rather two components of one force—the force of gravitation—one is the local tendency to descend and give room for lighter gases above, and one is a horizontal pressure toward the chimney, hence the greater the horizontal component or the draft, the nearer the resultant will come to a horizontal line, but with a decreased draft, the local tendency to descend will predominate.

Bearing in mind what has been previously said about the circulation through the active fire, we are led to the conclusion that it would be of advantage to increase the velocity of circulation in certain portions of the watersmoking sections without disturbing the draft through the fire.

Various means have been devised for overcoming this obstacle in the watersmoking, but this is no place to comment on their efficiency; suffice to say that with nearly all of them it is found necessary to form large longitudinal flues in the material along the floor in

order to increase circulation by increased draft area, but such flues are objectionable during the cooling or annealing stage, inasmuch as they present uninterrupted passages for cold air, and more so, since the atmospheric pressure is greatest at the floor of the kiln; therefore too much air is drawn in through such flues, which carries off the heat from the surrounding material too rapidly and finally enters the fire at a low temperature, rendering it impossible to maintain an even temperature in the finishing section.

(To be Continued.)

#### ANOTHER REJOINDER.

To Brickmakers:

IN the February issue of the CLAY-WORKER appeared a letter from the Simpson Brick Press Company, and a copy of a letter over the signature of Mr. W. C. Lemert, in which an elaborate attempt is made to explain to the brick-making public how the Simpson Brick Press got an award, or rather, why the Simpson Press *did not get an Award* at the World's Fair. There has been no lack of zeal and finesse on the part of Mr. Simpson in his efforts to either land the prize himself or belittle the value and effect of it, if awarded to us. For several months the Simpson Company has been proclaiming, with a reckless regard for facts, that their machine was the only brick press in Machinery Hall to receive an award. Their advertisements have been filled with statements to that effect, and now they bring in what they consider a clinching argument in the form of a letter from Col. Lemert. We assure the Simpson Company that they are welcome to the meager crumbs of comfort they can extract from Col. Lemert's report. We will try to be content with the tokens of appreciation which the Boyd Press received, including the Great Bronze Medal, the Blue Ribbon and Diploma, and such other honorable mention as fell to our lot.

Col. Lemert calls himself the "Sole and special judge on brick machinery." Mr. Simpson calls him the "Only authorized judge on brick machinery," yet his report recommending an award to the Simpson Press didn't go through, for as soon as the Colonel's report came to the notice of the eminent mechanical experts composing the Jury of Awards in Machinery Hall, it was very promptly *rejected*, and its recommendations *reversed*. They called a halt on the Lemert Re-

port and nipped the *little scheme* in the bud. This is what Mr. Simpson calls "his award" or "honorable mention."

Now, whether Col. Lemert recommended an award to the Simpson Press or to the Boyd Press, or to both, or neither, does not in any way interest anyone, as his whole report was rejected. What the public would like is the complete Lemert Report. Mr. Simpson has already quoted from it, now let us have the full report. It would be interesting, perhaps entertaining to brickmakers to read what this manufacturer of mud machinery can have to say about dry press machines and process. By all means let us have the full report.

If the Colonel said anything in his report against the Boyd Press, we will forgive him, and to show that we have no feeling in the matter, we will forgive him if he said anything in favor of the Boyd.

Mr. Simpson will, of course, in justice to brickmakers, see that a full and complete copy of the Lemert Report is published, in order that the public may judge for itself. He may also be able to tell us what happened to this report when the experts got hold of it, and why a re-examination was ordered and made, and a new report substituted for the Lemert Report. In short, why the Boyd Press carried off all the Honors and the Simpson got none.

CHISHOLM, BOYD & WHITE.

Chicago, March 8th, '94.

#### MAKING BRICK IN THE GAS BELT.

B. W. Bennett started up again the 5th inst., and claims he is making the best brick of anyone in the Gas Belt, now that he has added a crusher in his stony material.

He is very enthusiastic over the quality of brick he is producing, for he had no trouble selling the past season, while his competitors did have trouble. He greatly praises his "Monarch" machine, which he put in a year ago, and says if anyone wants to see the nicest, squarest, stiffest-moulded brick they ever saw, to come there and "No talking will be necessary, for the brick will show for themselves."—*Muncie (Ind.) News*.

On page 367 we introduce to our readers something new. Look at it, and if you are interested, write to headquarters for full particulars and you will be courteously accommodated.



# THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK  
MANUFACTURERS' ASSOCIATION OF THE  
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## NOT ENTIRELY A MATTER OF SENTIMENT.

We are keenly sensible of the appreciation manifested by a great majority of our subscribers who have so promptly paid up for '94 and also appreciate fully the many kindly expressions that have accompanied these yearly contributions. It is gratifying to know that our efforts to make the CLAY-WORKER second to no trade paper in the land are so generally appreciated. We are duly thankful for all these many favors and hope that they will be supplemented speedily by similar communications from those who have so far neglected this small but important detail—now is the time to subscribe.

## THE POWWOW AGAIN.

Our good friend, Will Gates, in his button hole (No. 2) talk, on a preceding page, criticises the dress suit at the powwow. Mr. Gates graced that festive occasion attired in the conventional swallow-tail, and therefore can speak consistently on the subject. Having a dress suit and appearing well in it, he is relieved from the charge of captiousness by those not acquainted with him. Self-criticism is profitable. The members of the Association should do just what Mr. Gates has done. Where they see anything unsatisfactory in the development or spirit of our body, they

should criticise it. It is through kindly criticism that we can prevent retrograde movements. It is by such a course that we can continue to advance.

With all of the splendid qualities of the recent convention, we think that the powwow is the one feature which one could criticise if he were looking for something with which to find fault. We were of the powwow, and in criticising it, as in the criticism of any other feature of the Association, we feel that we are criticising ourself; and we believe that, on principle, this is a good thing to do. The original spirit of the powwow should be preserved, and while the dress suit itself may not hurt it, the the dress suit spirit might work injury. It tends toward formality which should be avoided. The general aim and purpose of the powwow is to bring the natural man closer to his brother in the craft. We are inclined to agree with Mr. Gates in the general spirit of his remarks. Let us have the powwow, as originally conceived, a pleasant social gathering, free as possible from restraint and formality.

## AN ANNOUNCEMENT.

In the April CLAY-WORKER we will begin the publication of a series of illustrated articles on "American Ceramics," by Richard G. Frackelton, of Milwaukee, one of the few native clayworkers who have achieved international fame. We opine that Mr. Frackelton's contributions to the clayworking literature will, like the famous ware that bears his name, be a credit to him and a source of much pleasure and profit to the craft. In a recent issue the *Philadelphia Times*, says, speaking of the Frackelton Exhibit, "This was the only original thing at the World's Fair in American Ceramics." The ware referred to will be illustrated and its origin and method of manufacture fully described by Mr. Frackelton for the benefit of our readers.

## GOVERNMENT TESTS OF BUILDING MATERIALS.

In the last number of this journal we called attention to the tests of building materials to be made by the United States government at the Arsenal at Watertown, Mass. We publish elsewhere the circular issued by the government, which explains the general character of the work done. The government is the proper authority for work of this kind. Being done by its

own army officers, the fairness and thoroughness of the test is placed beyond all question. It places before the people that kind of information with respect to the stability of building materials which is most needed. It is of particular value to the makers and producers of building materials in that it gives precise, accurate and definite statements in regard to all materials of this general kind now in use. We commend the circular of the Watertown Arsenal to our readers, and request that they send material for trial to the authorities named, together with the information desired by the government authorities.

## BURNED CLAY VS. STONE.

On a preceding page our readers will find a carefully prepared contribution bearing upon the production of an artificial stone in brick form. The process as outlined is a very intelligent one and shows considerable ability on the part of those interested in its manufacture. However, there are serious disadvantages in connection with the successful production of material of this character. Primarily, it is an artificial product, involving very careful, skillful and intelligent handling. A single misstep in any of the various details would result disastrously.

In the use of burned clay as a building material results of this character are not to be feared. The work immediately shows for itself. In quarrying stone we know the general character of the material from its past history. It is well known that it takes about twenty years to test a new kind of stone. After the lapse of a long time one might find that an artificial stone was not suited to the purposes for which it was intended. Irregularities might not show in the entire product but if in only a part, still the result would be a failure.

The material that these gentlemen have selected as one worthy of imitation is not a good one. Granite is by no means a satisfactory building material. No building material is more treacherous, none so seriously affected by heat. The first great object lesson to this country indicating this fact was the Boston fire, twenty years ago. Buildings some considerable distance removed from the path of the fire were seriously affected by the heat. Great flakes of stone popped from the walls and left the front of the building in a condition requir-



ing the rebuilding of the entire front. This happened to no less a building than the United States postoffice in that city. One of the facades was almost entirely ruined by heat, which caused no harm to the interior of the structure. The great loss in the Bedford street fire in Boston two years ago was caused by the use of granite. The piers of the first two stories were constructed of this material. A fire in one of the show windows destroyed the granite supports; and the entire mass, a very tall building, was completely destroyed by what would not have fazed brick or terra cotta. Another notable instance of the the great injury done by a small fire to a stone building was the Athletic Club building in Chicago. The fire did comparatively little damage to the interior, yet almost the entire front had to be rebuilt, owing to the spalling of the stone. Moral, build of burned clay—stone, whether natural or artificial, is inferior to brick or terra cotta.

#### BRICK FOR COUNTRY ROADS.

At a recent meeting of the Road Congress, in this city, a practical road builder said that the time was not far distant when a brick covering would be used for a very large portion of the country road surface of this section; that its cost was not such as to preclude its use when the subject was viewed from the high economic standpoint which the importance and seriousness of this question demands.

#### SENSE IN ADVERTISING.

As in all other walks in life, there is both sense and nonsense in advertising. There is money made and there is money lost by it. There is money saved and there is money wasted. If one wishes to sell clayworking machinery, he should advertise in a journal which goes to the users of that class of machinery. If he wishes to sell brick, he advertises in the journal which goes before the users of brick. On general principles the users of brick, the architect, the capitalist, or the modest house builders care little or nothing about brick machinery. They care nothing about methods. Their principle interest is in results—in brick. Now, it must be manifestly true that a brick machine manufacturer who spends his money in advertising in a class journal which meets only builders and architects is

very apt to find that his effort and his money is absolutely wasted. Some who make such investments would not for a moment think of investing in lottery tickets, but they might just as well.

It is the journal that brings the buyer and seller together which brings results. What nonsense is it for the seller of machinery to advertise with those who do not in any sense meet the buyer. We know of advertisers of clayworking machinery who spend money for advertising their products in journals which do not, legitimately, go into the hands of a single buyer during the course of a year's business. This certainly is nonsense in advertising. The journal which meets the largest number of buyers, and which, from its character commands the greatest respect, is certainly the one which will do the greatest good. There is sense in advertising in such a medium.

#### BURNED CLAY MONUMENTS.

On page 339 will be found an interesting sketch telling of the use of clay tomb stones two hundred years ago. This is the first of a series of papers that has been prepared for the CLAY-WORKER by Edwin Atlee Barber author of "The Pottery and Porcelain of the U.S.," a handsome five dollar volume recently published by G. P. Putnam's Sons of New York City. The fine plate of Mr. Barber which appears on same page is from a relief tile plaque modeled by W. W. Gallimore and for the use of which we are indebted to Messrs. Putnam's Sons.

#### A NEW SCHEME.

The street paving problem is now receiving a great deal of attention in St. Louis, one of the Board of Public Improvements is an advocate of annealed brick, and wants the city to go into the brick business and erect a plant and make her own brick. He argues that there is plenty of the raw material at hand and that the works can be operated by convicts from the city work house. Thus the city's streets can be paved with comparatively little expense save the cost of putting down the brick.

#### LESS WAGES—MORE TIME.

Smith & Gravers, brick manufacturers of Massillon, Ohio, have, according to the Toledo Commercial, cut the wages of their employes from 12½ to 10 cents

per hour, but hereafter they will allow the men to work seven days a week, instead of six, as heretofore, and so the workmen, who are grumbling at the change, will be able to make as much money, and will have less time of their own in which to spend it.

#### TRADE LITERATURE.

WE ARE INDEBTED to the Pennsylvania Museum and School of Industrial Art, Philadelphia, for a copy of their new catalogue of American Potteries and Porcelains. The purpose of this catalogue is to furnish a descriptive reference list of the Barber collection of American ceramics, which contains many rare and curious pieces, some of which are illustrated, and all are described and classified by Edwin A. Barber. Price 15 cents.

THE AMERICAN FIRE BRICK AND CLAY Company, Mineral Point, O., have ready a new schedule of shapes, which they will mail to any of our readers who drop them a card. They manufacture high grade fire brick of any size and shape desired; also furnish ground clay, raw or calcined, in bulk or sacks.

BICKEL BROS., St. Louis, are sending out a little pamphlet devoted to their down-draft kiln, which they build either round or square. Those considering the erection of kilns are requested to write them.

M. F. WILLIAMS & Co., St. Louis, Mo., have out a series of circulars illustrating and describing their clayworking machinery. Among other new things included in the list is a Shale Breaker Crusher and Grinder, which, it is claimed, is the most useful machine that a brick-maker can possess if he has refractory clays or shales to contend with.

ANTHONY ITTNER, ST. LOUIS, has issued a new pocket catalogue of Pressed and Ornamental Bricks. It is substantially bound in leather with title embossed in silver, making a very pretty, as well as useful, work for builders and architects. Over two hundred different designs of pressed and moulded bricks are shown by well executed engravings. If any reader wants a superior grade of red pressed brick, they can be obtained from Mr. Ittner.

DUNKIRK, CHAUTAUQUA COUNTY, N. Y., is the subject of a formidable looking pamphlet, on the margin of which is inscribed "Compliments of John Hil-



ton." On an inner page we find a brief description of Mr. Hilton's brick-works, in which it is stated that he learned the business in France, and for the past thirty-five years has been making brick for the Dunkirk market. Mr. Hilton is indeed a born and bred brickmaker, for his father followed the business all his life, and both his maternal and paternal grandfather were brickmakers.

D. J. C. ARNOLD, NEW LONDON, O., is mailing a pocket edition of his illustrated catalogue for 1894. It is a handy little affair that should find a place on every brickmaker's desk. It will be sent free to any of our readers.

J. W. PENFIELD & SON., Willoughby, O., have favored us with a copy of their new catalogue, devoted to Plunger Brick Machinery. It is splendidly printed in two colors on coated paper, and contains a full list of all their plunger machinery and also a number of attractive illustrations of the hollow building blocks, ornamental brick, fire proofing and terra cotta lumber, for which they have dies in seemingly endless variety.

THE FREY-SHECKLER Co., Bucyrus, O., are now sending out their thirty-second annual catalogue of Clayworking Machinery. By way of introduction they say: "In each of thirty-two catalogues, issued during the past thirty-two years, we have presented at least one new and useful clayworking machine. This year we introduce THE ORNAMENTAL ROLLER DIE, for the manufacture of building blocks. It has been used during the past year by seven extensive factories, and the demand for Hollow Building Blocks has been largely increased by their ornamentation." Anyone interested in this most modern method of construction should write them for a copy of this interesting book, which also contains cuts and descriptions of their full line of clayworking machinery.

The Standish Fire Clay Co's sewer pipe works at Anderson, W. Va., is still idle, not having made any pipe for over a year. The prospects are that the plant will be replaced by an entirely new one with all modern improvements and greatly increased capacity.

The Mack Manufacturing Co. of New Cumberland, W. Va., have now all their plants in operation, the Sligo and Union works being the last to resume, after an idleness of over a year. This Company

is now making a shale brick of great merit in addition to their celebrated fire clay pavers. This is a new departure for this company, but as some cities prefer the shale to the fire clay brick, they are now able to satisfy all.

#### THE BOOM AT NIAGARA FALLS.

Niagara Falls is booming, owing to their great prospects of manufacturing industries locating there to obtain cheap power from the company that built the great tunnel, which is such an engineering wonder to the world. There was no brickyard there, and so the Niagara Brick Co. was formed and have erected a fine plant, with everything the most improved they could find. After long searching, they finally selected the "Monarch" machine, and express great satisfaction with it. They nearly made a mistake in taking another, because a little less in price.

#### MORE LIGHT WANTED.

MR. W. C. LEMERT,  
Bucyrus, Ohio.

DEAR SIR:—We have read your letter of January 27th, to the Simpson Brick Press Company, published in the February issue of the CLAY-WORKER. We have also read statements in Simpson's advertisements, claiming to be extracts from your report as one of the Judges of Brick Machinery in Machinery Hall at the Worlds Fair. You claim to have been the "sole and special judge" appointed for this purpose, and to have filed your report on August 30th.

According to the rules governing the granting of awards and diplomas, your report had to be passed upon by the Jury of Awards, composed of eminent mechanical experts, before any award could be granted. It is a well known fact that your report was rejected, and that during the first week in September these eminent mechanical experts ordered a re-examination of the brick machines in Machinery Hall. It is also a well known fact that you attended some of the meetings of the committee appointed for this purpose, and that this committee, after completing its examination, made a report reversing the recommendations made by you. It is also a well known fact that Mr. Simpson was furnished with a copy of your rejected report, or was allowed to see it and make extended extracts from it for his own advantage and contrary to all

the usages and courtesies of the Department, prior to the time your report was passed upon by the Jury of Awards.

It now appears that the Simpson Press did not receive an award or diploma, and was denied official mention by this committee of experts. As you have seen fit to publish, or permit to be published, such extracts from your report as would give the Simpson Press an unearned and undeserved advantage, we therefore ask, in the interest of fairness and justice, that you publish your full and complete reports on both machines filed August 30th.

CHISHOLM, BOYD & WHITE.

Chicago, March 8th, '94.

#### POWER OF ILLUSTRATION.

TAKE one small piece of chalk, a blackboard and some little folks.

Tell them a story, and mark on the board shapes or outlines, telling them this is a house, tree, dog, etc.

The power of imagination will fill out, in their minds, your crude outlines, and convey to them the ideas you wish to express.

You use the same principle when you illustrate your ads. for children of larger growth, with dollars to spend. There are few lines of advertising that could not be doubled in value by a judicious use of illustrations.—H. Senior.

#### THE HIGHER DEVELOPMENT IN BRICKMAKING.

As to the quality of brick little remains to be accomplished. Fineness of texture, uniformity in size and color, in a high state of development, are to be found in nearly all the brick which comes from our better yards. While there will yet be improvements affecting the cost of production, and a higher development in yard methods, the greatest development which we may expect, with a view of getting more money out of the clay, is in artistic lines, the manufacture of products which add artistic interest to the building in which they are used. This sort of work yields the largest relative profit, helps to call the attention of the public to the better things which may be accomplished in clay, and in that way redounds to the profit of the clayworkers.

D. V. Purington and wife, of Chicago, have gone to California for a month's vacation.



## THE BIRTH OF ST. PATRICK.

On the eighth day of March it was, some people say,  
That Saint Pathrick at midnight he first saw the day;  
While others declare it was the ninth he was born,  
And 'twas all a mistake between midnight and morn;  
For mistakes will occur in a hurry and shock,  
And some blamed the babby and some blamed the clock—  
Till with all their cross-questions sure no one could know  
If the child was too fast, or the clock was too slow.

Now the first faction-fight in owld Ireland, they say,  
Was all on account of Saint Pathrick's birthday:  
Some fought for the eighth—for the ninth more would die,  
And who wouldn't see right, sure they blacken'd his eye!  
At last, both the factions so positive grew,  
That each kept a birthday, so Pat then had two,  
Till Father Mulcahy who showed them their sins,  
Said, "No one could have two birthdays, but a twins."

Said he, "Boys, don't be fightin' for eight or for nine,  
Don't always be dividin'—but sometimes combine;  
Combine eight with nine, and seventeen is the mark,  
So let that be his birthday,"—"Amen," says the clerk.  
"If he wasn't a twins, sure our hist'ry will show  
That, at least he's worthy any two saints that we know!"  
Then they all got blind drunk—which completed their bliss,  
And have kept up the practice from that day to this.

—SAMUEL LOVER.

## DEALING IN FUTURES.

A TRAVELER on a prairie road strewed acorns on the lea;  
The hungry pigs they followed him and laughed with joy to see  
The tenderfoot throw pockets full of acorns on the ground,  
Which they devoured with munching jaws as fast as they were found.

But one escaped their greedy search and grew into a tree  
As high as corn, and this year's corn was very high—te he!  
It spread its branches east and west, and whispered, as it would  
Have blessed the man whose little deed had grown to so great good.

Long years pass on, some Western men scan all the treeless plain;  
For something which they cannot see their eager eyes they strain;  
They had the rope, they caught the horse, they've got the man likewise.  
Now if they could but find a tree, complete would be their prize.

Joy! Joy! They laugh with gladsome hearts: far, far away they see—  
And bless the man that sowed for them this acorn-planted tree.  
They stand beneath its shady boughs, they fix the one-line swing—  
And when the picnic road away the oak was blossoming.

O, let us then, what e'er we do, plant acorns while we may,  
For one of them may grow to be a lusty tree some day;  
And then some pleasant morning, when we've nothing else to do,  
That tree will be a handy thing to hang a peddler, book agent, proof-  
reader, philanthropist, poet, editor, worthy woman lecturer,  
amateur photographer, base ball crank, tennis fiend, and  
several other people who need a little hanging too.

—ROBERT J. BURDETTE.

## A BRICKYARD DRAMA.

"WHAT place is this, pa?" "This, my child, is a brickyard. "Whose  
brickyard is it, pa?" "It belongs to me, my child." Does those  
big pile of bricks belong to you, pa?" "Yes, my son." "Who  
does the dirt belong to?" "It belongs to me, my son." "Did you make  
the dirt, pa?" "No, my child; God made it." "Did He make it for you  
especiallly?" "No, my child; I bought it." "Bought it of God?" No; I  
bought it like I bought anything else." "Did the man you bought it of  
buy it of God?" "I don't know, my child; ask me something easier."  
"Anyway, it's a good thing you've got the land, isn't it, pa?" "Why,  
my son?" "Because you'd have to make bricks for a living like them  
horrid men. Will I have to work for a living when I'm a man?" "No,  
my boy; I'll leave you the land when I die." "Don't people turn to clay  
when they are dead, pa?" "What remains of them is clay." "When are  
you going to die, pa?" "I don't know, my son. Why do you ask?"  
"Nothing; only I was thinking what a hard old brick your clay would  
make."—H. A.

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## "BRICKMAKER'S MANUAL,"

Morrison and Reep, \$3.00

## "BRICKMAKING AND BURNING,"

J. W. Crary, Sr., \$2.50

## "TABLE OF ANALYSES OF CLAYS,"

Alfred Crossley, \$1.00

## "DURABILITY OF BRICK PAVEMENTS,"

Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of  
them to one address for \$5.50. Address T. A. Randall  
& Co., Indianapolis, Ind.

## ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and Belleville, Ill.

ESTABLISHED 1859.

RED Pressed and Ornamental Brick of unsurpassed quality  
a specialty and can be furnished in any desired quantity.  
Builders who desire the finest pressed brick at reason-  
able prices, are requested to write for illustrated catalogue and  
price list.

Rock-faced and Roman brick, red and brown, granite,  
mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

ANTHONY ITTNER, Telephone Building, ST. LOUIS, MO.



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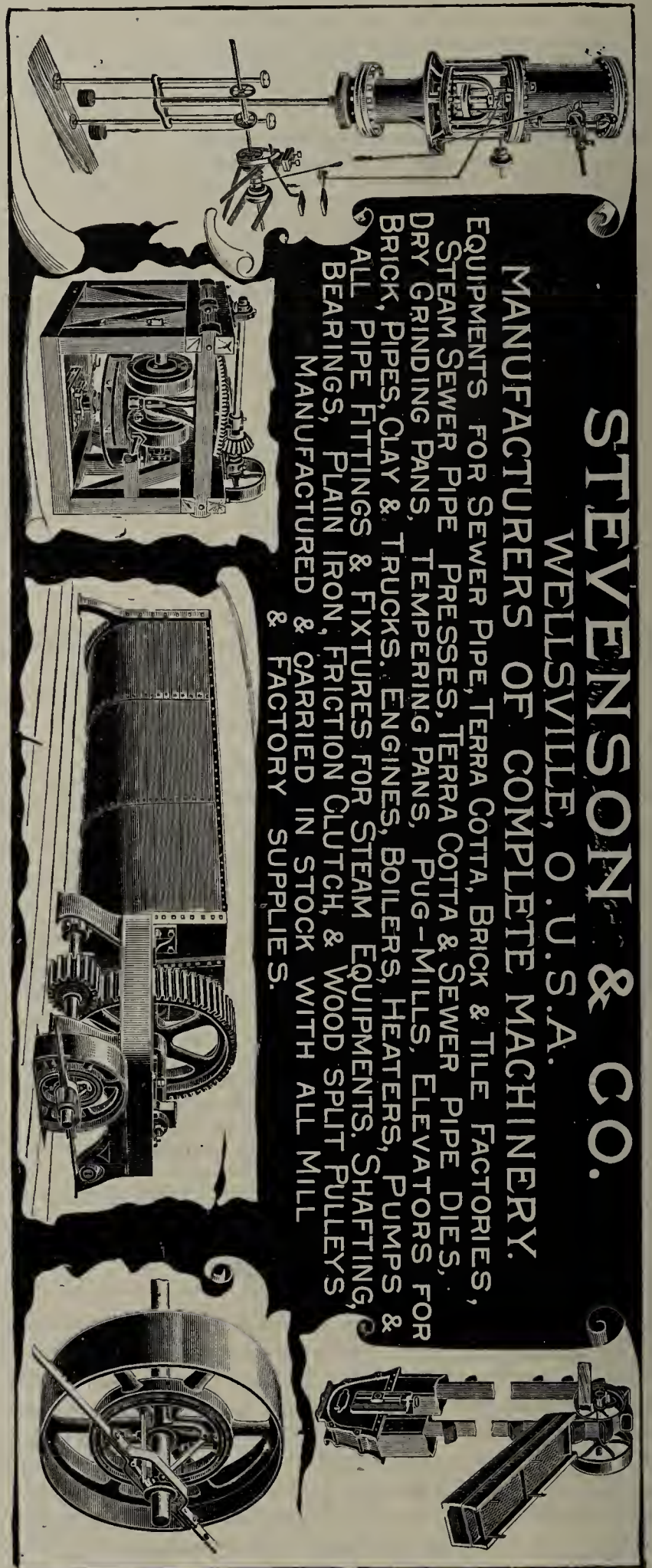
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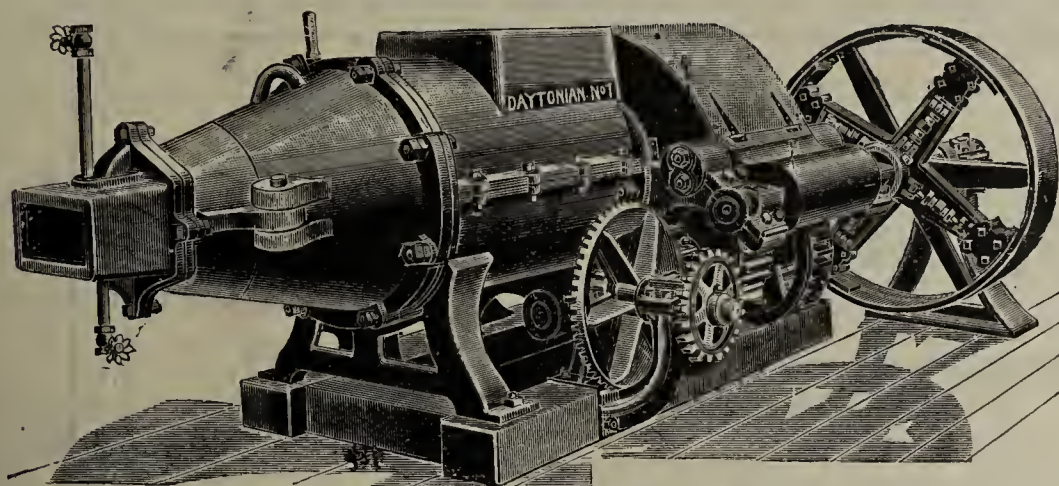
**STEVENSON & CO.**  
WELLSVILLE, O. U.S.A.

**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES,  
STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES,  
DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR  
BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS &  
ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS. SHAFTEING,  
BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS  
MANUFACTURED & CARRIED IN STOCK WITH ALL MILL  
& FACTORY SUPPLIES.



# ❖ RAYMOND'S ❖

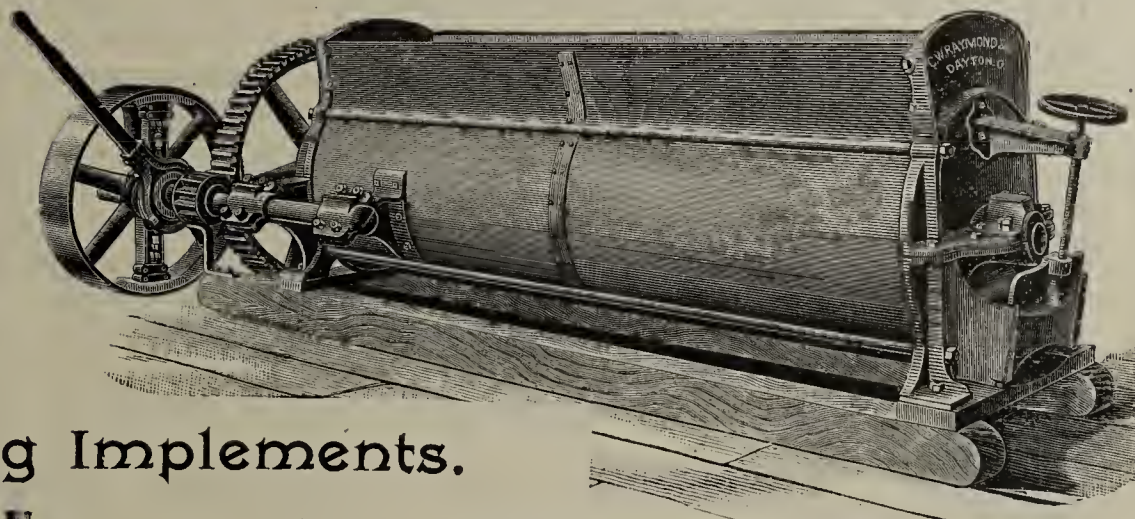


## BRICK

Brick Machines:

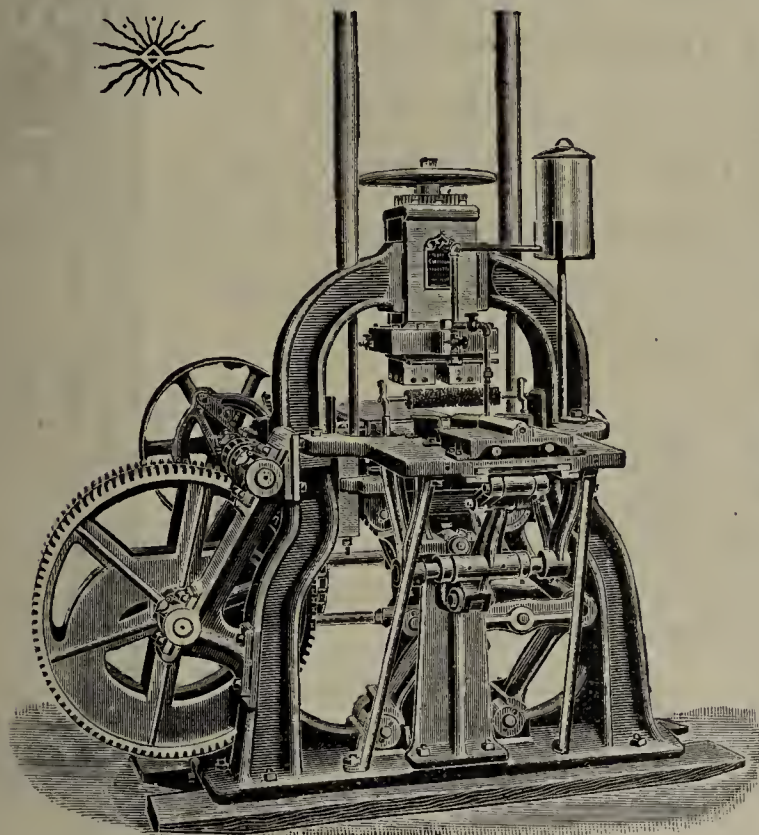
Cutting Tables,  
Pug Mills,  
Revolving Screens,  
Roller Crushers,  
Disintegrators,  
Dry Pans, &c.,

# MACHINERY



A COMPLETE LINE OF

Clay Working Implements.



The Columbian Special Re-Press.

*Re-Presses for Red Brick,  
Re-Presses for Fire Brick,  
Re-Presses for Paving Brick,  
Re-Presses for Ornamental Brick,  
Re-Presses for Roofing Tile,  
Re-Presses for Sidewalk Tile.*



THE LARGEST LINE OF  
RE-PRESSES  
IN THE WORLD.



## C. W. Raymond & Co

DAYTON, OHIO.

... SEND FOR CATALOGUE ...



## JUDGE PINE BLUFF

### Renders Verdict in Favor of Plaintiff.

{ MALVERN  
VS.  
{ MEMPHIS, HOT SPRINGS, ET AL.

#### THE MALVERN VITRIFIED BRIK.

THE difference in the durability of the vitrified brick used in paving the streets of Pine Bluff, is beginning to attract attention, as the greatest contrast is already apparent. That portion of Main street which is paved with the white, or Malvern brick, is as smooth, perfect and unworn as the day on which it was put down, while the brick which was made in Fort Smith and Memphis, is beginning to wear fearfully, even on East Court street, where there is but little traffic and no heavy hauling. Many of the brick appear to be porous, and it seems that constant wetting is making them soft. The contrast will certainly decide our people on where to purchase brick when our other streets are to be paved.—[Pine Bluff Commercial.

THE above clipping is from the Pine Bluff (Ark.) Commercial and refers to Paving Brick made with the *Little Wonder Brick Machine* purchased by Mr. Thomas Atchison, Malvern, Ark., in the spring of 1888, and substantiates our claim that the brick made on the *Wonder Machines* are more dense, free from air puffs with less lamination and will wear on the street longer than brick made by other machines.

THE WALLACE MFG. CO.,  
FRANKFORT, IND.

See ad. on page 415.



## EDITORIAL NOTES and CLIPPINGS.

Hennessey, Oklahoma Ter., is to have a new press brick plant.

Will Howell, Duncan, Ill., wants to purchase good cut off wire.

A new brick plant will soon be established at Cambridge, Ohio.

C. W. Kidder, of New Orleans, La., is on the market for a brick machine.

The Turner Brick Co., Turner, Ill., have put in a new 4-mold U. S. Brick Press.

A company is being organized at Fultonham, Ohio, for the manufacture of brick.

A stock company has been organized at Bardolph, and will erect a brick and tile factory.

Stripe Bros. brick and tile works at Greensburg, Ohio, were destroyed by fire the 5th inst.

The Batavia (Ohio) Challenge Brick Co. has been incorporated by Harry Collins, Martha E. Collins, John H.

Orebaugh, Milton Jameson, Frank White and Thomas Glancy. Capital stock \$50,000.

A new brickyard is to be established at Fullerton, Neb., with a capacity of 20,000 brick daily.

The brick manufactories of Portsmouth, N. H., are making preparations to form an association.

The Port Credit (Ont.) Terra Cotta and Pressed Brick Co. has been incorporated. Capital stock \$50,000.

No matter what dryer you contemplate purchasing, get prices for cars from the Wellington Machine Co.

Alfred A. Riggs, Hartford City, Ind., wishes to purchase a flower pot machine for making standard flower pots.

A new brick plant has been erected at Hot Springs, Arkansas. Messrs. John Sumpter and John Loughran are interested.

Mr. John R. Figh of Dallas, Tex., writes that owing to poor health, he has retired from the firm of J. M. Harry & Co. and from the brick business, and

adds: "Heretofore have read the CLAY-WORKER for profit, and now want to read it for pleasure, so find enclosed \$2.00."

The firm of Lindenmeyer & Trompeter Bros., La Salle, Ill., has been dissolved, Mr. Lindenmeyer continuing the business.

The Penn Brick Co., Leetsdale, Pa., has been incorporated. Mr. J. R. Balph, of New Castle, will be general manager of the plant.

The Moline (Ill.) Press Brick Co. have leased the brick plant of the Moline Mfg. Co., and will operate the same the coming season.

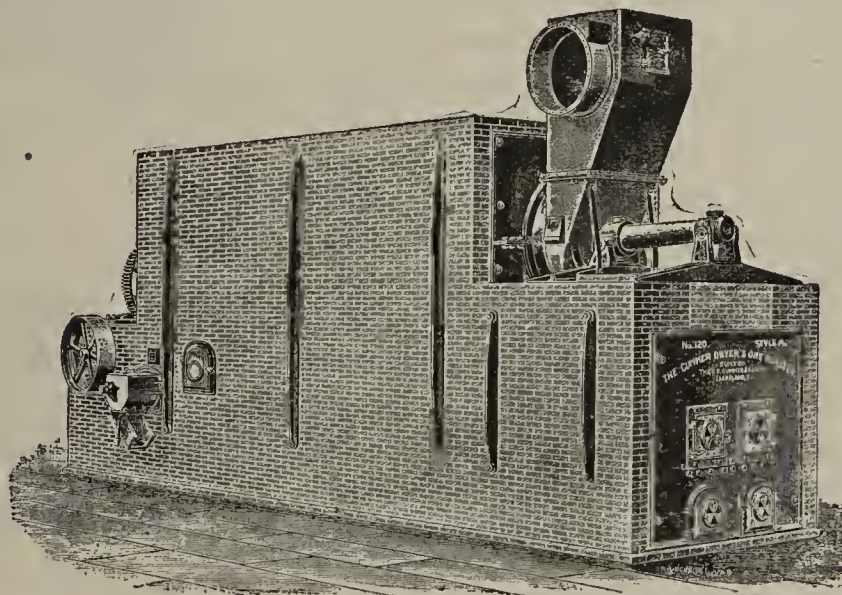
The dry house of the LaClede Fire Brick Co., Cheltenham, Mo., was damaged to the extent of \$500 by the falling of a smokestack.

If you have something you don't want, or want something you haven't got, read or advertise in our "Wanted, For Sale, Etc." columns.

Ernest G. Alden & Willard Kidder have purchased Cyrus Knapp's interest in the Cyrus Knapp & Co's brick plant at Terre Haute, Ind. Mr. Alden informs

LABOR DISPENSED WITH; VERY LITTLE FUEL USED; NO BREAK DOWNS; SUPERIOR PRODUCT OBTAINED; CLAY DRIED SUMMER AND WINTER, RAIN OR SHINE, ARE A FEW OF THE SPECIAL ADVANTAGES OBTAINED BY USING THE

# Cummer Clay Dryer



## SIX SIZES MADE.

Prepares from 3 to 20 tons of clay per hour for dry pan or pulverizer. The clay is handled mechanically (without men) from bank to press or other machines.

### NEW METHODS.

#### DRIES

Phosphate, Sand, Earths, Paint Stocks, Peat, Coal, Salt, Marl and Clay for Cement making, Chalk, Cereals of all kinds, Tankage, Night Soils, Animal Manure, etc., etc.

#### CALCINING AND ROASTING MACHINERY

for Gypsum, Ores of all kinds, Phosphate, Paint Stocks, etc., etc.

## THE F. D. CUMMER & SON CO.,

613-616 Arcade,

CLEVELAND, OHIO, U. S. A.

SEND FOR  
OUR NEW CATALOGUE.



us that the firm name will be changed to the Terre Haute Pressed Brick Co., and that the new firm will make a number of improvements in the plant.

S. C. McGirnsie, Rat Portage, Ont., Canada, writes that he is just starting a brickyard at that place and wants to purchase machinery, etc.

The W. S. Dickey Clay Mfg. Co., Kansas City, Mo., want a line of clay-working machinery, including clutch pulleys, line shafting, etc.

Mr. Arch Miller, formerly manager of the Lydon & Glabbs brick works, Pittsburgh, Pa., will establish a large brick plant at Sacramento, Cali.

The "Monarch" machine at the yard of Simon Kline, Reading, Pa., seems to be doing exceptionally good work from his statements on page 402.

Packer & Co. have leased the Lock Haven (Pa.) Clay Works yard and will operate the plant. They will manufacture salt glazed sewer pipe.

The Montello Brick Co., Reading, Pa., have just completed the reconstruction of their steam dryer, thereby increasing their capacity to 100,000 brick daily.

Samuel W. Green & Co. write that they are going to erect a brick plant at Metropolis, Ill., and will be glad to receive illustrated circulars of machinery.

C. W. Kronhart, of Benwood, Ohio, has purchased the Moundville (O.) brick plant. He will put same in first-class condition and operate it this season.

The Enterprise Brick Co. has been incorporated at St. Louis, Mo., with a capital stock of \$30,000. J. F. & Louis W. Sherpe, Frank Grathaus and others, are interested.

We see by the circular of the Wellington Machine Co. that they are selling moulds at lower prices than before, and they claim that the standard of manufacture has in no way deteriorated.

The Powhatan Clay Mfg. Co., of Richmond, Va., advise us that the station near which their works are located has been rechristened. Clayville is the name by which the thrifty community will be known to posterity.

The close times are making some manufacturers sell their goods at prices that would have been considered impossible a year ago. The Wellington Machine Co. claim that no one else has ever sold dryer cars at the prices they

## The YATES IMPROVED DOWN DRAFT KILN,

For Burning All Kinds of Brick.

**DON'T FAIL** to get our descriptive Circular and References.

BOTH ROUND AND SQUARE KILNS

and FURNACE HOT AIR DRYER.

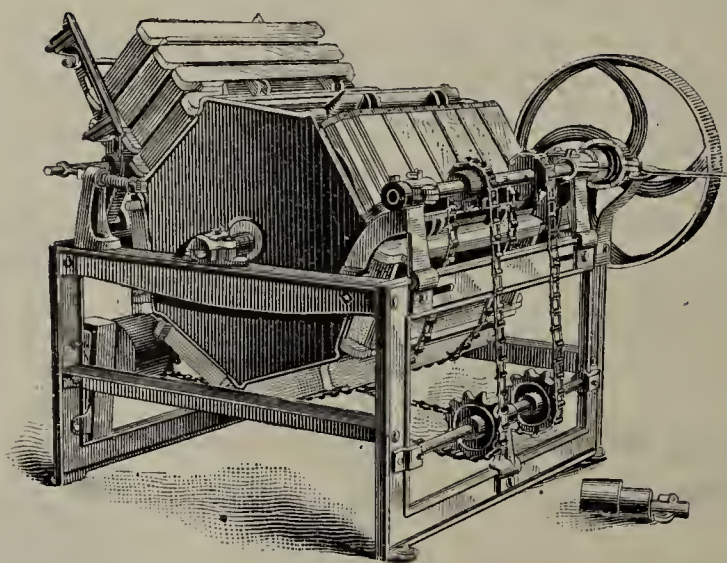


THIS Kiln has worked its way to the front by results, which is the highest test of merit.

Send stamped envelope for particulars to

**ALFRED YATES,**  
Johnsonburg,  
Penn.,

or, W. N. PIKE, Contractor, MALDEN, MASS.



### CHAMPION Brick Mould SANDING MACHINES.

This cut represents the latest improved Champion. No belts, apron or gearing. Simple, strong, and Serviceable.

**A. H. NEWTON,**

Manager and Sole Agent,

HAVERSTRAW, N. Y.

**NOTICE** To Brickmakers, Dealers and Others.....

Any person purchasing Champion machines from other than the above, render themselves liable to damages, as no other person has the right to manufacture said machines.

## THE THURMAN FUEL OIL BURNER CO.,

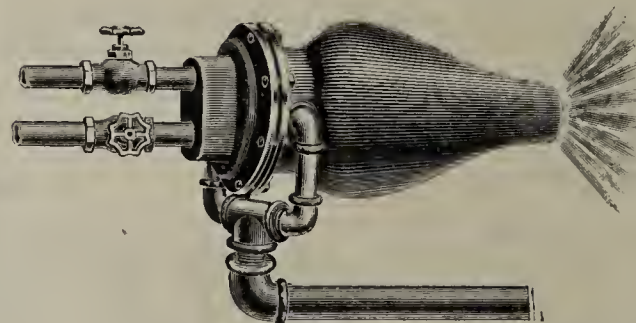
Designers, Contractors and Engineers, Fuel Oil Equipment,

GENERAL OFFICES: 35 and 36 Cordova Building,

JOHN S. THURMAN, Mech. Engineer.

INDIANAPOLIS, IND.

509 Monadnock Block, CHICAGO, ILL.



We are not Connected with  
any other Oil Burner Company.

The only perfect Crude Oil Burner on the market. The cheapest and best. Absolutely smokeless. It is Economical. Reliable. Requires no expert to manage. Cheaper than Coal. It perfectly atomizes the oil with the air and steam.

MAKES LESS NOISE THAN ANY OTHER BURNER.

For stationary Boilers, Brick Kilns, Locomotives and all Steam Plants. No soot. No Sparks. No Smoke. No Odor.

TRY OUR IMPROVED BURNER IN YOUR KILNS.

GENERAL  
AGENTS

**Red Seal Boiler Compound**

For the removal and Prevention of  
Scale in Steam Boilers.

Write for Prices.



DO NOT BUY A

[FOUNDED 1879.]

# SOFT CLAY BRICK MACHINE

Until You Have Investigated Ours.

Send for Photo.

W. E. TALLCOT &amp; CO., Croton-on-Hudson, N. Y.

## Fire Brick

We make a special High Grade Fire Brick (all shapes) for Brick Kiln Construction.

**NOT EXCELLED** By any. Our quotations will surprise you.  
We sell Fire Brick on their merits and  
their use will prove **AN ECONOMY.** GROUND CLAY IN  
.....BULK OR SACKS.

We solicit your favors.

Manufacturers of.....  
High Grade Fire Brick for Every Purpose.

THE AMERICAN FIRE BRICK &amp; CLAY CO.,

MINERAL POINT, OHIO.

## THE "AJAX" BRICK MACHINE

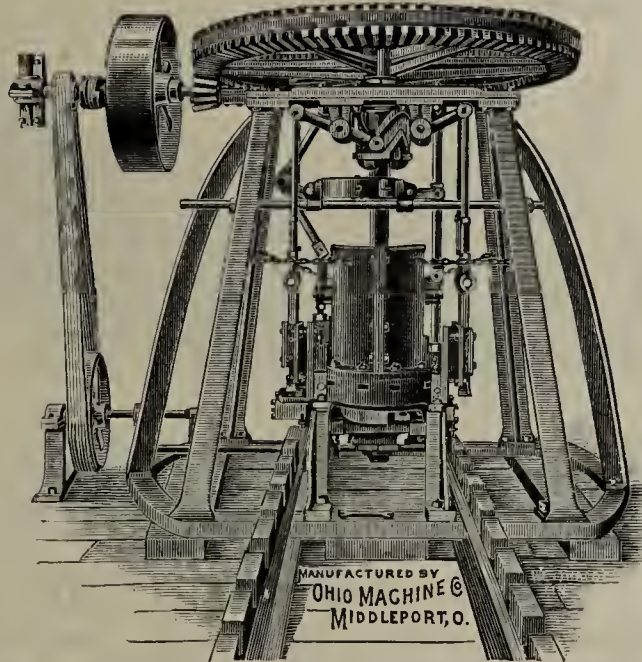
MANUFACTURED BY

### Ohio Machine Co.,

Middleport, Ohio.

Under the very Latest Improved Grant-Murray Patent.

This machine is constructed with the object of giving to purchasers the very best results obtainable for the money invested. It is at once Simple, Durable, Convenient, and Easily operated. We claim these machines make the strongest brick in the market, a brick that is very superior for Street Paving and building purposes. Their superior quality as pavers may be ascertained by reference to some of the leading cities of Ohio and West Virginia. This machine works the clay very stiff, pressing all the clay into each brick that it will possibly contain, thus imparting the quality requisite to a No. 1 Paving Brick. We guarantee these machines to our customers, and solicit investigation as to their merits. For further particulars please correspond with



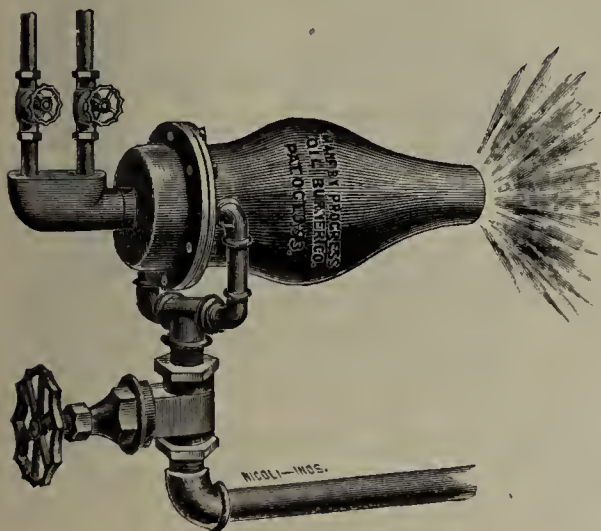
### OHIO MACHINE CO.,

MANUFACTURERS.

We manufacture the Grant & Murray Patent Repress  
Brick Machine, pressing 4 brick each revolution  
and 40,000 per 10 hour day.

Middleport, Ohio

## PROGRESS OIL BURNER.



Device  
...For **Burning Hydro-Carbon Oils**

Applicable to all conditions where heat is used for burning clay, and to all manufactories where steam is used.

Any degree of heat desired.  
Economy in steam and oils.  
Full thermal value of the fuel obtained.

### PROGRESS OIL BURNER CO.

OFFICES:

18 & 20 W. Georgia St., INDIANAPOLIS, IND.  
161 La Salle St., Room 76, CHICAGO, ILL

**NOTE:**—We own a seven-eighths interest in Patent No. 505,931 assigned to John S. Thurman, and are prepared to furnish Burner direct in any quantity.

are quoting, and they guarantee every car to be perfect. It is a good time to buy when manufacturers are anxious to sell, and consequently cutting prices to the quick.

Mr. W. A. Miller, of St. Louis, Mo., in renewing his subscription states that he is building a new yard near that city. The new firm will be called the Lindenwood Pressed Brick Co. They will put in improved machinery, etc.

The "Ajax" Brick Machine and "Big Four" Repress, manufactured by the Ohio Machine Co. of Middleport O., (as per ad., page 369,) are creating much interest among brick manufacturers. Write them for full particulars.

The Atlanta (Ga.) *Constitution* is authority for the statement that the Rome Brick Co., over which our able contributor, R. B. Morrison, presides as superintendent of the works, will take up the manufacture of paving brick.

The Wellington Machine Co. claim that their mould-sander which they sell at \$100 only, has all the good features of the other high priced ones, and in addition, good points that the others have not. Anyone needing such a machine should investigate.

The Simpson Brick Press Co., Chicago, Ill., have removed their office from 89 Washington St., to more commodious quarters, in the Chamber of Commerce Building, where they will be pleased to extend a cordial welcome to their friends and acquaintances. Brickmakers visiting the "Windy City," are requested to make their new office headquarters while in Chicago.

The J. M. Rumbaugh Brick Co. now have their new brick plants at Greensburg and Walls Station, Pa., in full operation, and are well pleased with the entire equipment and especially their large Huyett & Smith Dryer, which has a daily drying capacity of 60,000 brick. In a recent letter they say, "We like our dryer very much. It is working to our entire satisfaction." This brief commendation covers the whole question apparently and leaves nothing to be desired.

F. D. Cummer & Co., Cleveland, Ohio, have received an order from Montague & Co. of Chatanooga, Tenn., who are large manufacturers of brick and drain tile, for one of their No. 1 size, style A. dryers, (next to the largest dryer they make,) and will put in use the clay-



preparing system, which is used in connection with same. This size of clay dryer has a capacity for preparing 15 tons of clay for the dry pan or other machines per hour; clay going to dryer averaging about 20 per cent. moisture. Dryer uses only about  $1\frac{3}{4}$  tons of soft coal per ten hours.

#### OHIO VALLEY NEWS.

There is at present but very little sewer pipe being made in the works in this valley, as they are all closed down making repairs. The stock of sewer pipe on hand is quite low, and by the middle of this month there will be a general resumption.

The paving brick works are showing more signs of activity, as they are turning out brick for the paving season, which has already begun.

At last we are able to report something authentic of the much talked-of combination of sewer pipe manufacturers. It is no more, and for the present the question of combination will not be agitated. At a meeting of the manufacturers in Toronto, Ohio, about February 1st, the project was supposed to have been in a satisfactory way and the last objector to the scheme was won over by the persuasive eloquence of the majority, and everything looked forward to a happy consummation, when the head of one of the companies, who till that time was considered favorable to the scheme, announced that his company then and there severed all connection with the combination, and would sell their product at what price they themselves would elect, and to whom they pleased. This caused a general disruption, and there was much bitter feeling.

The opinion is that much time will elapse before another attempt at an organization is made.

The following works have increased their capacity largely this spring by the addition of new machinery and kiln service: Calumet Fire Clay Co., Calumet, Ohio, Ohio Valley Fire Clay Co., Great Western Fire Clay Co. and Toronto Fire Brick Works of Toronto, Ohio, and Barnard Brick Works of Bellaire, Ohio.

Mr. Joseph E. Edwards of Toronto, Ohio, has secured a patent on a flanged sewer pipe, and has made arrangements with the Ohio Valley Fire Clay Co. for the manufacture of the same. Each pipe is pressed in two pieces and stuck together in the centre when green, which leaves a flange on each end. The pipes are to be bolted together and joints made with cement. It will be used as water pipe in places where the pressure is not great. BUCKEYE.

## FIRE BRICK.

Below are analyses of the **PLATT BRICK & FIRE PROOFING CO.'S** Fire Clay Deposits.

|                            | No. 1. | No. 2. |
|----------------------------|--------|--------|
| Water of Constitution..... | 2.82   | 9.69   |
| Silica.....                | 86.63  | 55.11  |
| Alumina.....               | 10.92  | 26.71  |
| Oxide-iron.....            | .10    | 4.29   |
| Sulphureous-acid.....      | ...    | 4.16   |
| Totals.....                | 99.97  | 99.96  |

Analyses by W. S. Robinson, Chemist, Omaha, Neb.

Brick are manufactured carefully on the best of machinery. Large capacity. Prompt shipment. Prepared fire-clay. Fine Pressed Brick. Paving Brick.

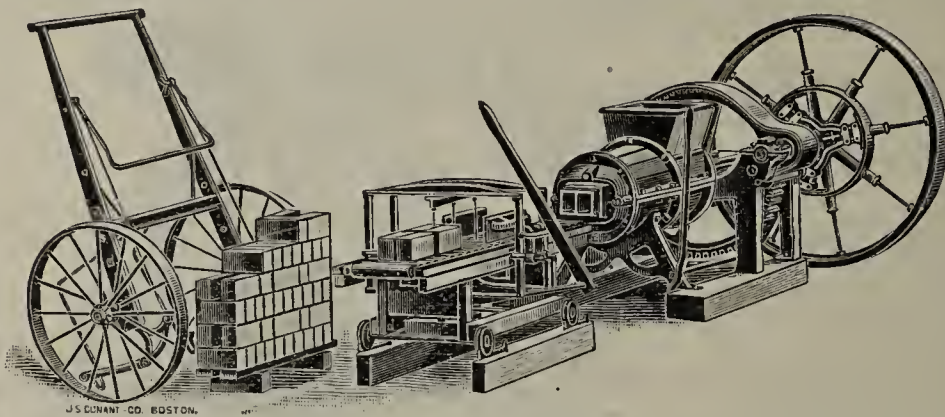
Address

**PLATT PRESSED & FIRE BRICK CO.,**  
706 Youngerman Block, Des Moines, Iowa.

## J. C. STEELE & SON,

SOUTHERN MANUFACTURERS  
.....OF BRICK MACHINES

The Only Manufacturers of Steele's Celebrated BRICK TRUCK for Portable Hack.



Kiln Castings,  
Pug Mills,  
Winding Drums,  
Clay Cars,  
Switch and Frogs,  
Friction Pullies,  
Etc., Etc.

THIS cut represents our "One X" Machine, which makes 10,000 to 15,000 per day. But we have a large Double Geared Machine for side or end cut brick which makes 15,000 to 20,000 per day. Write for Catalogue and Prices, and mention the CLAY-WORKER.

J. C. STEELE & SON, Statesville, N. C.

## The Mock Portable Rack and Pallet System FOR HANDLING BRICKS.

The Most Expeditious, the Safest and Easiest Method of Handling Soft Clay Brick from Machine to Kiln.

IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.

By this method the brick are not touched by hand till tossed to the setter, so that they go into the kiln in much better condition than is possible by the old time methods.

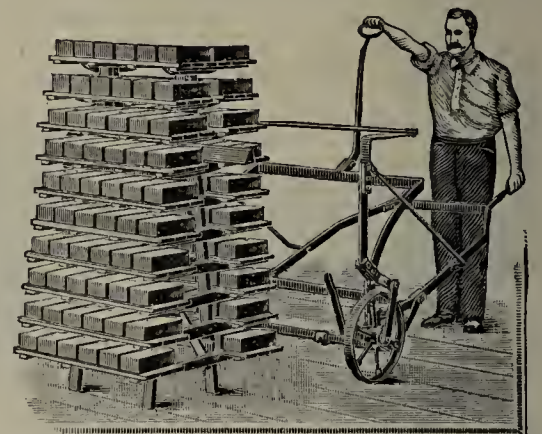
### WHAT USERS SAY OF THE MOCK SYSTEM.

Mr. J. C. Adams, Indianapolis, President of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for two seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."

We are prepared to furnish complete plans and specifications for the erection of brick works of any desired capacity and solicit correspondence from those desiring further information relative to our system of handling brick.

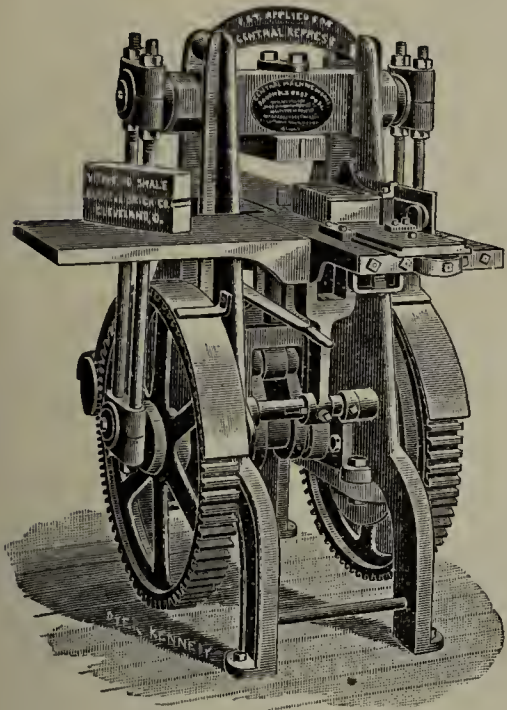
**MOCK BROS.,**  
MUNCIE, IND.

Mention the Clay-Worker.





# REPRESSES and BRICK MACHINES.



.....

This cut represents one of the most complete Power Represses ever offered to brick-makers.

It has been tested in every way and given entire satisfaction. It has a capacity of 15,000 brick per day.

Our No. 2 Repress Double Mould has a capacity of 30,000 per day. They can be seen in full operation at the Buckeye Brick Company's plant at Wickliffe, Ohio.

—MANUFACTURED BY—

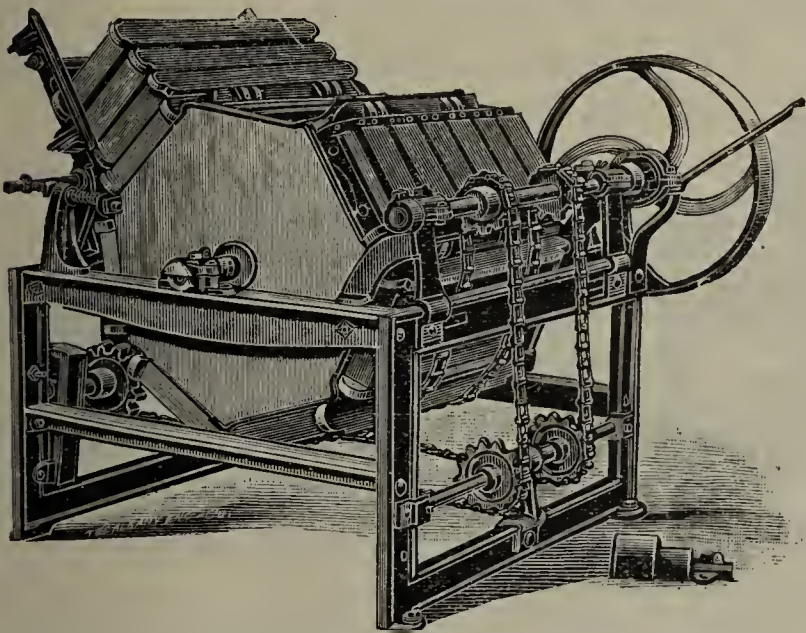
## CENTRAL MACHINE WORKS,

Send for Circulars and Prices. 226-236 Abbey St. CLEVELAND, O.

## Buck's New Champion Brick Mold Sanding Machine.

J. A. Buck, the Inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton to letters patent for said machine.

The "New Champion" is a great improvement over the old "Champion," doing away with Belts and Gearing and being much more simple. It is the cheapest, best and most durable sanding machine made, in brief it is warranted to give satisfaction.



### REFERENCES:

Wood & Allison,  
Haverstraw, N. Y.  
Michael Kane,  
Hartford, Conn.  
Davis Brothers,  
New Haven, Conn.  
George Ives,  
New Haven, Conn.  
Post Brothers,  
East Williston, L. I.  
W. D. Edgerton,  
Oswego, Falls, N. Y.  
Geo. H. Smith, Pres.,  
Excelsior Brick Co.,  
Haverstraw, N. Y.,  
and many others.

### WHAT THE "NEW CHAMPION" IS DOING.

Mr. J. A. Buck:

HAVERSTRAW, N. Y., Oct. 26th, 1893.

DEAR SIR:—The five-mould sanding machines purchased of you last spring have given us entire satisfaction. No expense for repairs, or loss of time, as the machines have always been ready to work.

Yours respectfully,

DENTON FOWLER & SON.

Write For Prices

J. A. BUCK, 76 Oneida St., COHOES, N. Y., or CRESCENT, Saratoga Co., N. Y.

### FOR SALE, WANTED, ETC.

Advertising rates in this column 25 cents a line, or 4 cent a word, each. insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

FOR SALE. One three-mold Andrus Dry Clay Brick Press. Clay here not suitable. Enquire of JOHN ITTNER, York, Neb.

FOR SALE. Brickyard, in good town of about 5,000 inhabitants. No other brickyard within 16 miles. For further particulars enquire of JOHN ITTNER, York, Neb.

FOR SALE OR TRADE. A fine tile factory, fully equipped with new machinery last season. Demand for tile larger than the supply, and prices good. Reason for selling, too much business. Address A. WOLCOTT, Wolcott, Ind.

FOR SALE. One improved Brewer brick machine, capacity 30,000 per day, used two years, will sell cheap. Address C. LAMMERS, 1419 S. Adam St., Peoria, Ill.

FOR SALE. One stiff clay brick machine with automatic cutter and pug mill—good make—little used, good as new, low price. Will sell separately or all together. Send for particulars THE HUTMACHER BRICK CO., Quincy, Ill.

WANTED. Position as foreman or superintendent. 15 years experience—can burn with coal or oil. Best of references. Address Box 6, care Clay-Worker.

WANTED. A flower-pot machine of the Standard type for small pots—or second-hand one in good working order. Also correspond with a first-class stoneware potter and parties interested in paving brick. Address T. C. NATIVEL, E. Los Angeles, Calif.

FOR SALE. One new improved Sword Brick Machine. Has been used two months—as good as new. Will sell cheap, for cash. Address JAS. W. MARKHAM, Traverse City, Mich.

FOR SALE. Three combination plastic press brick machines. These machines are of an excellent manufacture and highly adapted to plastic clays. Also one dry press machine and three power presses. Apply or address to ALFRED YATES, Mgr. Somerset & Johnsonburg Mfg. Co., Johnsonburg, Pa.

FOR SALE AT A BARGAIN. One 3-mold Andrus Dry Press with elevator. A Potts Disintegrator with shafting and pulleys to suit. One Henry Martin machine, with dryer and kiln doors. Address J. H. KENNEBREN, Columbus, Miss.

WANTED. Position as foreman or superintendent. Twenty-five years experience. Can build and equip sewer-pipe, drain tile and paving brick plants and manage them successfully, construct down draft kilns, burn the same, guaranteeing success. Best of references. Address J. W. Midvale, Tuscarawa Co., Ohio.

WANTED. Traveling Salesman, by a strictly first-class fire brick manufacturer. A man with experience in this line, or at least with considerable knowledge of metallurgical processes, preferred. Give experience, age and references. Address "BRICK," Box 156, Allegheny, Pa.

MENTION THE CLAY WORKER

When writing to advertisers

MENTION THE CLAY WORKER.



**FOR SALE.** At a third of cost, a Clay Packer, as good as new, made by Turner, Vaughn & Taylor. Address **WRIGHT & KERDOFF,** Cleveland, Ohio.  
31 c

**FOR SALE.** Steam Brick Plant. Daily capacity 20,000. 45 h. p. Atlas engine and boiler, large pug mill, conical roll crusher and Leader brick machine. Large dry shed, heated by steam, plenty of clay, railroad switch close. Fuel and labor cheap. Will sell all, or part interest to right party. Located only a few blocks from heart of city. Address **J. D. DIFFENBAUGH, Treas.,** Monmouth, Ill.  
31 d

**A BRICK MAN** has devised a plan for manufacturing brick at a dollar a thousand less than any process now in use. Would correspond with any party that will take controlling interest in same. Address **Box 5, care Clay-Worker.**  
31 tp

**WANTED.** Position as Superintendent of architectural terra cotta works, by an Englishman with 20 years experience. Address **Box 111, care Clay-Worker.**  
31 c

**FOR SALE.** One No. 6 B. Machine with side cut board delivery table and side cut lubricating die, new, at New Orleans, La. For particulars, address **NOLAN MADDEN & Co.,** J. F. Scanlan, Receiver, Rushville, Ind.  
31 d

**WANTED.** An experienced man to act as superintendent and general manager of a large brick and tile works. State experience. Address **S. E. GROSS, Cor. Dearborn & Randolph** [Streets, Chicago, Ill.]  
31 c

**A THOROUGH** practical brickmaker with 20 years experience in the manufacture of all kind of brick, also in management of yard and sale of products. desires a position as superintendent or foreman. Unexceptionable references. Address **Box 4, care Clay-Worker.**  
31 k

**FOR SALE.** Two clay crushers with tolls 24x12 chilled, have never been used. One of these crushers is at Lime Springs, Iowa. and the other at Sheldon, Iowa. For full particulars, address **Nolan & Madden Co., J. F. Scanlan, Receiver,** Rushville, Ind.  
31 d

**FOR SALE.** One 9 foot dry pan, good as new. Will sell cheap on reasonable terms. Address **COREY PRESSED BRICK Co.,** Lehigh, Ia.  
22 c

**FOR SALE.** One No. 2 Pott's Disintegrator, in use one month. One up-right Potter's Pug Mill. Address **D. CULBERTSON & Co.,** White Hall, Ill.  
26 c

**FOR SALE.** A two-mold Boyd Dry Press Brick Machine, in perfect order, very little used. **POTOMAC TERRA COTTA Co.,** Washington, D. C.  
26 c

**FOR SALE.** Horse power brick machine, in good condition. Address **FRED H. BROCKETT,** North Haven, Conn.  
15-c-

**PARTIES** who want to go into the roofing tile business can get advice about patterns, machines, cars dryers, kilns, etc., at the address of **ROOFING TILE,** care Clay-Worker.  
16-c-

**FOR SALE.** Two second-hand Wiles Steam Brick Machines. Also three second-hand Martin Brick Machines. All in first-class repair. No reasonable offer refused. Can be seen at our yards near depot, North Haven, Conn. **I. L. STILES & Son,** North Haven, Conn.  
21 d

**FOR SALE** Very cheap. Two Clay Pulverizers in a No. 1 order. One set of Clay Rolls. One four-mould Dry Press. One Clay Elevator. Shafting and Pulleys. A great bargain, if sold together. Address, **M. F. W. & Co.** Care "Clay-Worker."  
2 tfd

## "Out of Sight—" The Victor Pneumatic Valve.



Victor Pneumatic Tire (trap door open, exposing valve.)

A hole in the rim—

A trap door,

And a choker

Constitute the greatest improvement ever attempted in Pneumatic Tire construction.

Found on Victor Bicycles only. Best things are always reserved for Victors.

No other Pneumatic Tire has an inner tube removable through the rim.

No other but what has a protruding valve, adding weight and preventing perfect wheel balance.

Victors are first in tires and improvements.

### OVERMAN WHEEL CO.,

BOSTON.  
NEW YORK.

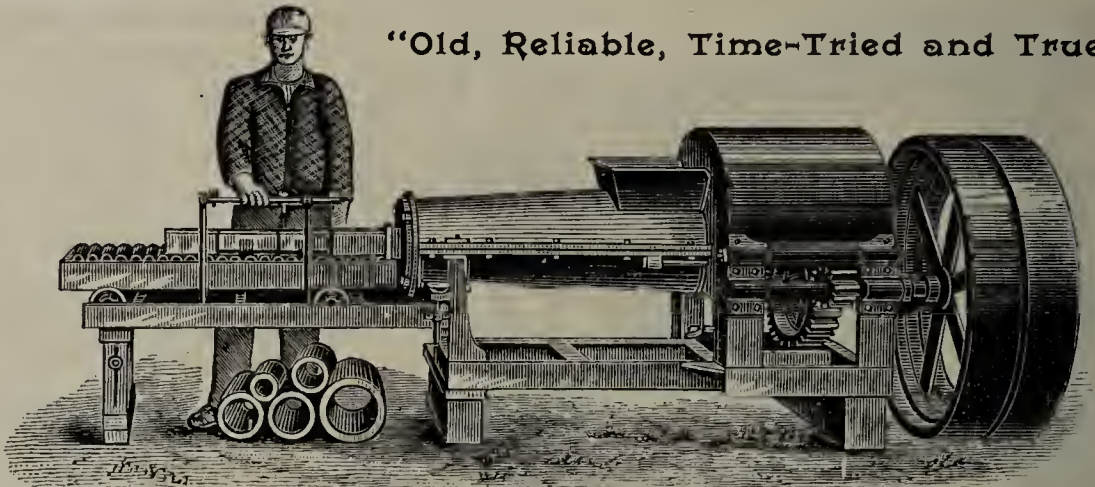
PHILADELPHIA.  
CHICAGO.  
SAN FRANCISCO.

DETROIT.  
DENVER.



## KELLS & SON'S IMPROVED BRICK AND ... TILE MACHINES.

"Old, Reliable, Time-Tried and True."



### P. H. Kells, the Original Inventor of the Auger Machine.

This machine works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. Patented June 22nd, 1880; and February 12, 1884. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

**We have had Twenty-seven Years' Experience in the Manufacture of Brick and Tile Machines.**

*We have made an improvement on our No. 1 Machine by which we can make tile from 3 inches up to 12 inches and on our No. 2 Machine we can make tile from 2½ up to 10 inches.*

For Illustrated Circulars, Prices, Etc., address

**KELLS & SONS, Adrian, Mich.**

## H. C. BAIRD & SON, PARKHILL, ONTARIO,

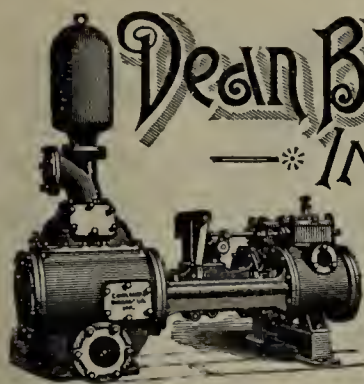
Sole Manufacturers for the Dominion of Canada of the above machines, also makers of the NEW QUAKER BRICK MACHINE.





# Dean Bros. Steam Pump Works,

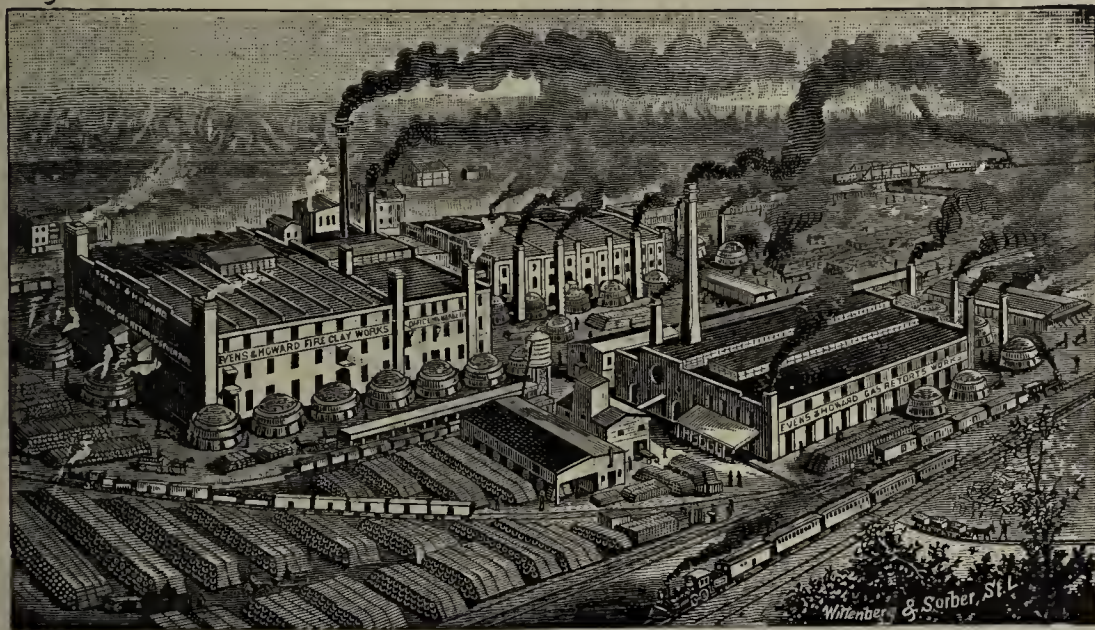
—\* INDIANAPOLIS, IND. \*—



SINGLE & DUPLEX PUMPS.  
HORIZONTAL AND VERTICAL PUMPS.  
Best Design & Workmanship.  
PRICES REDUCED Send for CATALOGUE.

# EVENS & HOWARD'S FIRE BRICK, CLAY RETORT AND SEWER PIPE WORKS

Our products have for more than thirty years been standard in all markets.

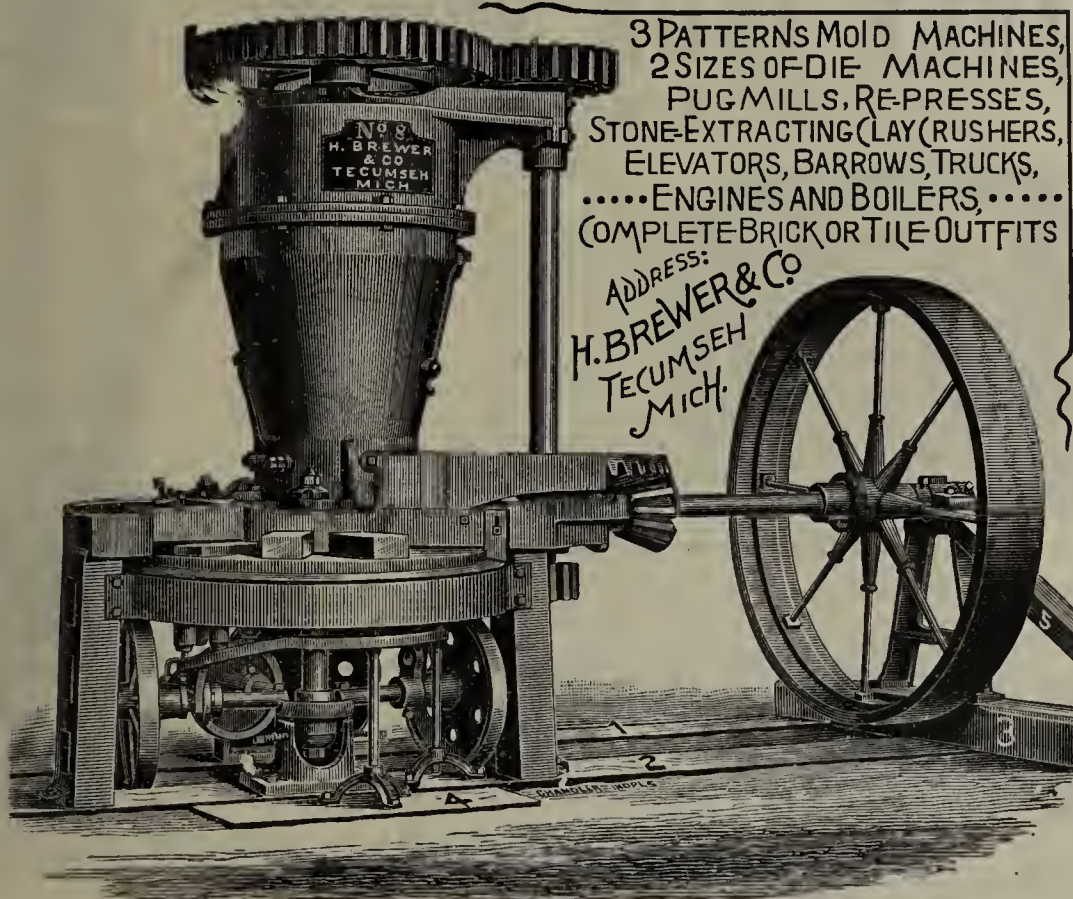


Estimates of the cost of our wares delivered throughout the U. S. and in foreign countries, furnished on application.

**Daily Output, 200 Tons.**

Office: 916 Market St.      Factories: { Howard & Station, Mo. Pac.  
and Frisco Railroads.

**ST. LOUIS, MO.**



3 PATTERNS MOLD MACHINES,  
2 SIZES OF DIE MACHINES,  
PUG MILLS, RE-PRESSES,  
STONE-EXTRACTING (CLAY) RUSHERS,  
ELEVATORS, BARROWS, TRUCKS,  
..... ENGINES AND BOILERS, .....  
COMPLETE BRICK OR TILE OUTFITS

ADDRESS:  
H. BREWER & Co  
TECUMSEH  
MICH.

**F**OR SALE. Whole or one-half interest in brick plant in good order. Good market. We own the clay land. 480 acres timber land. For particulars address, JOHN F. MACK, JR., s 3 c Marquette, Mich.

**W**ANTED. Position as manager or superintendent by an expert brickmaker and burner, 25 years practical experience in the manufacture of all kinds of brick—dry press, re-press, soft and stiff mud brick a specialty. Thoroughly understand the construction of a brickyard in all its details. Can burn brick with wood, coal and oil as fuel. Best of reference. Address  
s t f l p W. C. B., care Clay-Worker.

**F**OR SALE. A brickyard containing 17 acres of land. Dry by the pallet system, 200,000. A Henry Martin Brick Machine, patent Elevator, and the best Continuous Brick Kiln in the world. Good clay for brick and tiling. Sold 3,000,000 brick the past year. There is always a good demand for brick, there being no stone quarry within 150 miles. Reason for selling, too much other business, my patent kiln taking a great deal of my attention. Address, **CARL F. KAUL,**  
4. 12. c. **Madison, Neb.**

**SECOND-HAND MACHINERY.** We offer the following second-hand machinery for cash:

One Leader Brick Machine, in good order.  
One Leader Brick and Tile Machine, in good order.  
One Ideal Brick and Tile Machine, in good order.  
One Tile Elevator.  
One Clay Elevator, 20 feet long.  
One Wallace Brick and Tile Machine.  
One Ohio Brick and Tile Machine.  
One Acme Brick and Tile Machine.  
One Hoosier Soft Mud Brick Machine.  
One 15 h. p. horizontal stationary engine, good as  
new.  
One 30 h. p. double vertical stationary engine, in  
excellent condition.

THE DECATUR LEADER MFG. CO.,

s l t f

Decatur, Ill.

**WESTERN BRANCH, NATIONAL HOME  
FOR DISABLED VOLUNTEER  
SOLDIERS.**

Post Office, National Military Home,  
Leavenworth County, Kans.,  
March 6th, 1894.

## SALE OF BRICK PLANT.

NOTICE IS HEREBY GIVEN that sealed proposals will be received at the office of the Western Branch, N. H. D. V. S., until March 26th, 1894, for the sale of the plant for the manufacture of vitrified brick at said Home.

The plant consists of an eighty h. p. engine, two boilers, a brick machine, pug mill and all connecting machinery necessary for the manufacture of vitrified brick, curbing, etc.

The plant to be removed within sixty days from the date of the acceptance of the bid.

For further information, apply to the Governor of the Home.

BY ORDER OF THE BOARD OF MANAGERS:  
31 d m                      ANDREW J. SMITH, Governor.

# COLORIFIC.

For coloring Brick, Mortar and all Clay Products a deep and permanent red. Most, if not all, colors in the market, are artificially prepared. Colorific is a natural color. References and directions furnished for use. Sample free. Ask for price of

WESTBROOK & WELLS,  
Ogdensburg, N. Y.





## ALBANY SLIP CLAY.

We have a large bank of a superior quality of SLIP CLAY. Price very low by barrel or carload. Best of reference as to quality. Address

JACKSON BROS., Albany, N. Y.  
N. Y. State Drain Tile and Pipe Works

## Analytical and Consulting Chemist

CHARLES FERRY, B. S.,

TROY, N. Y.

Analyses of all grades of clays, fire sands, kaolins and refractory materials furnished, with desired information based upon practical experience, at a reasonable figure. Only the best work, which is afforded by careful manipulation and a well equipped laboratory, may be expected.

## Steubenville Foundry & Machine Works,

Established in 1820.

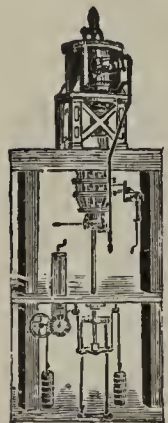
—Manufacturers of—

## STEAM SEWER PIPE PRESSES

OF DIFFERENT SIZES,  
Making From 2 to 30-Inch  
Pipe Inclusive.

Pipe, Brick, Tile, Coping,  
Fire Proofing, and  
Building Block Dies.

Clay Grinding and Tempering  
Pans and Pug Mills.



FEED  
SCREWS  
FOR  
MINING  
CLAY.



STEAM  
— ENGINES  
— AND —

Every Variety of Iron and Brass Castings  
Shafting and Pulleys.

Send for Circulars and Estimates.

**JAS. MEANS & CO.,**  
Steubenville, Ohio.

## ELEVATORS

..FOR..

Clay, Coal, Ores, Sand,  
Grains, Etc.  
Tile, Brick, Packages, Etc.



## JEFFREY CHAIN BELTING,

—ALSO—

Malleable, Steel, Cable and Special Chains,

DESIGNED FOR.....

Elevators, Conveyors, Drive Belts,

FOR HANDLING.....

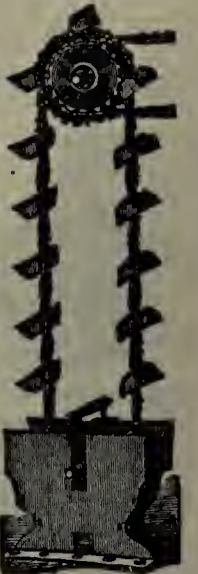
Brick, Clay, Tile, Ores, Etc.,

Send for REDUCED PRICE LIST. Address

**THE JEFFREY M'F'G CO.,**

New York Branch: 163 Washington Street.

Columbus, Ohio.



## NEW DISCOVERY KILN.

Patented April 13, 1886, June 12  
1888, Nov. 17, 1891.

More Than 1,000 Now Stand as  
Monuments of Fame to its Inventor

It is neat, compact, durable, easy to handle, constructed on scientific principles. Has been improved and now burning almost everything made from clay, such as Sewer Pipe, Vitrified Pavers, Etc., to Pottery and finer wares. Built any size up to 100,000. In short it leads the way.

Reward For Information of Infringements.

To know more and what they say of it, address,

**E. M. PIKE, Patentee**

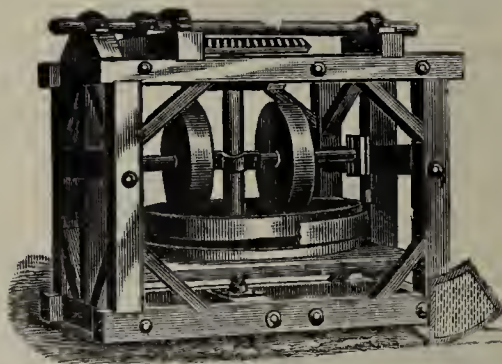
CAPT. G. H. ETTLA, Agt. }  
Marietta, Pa.

Chenoa, Ill.



## EAGLE IRON WORKS, DES MOINES, IOWA.

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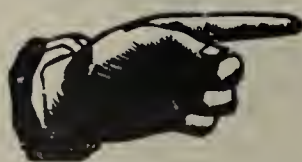


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Highest References from Users.

Correspondence solicited.

[Mention the Clay-Worker.]



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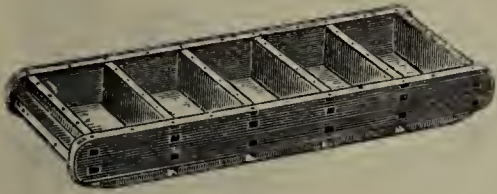
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..HAND..  
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MACHINE **MOULDS.**

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For handling Coal, Sand, Clay, Grain, Tan-Bark, Cinders, Ores, Sawdust, Lime, Cement, Shavings, Cotton-Seed, etc.

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Steam and Horsepower.

THE BEST MACHINE IN  
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These machines are sold on their merits, guaranteed to do first-class work.

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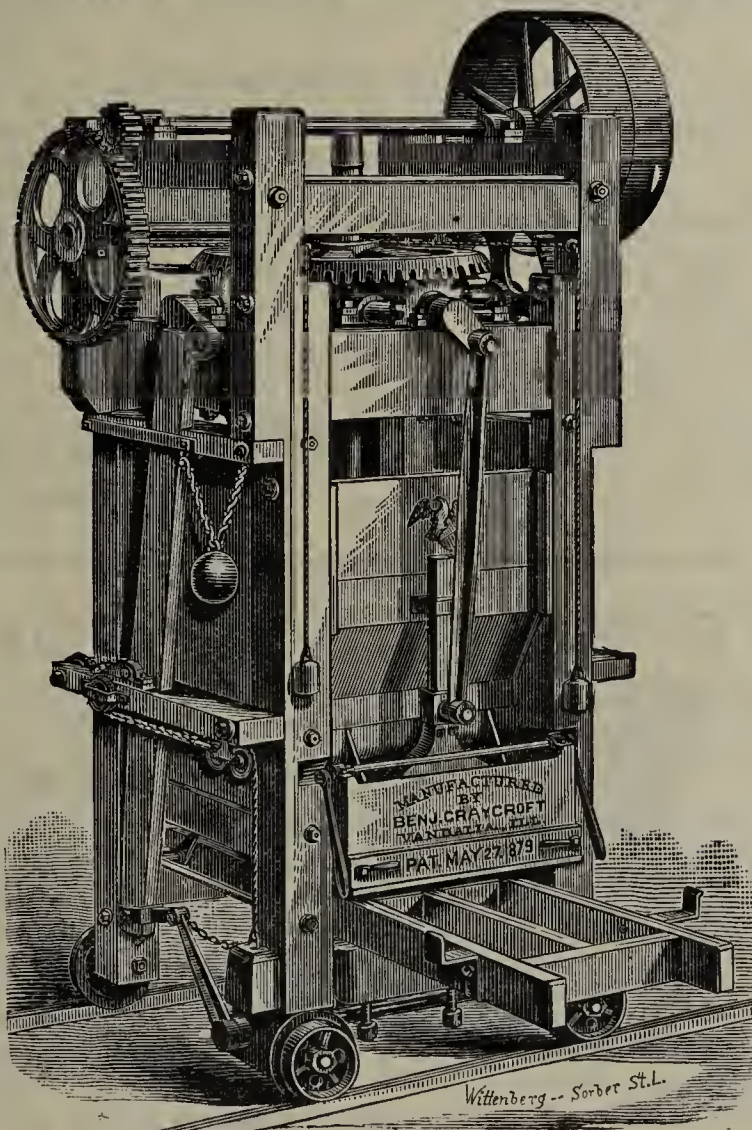
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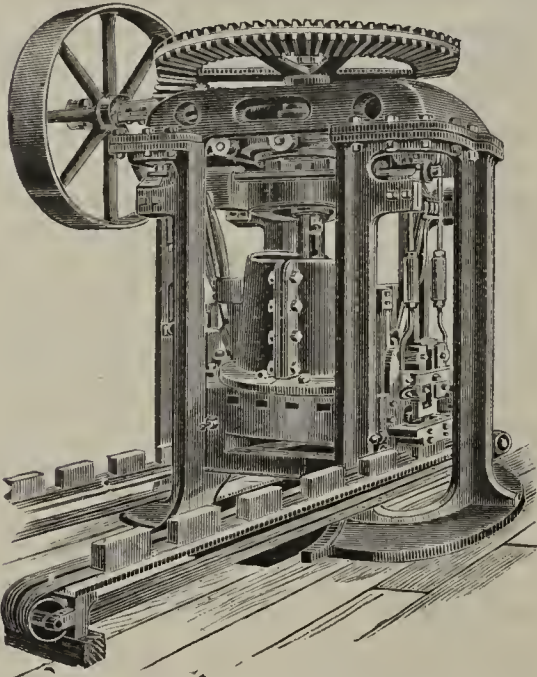
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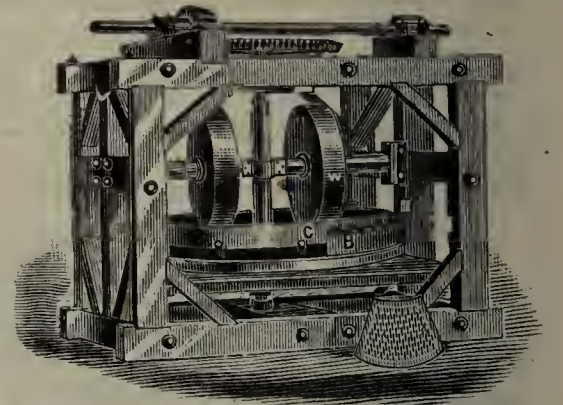
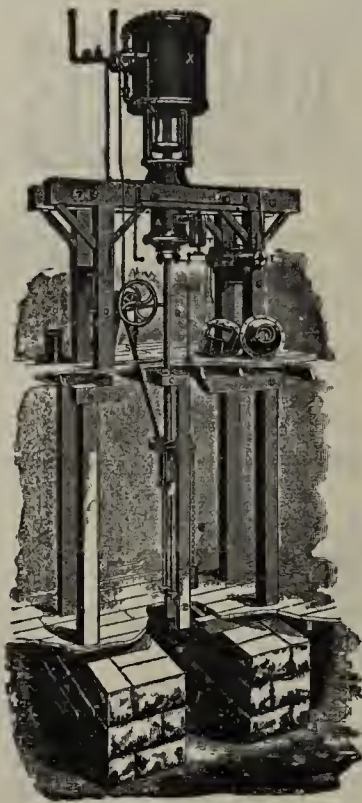
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Clayworking Machinery a specialty.

Builders of Double Acting, Direct Steam, Brick Press.



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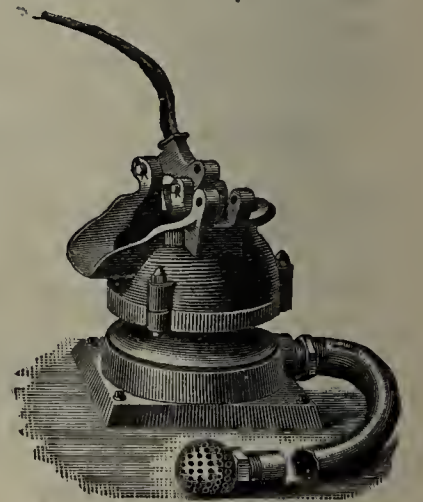
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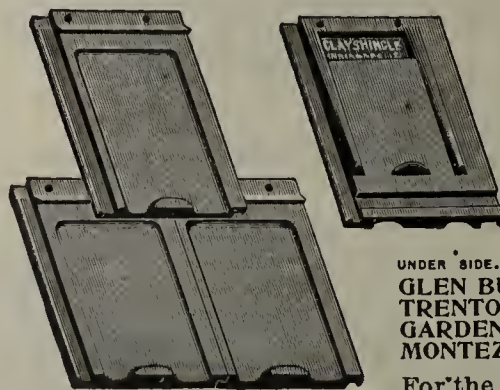
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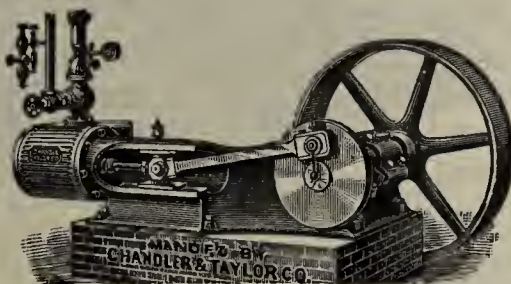
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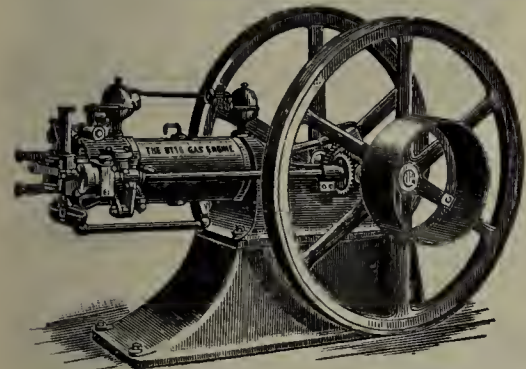
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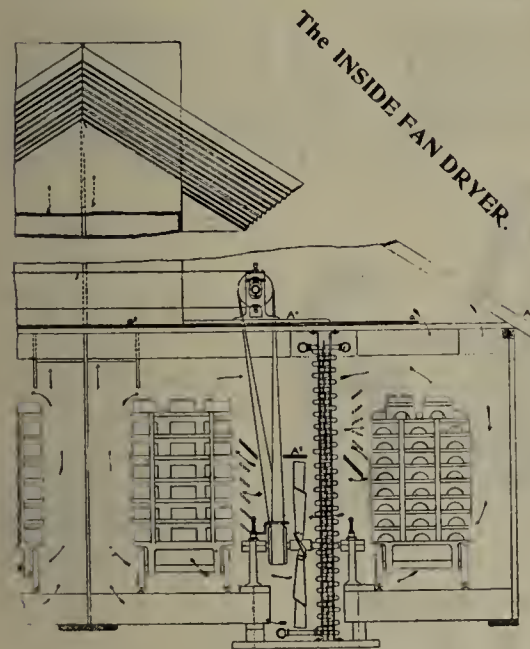
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U. S. Pat. Aug. 16, 1881. No. 245,742.  
U. S. Pat. Mar. 31, 1891. No. 449,170.  
U. S. Pat. Mar. 31, 1891. No. 449,231.  
British Pat. Mar. 31, 1891. No. 5,520.  
Canadian Pat. May 30, 1892. No. 39,025.  
Canadian Pat. May 30, 1892. No. 39,026.

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|                        |         |            |
|------------------------|---------|------------|
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| *No. 22 Passenger..... |         | 1:20 p. m. |
| No. 24 Passenger.....  |         | 7:00 p. m. |

|                        |         |             |
|------------------------|---------|-------------|
| *No. 21 Passenger..... | ARRIVE. | 10:30 a. m. |
| No. 23 Passenger.....  |         | 2:50 p. m.  |
| No. 25 Passenger.....  |         | 6:20 p. m.  |

Trains not marked run daily except Sunday  
\*daily, †daily except Saturday.

No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. &amp; A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west.

For time tables or any other general information call on any agent of Lake Erie &amp; Western or Ft. W., C. &amp; L. railroads, or address C. F. DALY, H. C. PARKER, General Pass Agt Traffic Manager, Indianapolis, Ind.

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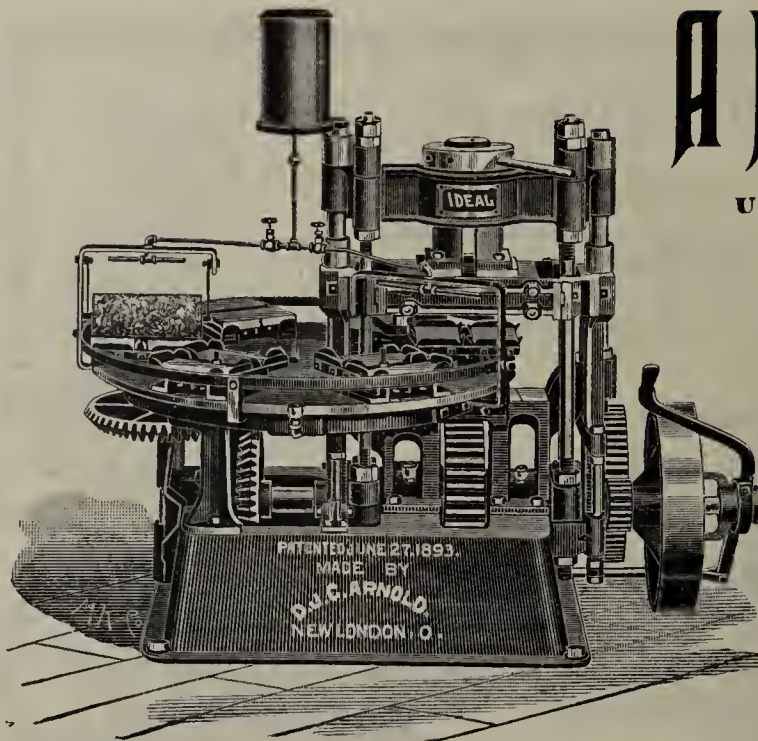
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New features not found  
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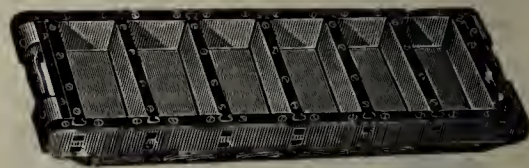
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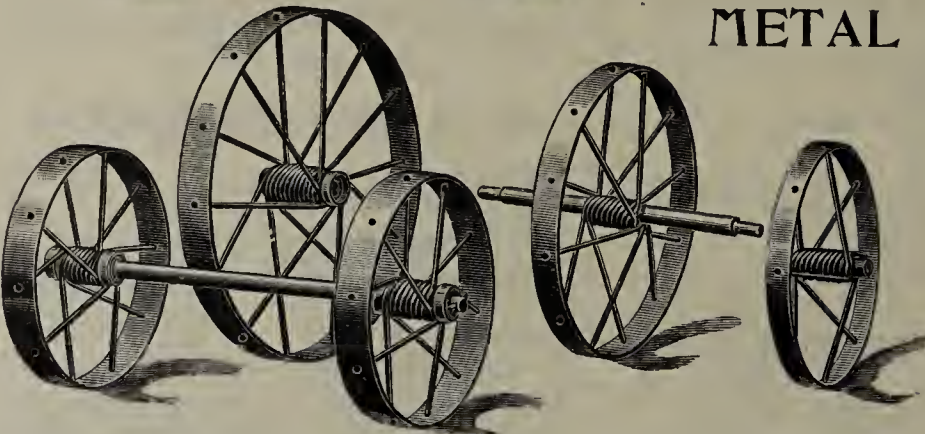
All kinds and shapes  
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Not affected by  
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About the same  
weight of wooden  
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## METAL WHEELS.

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**STRONG**

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A Full Line of Brick and Tile Yard Supplies.

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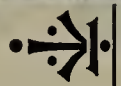
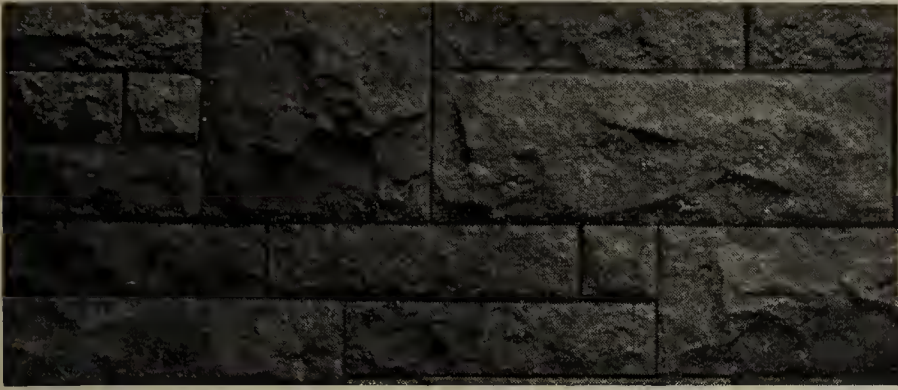


# The BOSTON BRICK ASHLAR.

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

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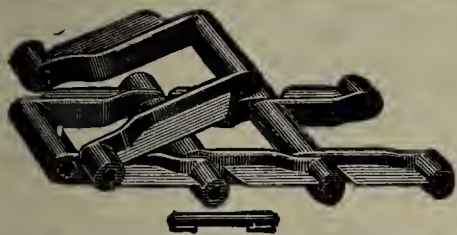
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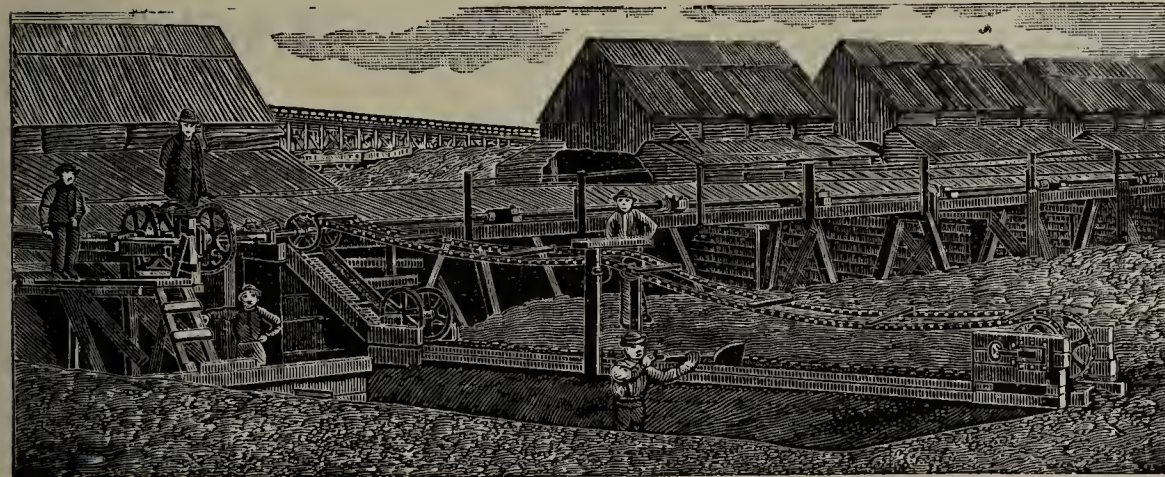
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Mey Patent Clay Elevator.

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ENGINEERING WORKS,

APPROVED APPLIANCES FOR

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64 to 68 Columbia St., BUFFALO, N. Y.

at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

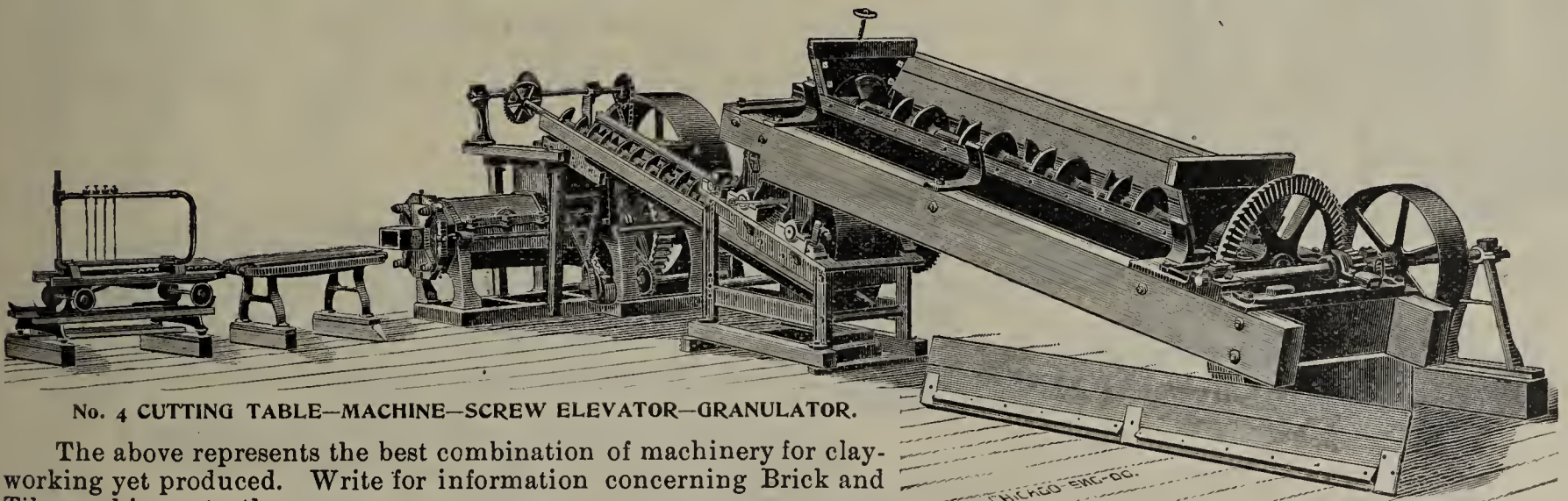
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Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

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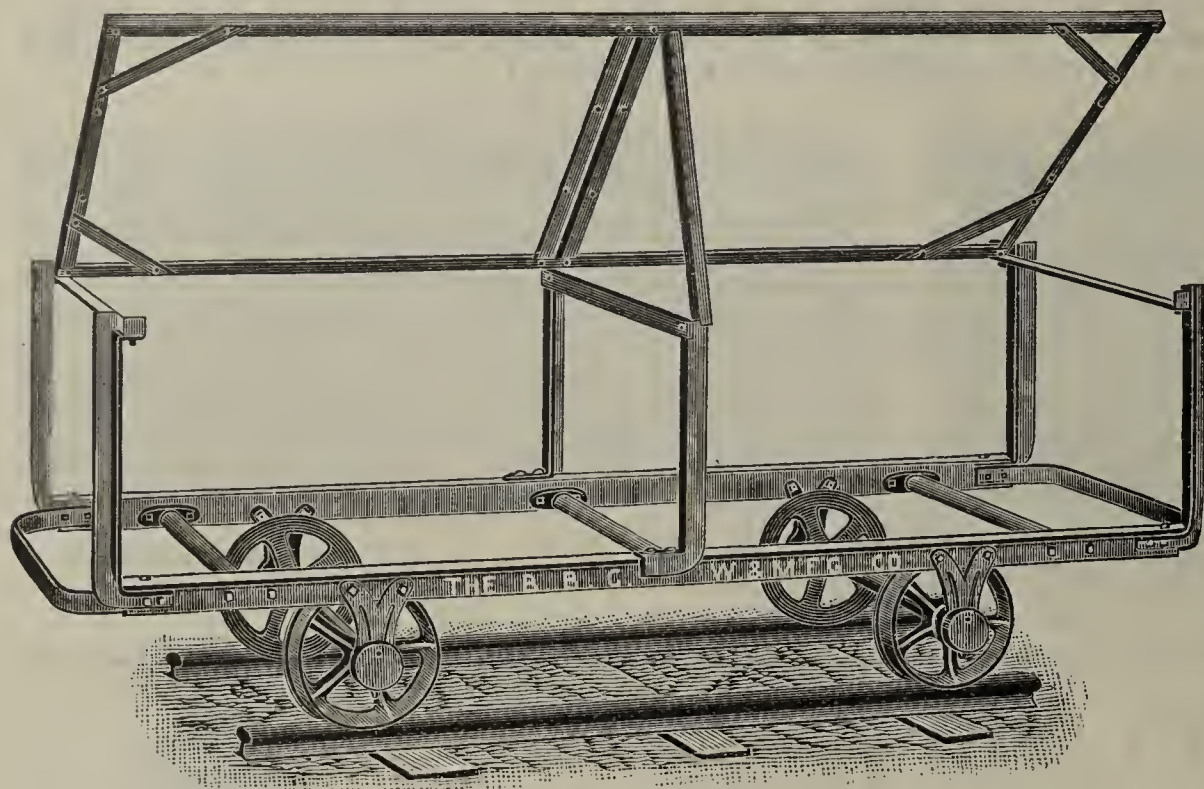


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The above represents the best combination of machinery for clay-working yet produced. Write for information concerning Brick and Tile machinery to the

ADRIAN BRICK AND TILE MACHINE CO., Adrian, Michigan.





## BRICK DRIER CARS.

ONE brick manufacturer who has used both the common cast iron and our all Steel Brick Drier Cars, says, "The

### Cast Iron Cars

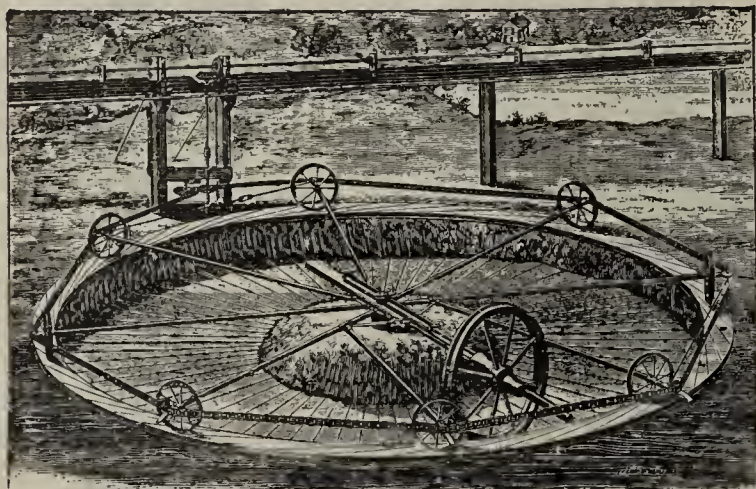
With which our yards were started have cost us fully three times as much as your

### All Steel Cars."

Profit by experience.

The Ball-Bearing Car Wheel & Mfg. Co.,  
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SUCCESSOR TO  
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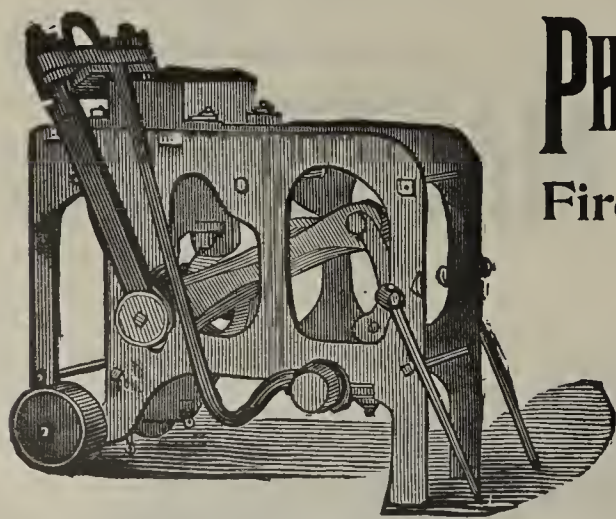
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Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.



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—MANUFACTURED BY—

A. M. & W. H. WILES,  
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We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



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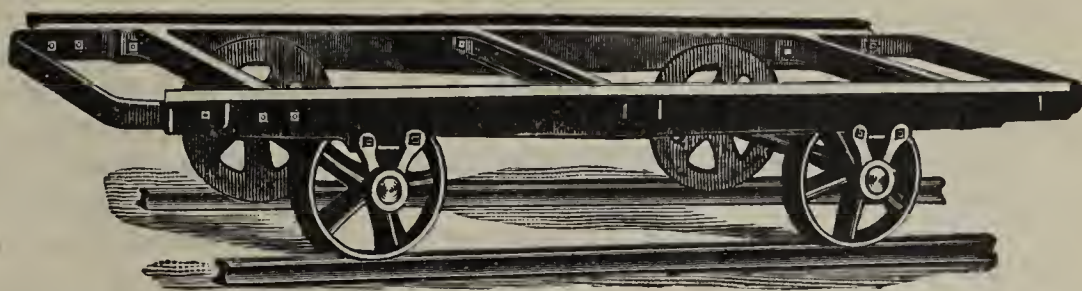
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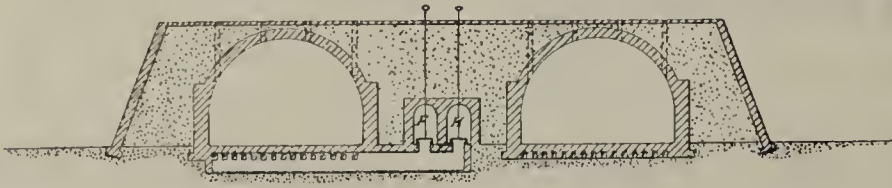


STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG. CO.,  
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**Marks a Great Advance in the Art of Continuous Burning**

Accuracy of results reduced to a certainty.  
Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.  
Under ordinary circumstances the kiln pays for itself in six months.  
Do not decide on kilns before making a thorough investigation.  
Choose a kiln that is fully guaranteed as to results.  
Read what some of the users say about Youngren's Continuous Kiln and be convinced.

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Yours truly

SAN JOSE, Cal., Aug. 25, 1893.

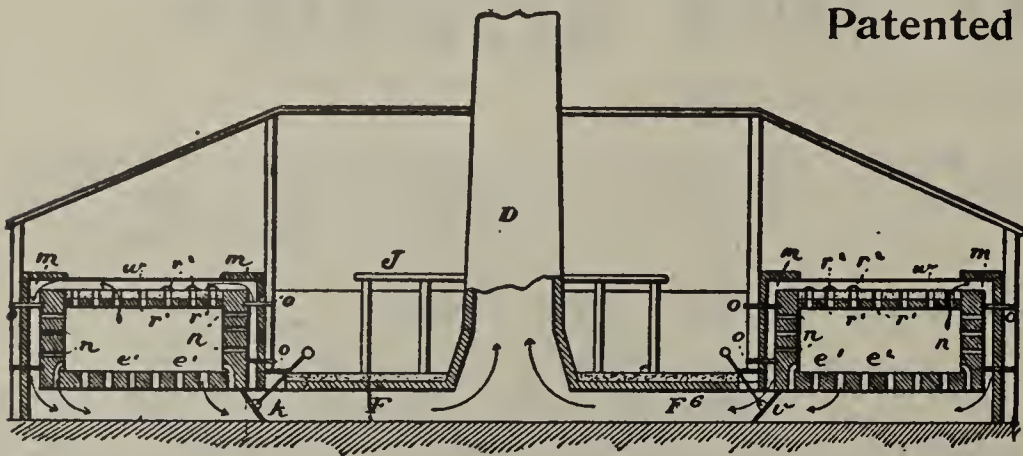
Per H. M. STAMMER, Superintendent.

For particulars address

**P. L. YOUNGREN, Oakland, Cal.**

# The KAUL Continuous Brick Kiln.

Patented March 23, 1892.



**THIS** Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

Mention the Clay-Worker.]

**CARL F. KAUL, Madison, Neb.**

*Why Pay Royalties? Why Pay Yard Rights?  
When You Can Get*

## Bickel's Improved Down Draft Kiln

**GUARANTEED WITHOUT.**

We will build this Kiln and guarantee it to give satisfaction, either by contract or on a per cent. basis.

This Kiln is Simple and Durable in Construction, and Economical in Operation, and does not require an expert to handle it. Any good burner, who understands his business, can easily manage it.

There are no small tile to break or burn out, and no iron exposed to the flames.

This Kiln is built Strong, and to any desired size, and adapted to burning Fire Brick, Vitrified Brick, and Dry Pressed Brick, and all kinds of Pottery goods. Built Square or Round.

For further information, address

**BICKEL BROS. CONTRACTING CO.,**

**920 Market Street,**

[Mention the Clay-Worker.]

**ST. LOUIS, MO.**



# THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

St. Louis, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

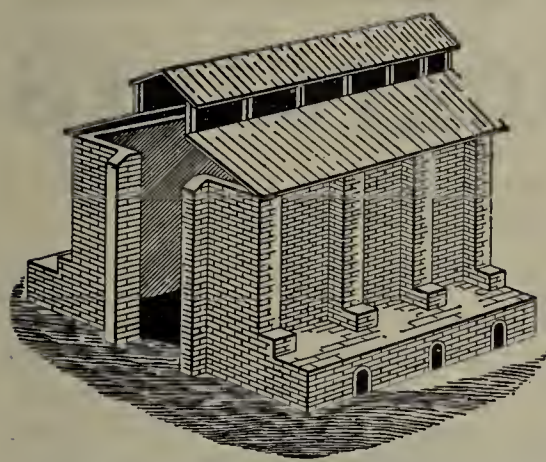
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

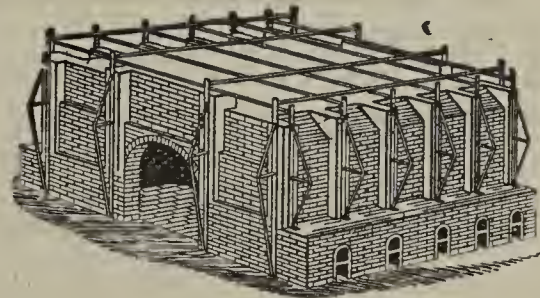
[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.



## LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

VITRIFIED PAVING BRICK.

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

### TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, MO., July 17, 1892. }

H. REPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }  
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,

COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

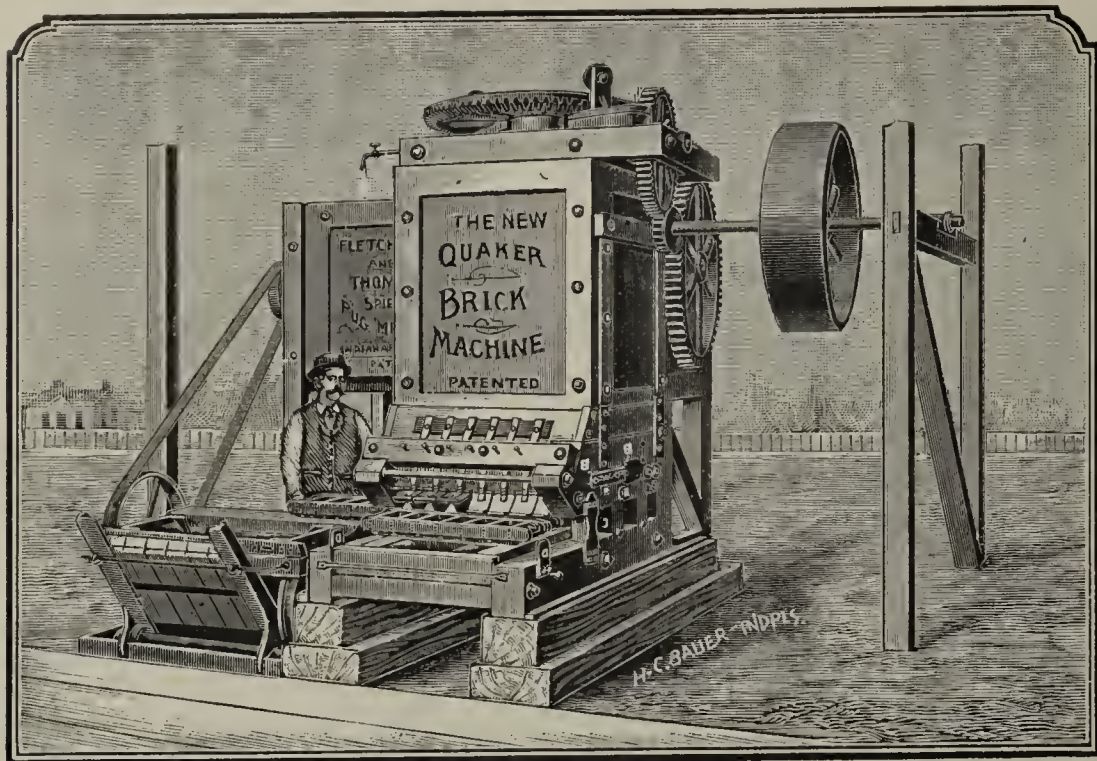
For further particulars and full explanation, please address me, and oblige

LOUIS H. REPELL,

1,913 Indiana Ave.

KANSAS CITY, MO.





EXTRA HEAVY, COMBINED OUTFIT CAPACITY 40,000 TO 50,000 PER DAY.

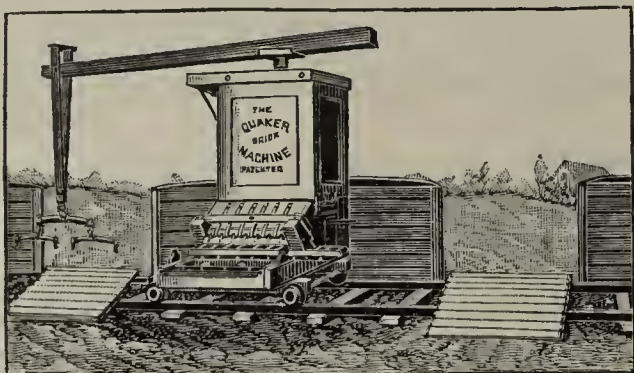
THE NEW MODEL

**QUAKER**

HORSE POWER.

The best machine for the man of moderate means ever used.

Capacity 15,000 to 20,000 per day.



WE CONTRACT TO ERECT AND EQUIP

PLANTS COMPLETE IN EVERY DETAIL.

Send for Illustrated Catalogue and Special prices.

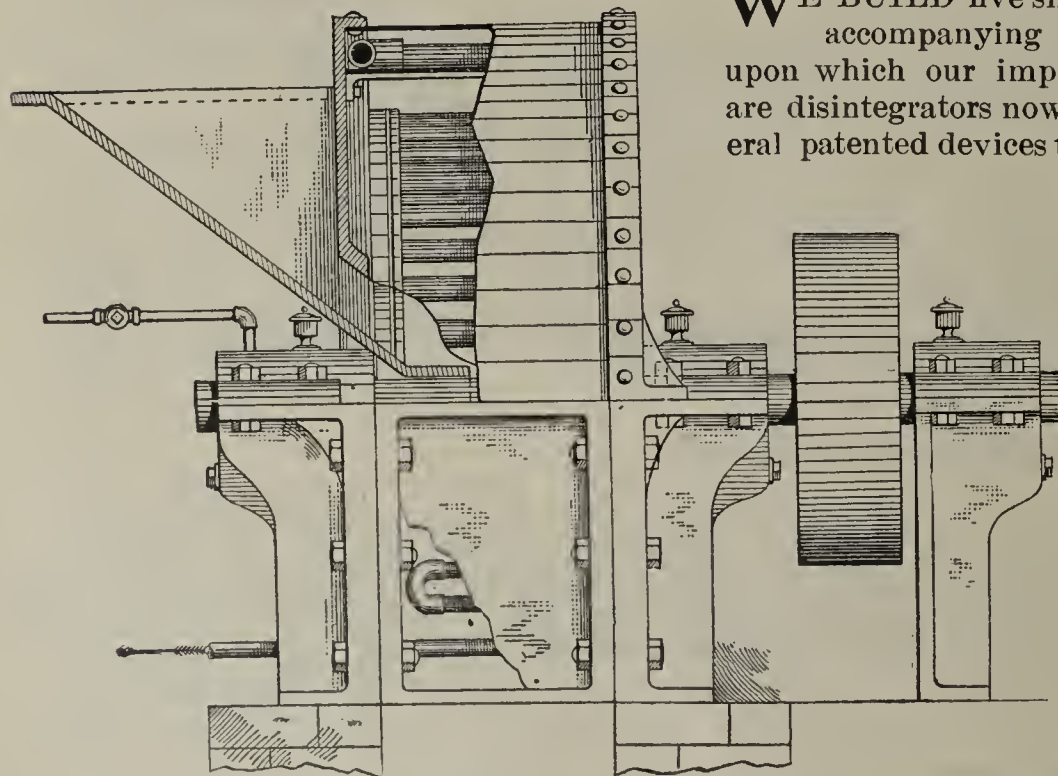
**S. K. FLETCHER,** General Agent,  
Successor to FLETCHER & THOMAS,  
INDIANAPOLIS, IND.

# IMPROVED Clay Disintegrators

(OUR OWN PATENT.)

LARGE CAPACITY WITH LITTLE POWER

FOR PULVERIZING COMMON CLAY, FIRE CLAY, SLATE,  
PAINT, BONES, FLINT AND ORE OF ANY DESCRIPTION.



WE BUILD five sizes ranging from 30 to 60 inches in diameter. The accompanying cut will give the reader an idea of the principle upon which our improved pulverizers are constructed. While there are disintegrators now on the market somewhat similar, ours have several patented devices that makes them much more efficient and durable.

The steam jacket shown in the cut is an especially valuable feature and prevents any tendency to clogging when damp material is used, a great advantage, as all who have had any experience in handling moist clay will readily concede.

Another improvement (our own invention) consists of self-oiling, dust-proof journal boxes, which insure smooth, easy running, and reduces the strain and wear to the lowest possible degree.

Our Disintegrators are built for service. We have a large number of them in use on different materials and all are giving entire satisfaction.

We will be pleased to furnish full description of machines and testimonial letters from users.

IF YOU WANT THE BEST, WRITE US FOR PRICES, ETC.

## Schoellhorn-Albrecht Machine Co.,

MANUFACTURERS,  
609-610 North Levee,  
ST. LOUIS, MO.





# "Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our class of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

## MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

**Thompson's Water-Proof Belt Dressing for**

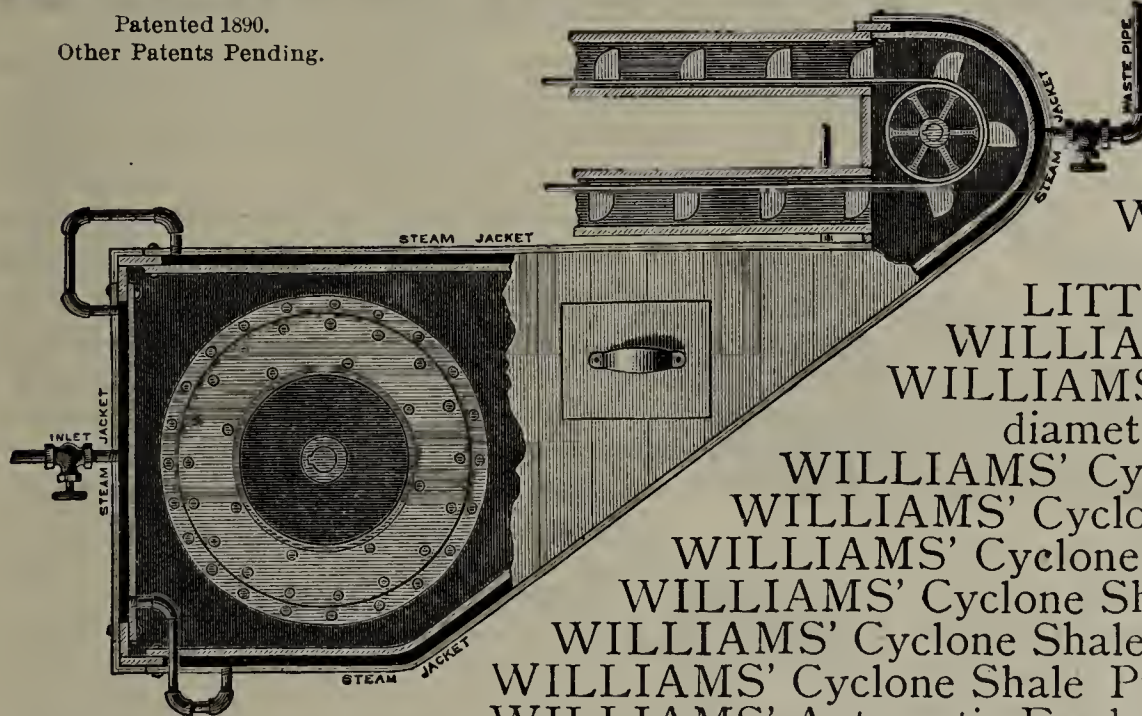
**Leather, Rubber and Canvas Belting.**

**No user of Belting can afford to be without it.**



# WILLIAMS' CLAYWORKING MACHINERY.

Patented 1890.  
Other Patents Pending.



WILLIAMS' Clay Elevators.  
WILLIAMS' Triple Roll Clay  
Crushers.

WILLIAMS' Brick Trucks,  
Three sizes.

WILLIAMS' Revolving Clay  
Screen.

LITTLE'S Steam Jacket for Pulverizers

WILLIAMS' Clutch Pulleys and Couplings.

WILLIAMS' Cyclone Clay Pulverizer 30 in.  
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.

WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.

WILLIAMS' & LITTLE'S Patent Steam Clay Screen.

WILLIAMS' Pony Pulverizer for Testing Clay and Shale.

WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Clay Cultivators.

WILLIAMS' Clay Bunchers.

WILLIAMS' Brick Barrows.

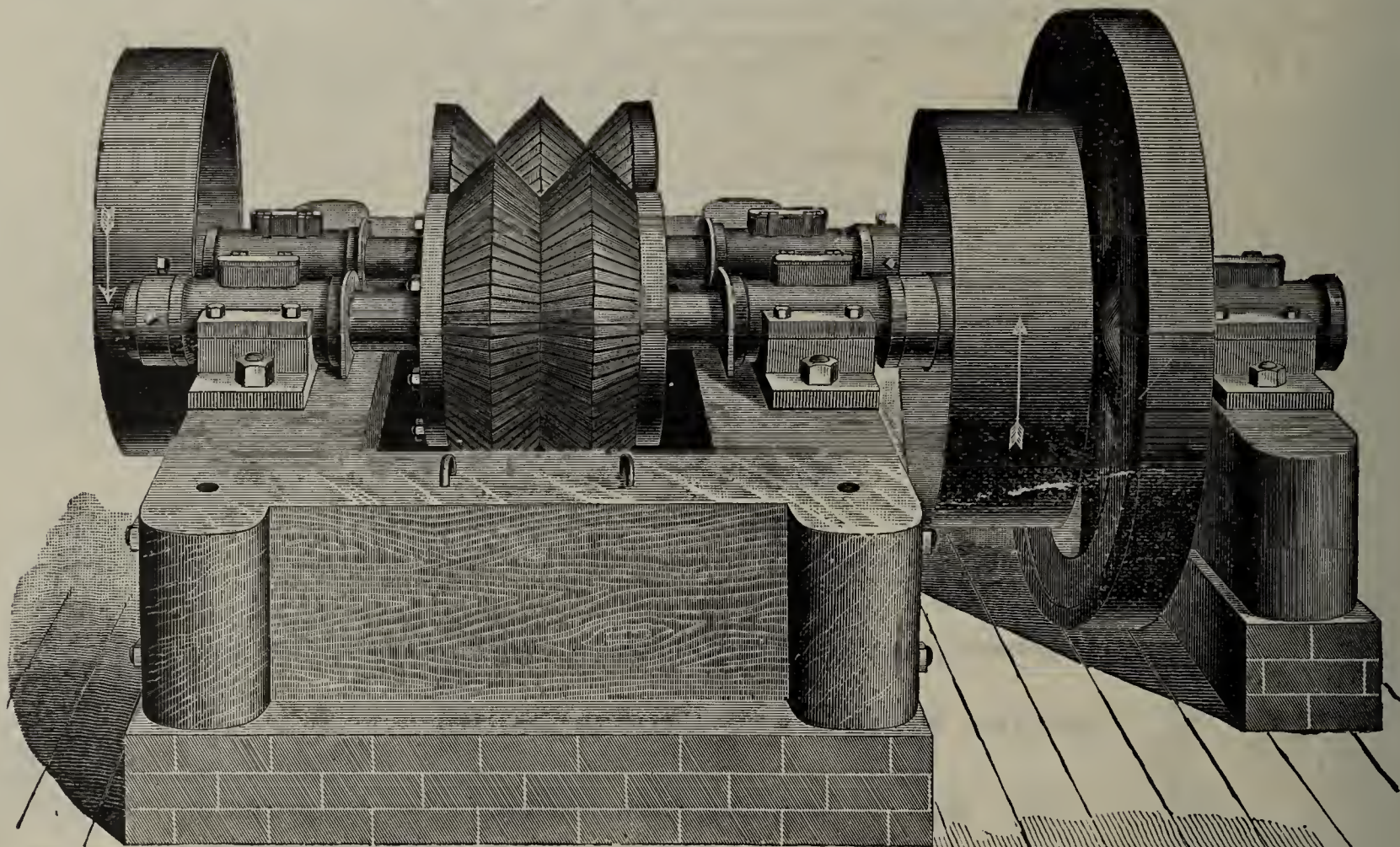
WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO.,** 2705 and 2707 N. Broadway. **ST. LOUIS, MO.**



# NEWELL IMPROVED CLAY PULVERIZER

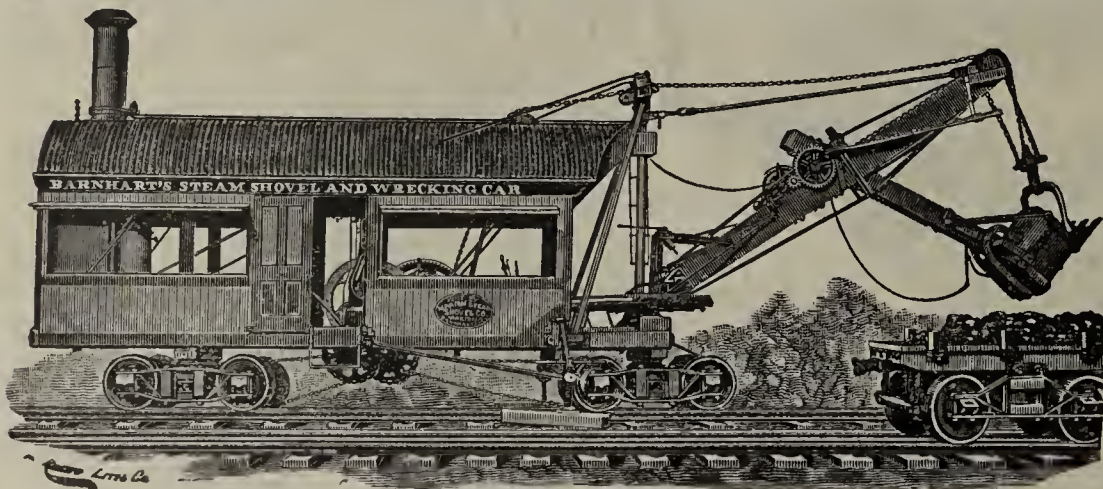
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

**NEWELL UNIVERSAL MILL CO.,** Room 710, Haremyer Building, New York, U.S.A.  
26 Cortland and 21 Dey Streets,

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

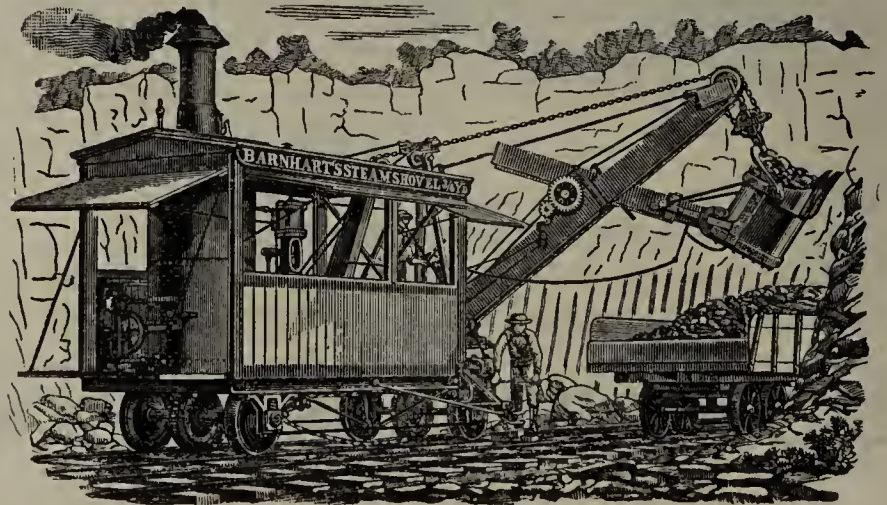
yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**

603 West Center Street,;

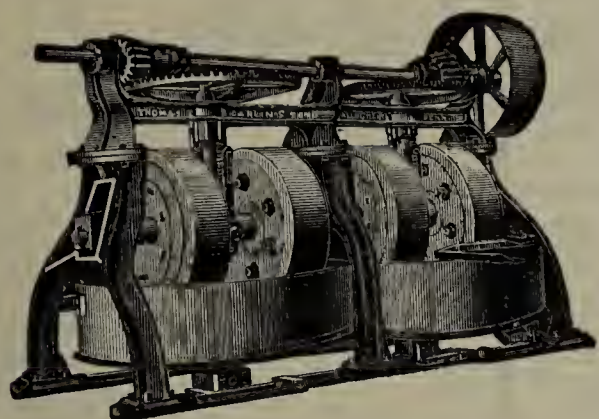
**MARION.**

**OHIO.**



STYLE C—¾ YD





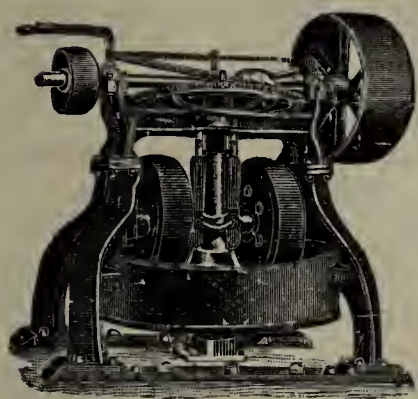
OUR SPECIALTY.

## GRINDING AND MIXING PANS

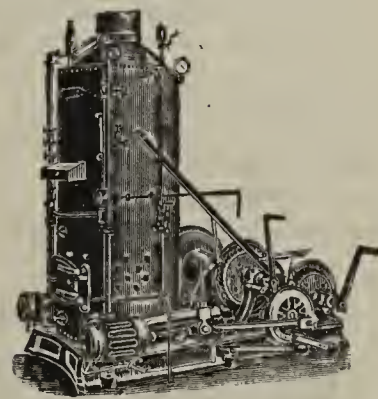
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,  
 ALLEGHENY, PA.



One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

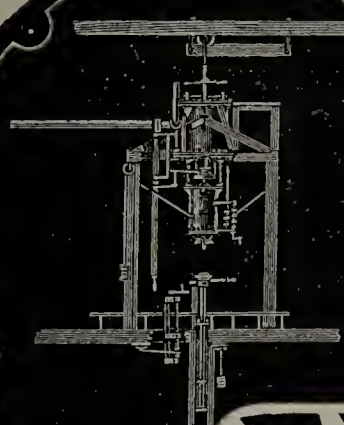
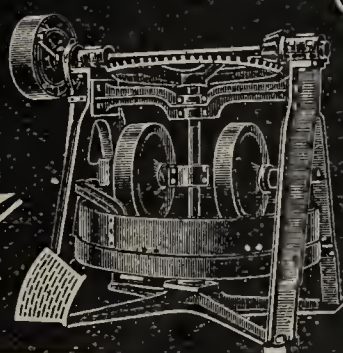
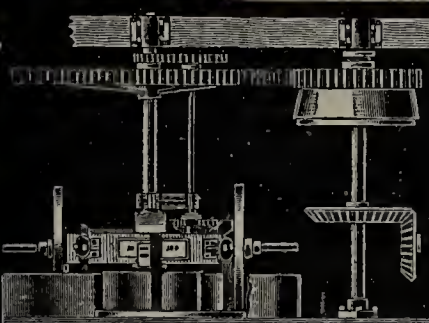
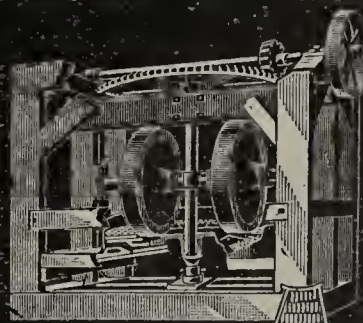
IN STOCK: { One 8 foot Wet Pan.  
 Eight 3 foot gauge Dump Cars.

MANUFACTURERS OF  
 IMPROVED  
**CLAY WORKING  
 MACHINERY**  
 OF EVERY DESCRIPTION  
**TAPLIN RICE & CO.**

CLAY MILLS,  
 STEAM SEWER PIPE PRESS,  
 DRY & WET PANS, DIES, CLAY BLOCKERS,  
 POTTERS' WHEELS AND  
 MACHINERY OF ALL KINDS.  
**AKRON, OHIO, U.S.A.**

PROMPT ATTENTION  
 & DISPATCH GIVEN  
 TO ORDERS

SEND FOR  
 CATALOGUE  
 A



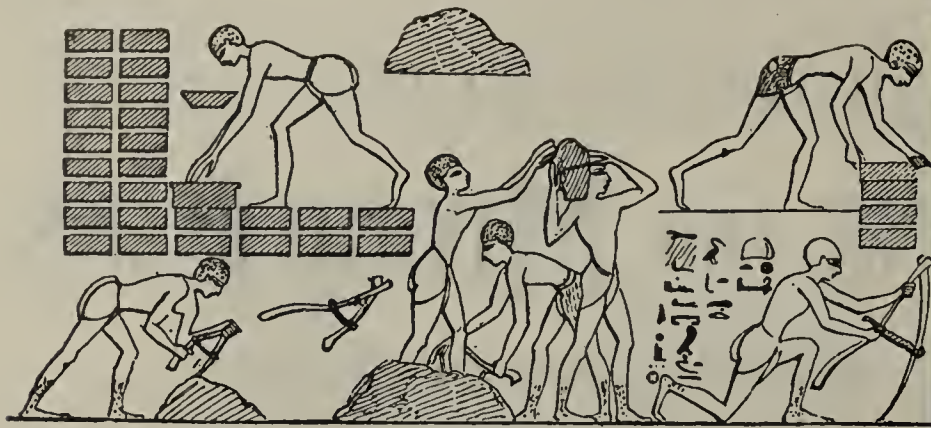


Fig. 1.—A "TALE" OF BRICKS, B.C. 1492.

"And Pharaoh commanded the same day the taskmasters of the people, and their officers, saying: Ye shall no more give the people straw to make brick as heretofore: let them go and gather straw for themselves. And the tale of the bricks, which they did make heretofore, ye shall lay upon them; ye shall not diminish aught thereof: for they be idle... And the officers of the children of Israel did see that they were in evil case, after it was said: Ye shall not minish aught from your bricks of your daily task."—EXODUS V.

makers as **Amenophis II.**, **Thothmes III.**, and other Pharaohs, the sale of any labor-saving machinery would have been well-nigh impossible, for the following cogent reasons: 1st. The existence of a practically unlimited labor-supply removed all necessity for economy in that item; and, 2d. The relations of Capital and Labor at that early period were such as to secure to the former an influence so paramount as to eliminate all pay rolls, and thereby vastly reduce the costs of production.

In the **thirty-three hundred and eighty** odd years that have elapsed since the era mentioned, the clayworking industry has undergone material modifications. In this year of grace A. D. 1894, what would have seemed an unwarranted waste of working capital in the eyes of a Pharaoh, is now regarded by all clayworkers who wish to be "heard from" as simply indispensable, to wit: the most approved labor-saving, work producing appliances. To better illustrate our meaning, we append a partial list of Brick and Tilemakers' Machinery, all of it designed for the express purpose of decreasing labor on the one hand, and increasing the quantity and quality of output on the other, viz.:

|                                              |                                              |                                                        |                       |
|----------------------------------------------|----------------------------------------------|--------------------------------------------------------|-----------------------|
| Auger Machines (two new designs just ready.) | Upright Pug Mills.                           | Horizontal Conveyors.                                  | Disintegrators.       |
| Winding Drums.                               | Represses.                                   | Side Cut Cutting Tables for Brick (Patent Curved Cut). | End Cut Brick Tables. |
| Revolving Tile Carriers and Cut Off.         | Roller Tile Cutting Tables.                  | Spring Trucks.                                         | Wheel Barrows.        |
|                                              | Wire Twister to Loop Cut Off Wires, &c., &c. |                                                        |                       |

If you are interested in Clayworking Machinery, we shall be pleased to have you write for our latest Catalogue.

**MICHIGAN BRICK AND TILE MACHINE CO., = Morenci, Michigan.**

WE present herewith two phases of the brick industry—one of them a decidedly gloomy report from pioneers in the trade; the other some cheerful statements of a "Middleman" who handles such goods extensively.

Fig. 1 represents brick-making as pursued in the Nile Valley about B. C. 1492, at which remote period labor troubles were by no means unknown, as we gather from the authentic record herewith.

Fig. 2 portrays an adopted citizen, from one of whose letters to the home of his youth we quote.

Unto such royal brick-



Fig. 2.—EXTRACT FROM LETTER.

"This is a fine country, sure enough! The very first hour I set foot ashore I got a job as assistant architect, at one dollar the day, in good money; and it's just sport, so it is. I only puts a few bricks into a small box like, and takes them up a bit of a ladder to a lot of other gentlemen that's waitin' for them, and they does every blessed stitch of the work with them bricks."

**EXTRA HEAVY**  
THIS PAN WEIGHS MORE,  
WILL LAST LONGER,  
DOES THE WORK BETTER,

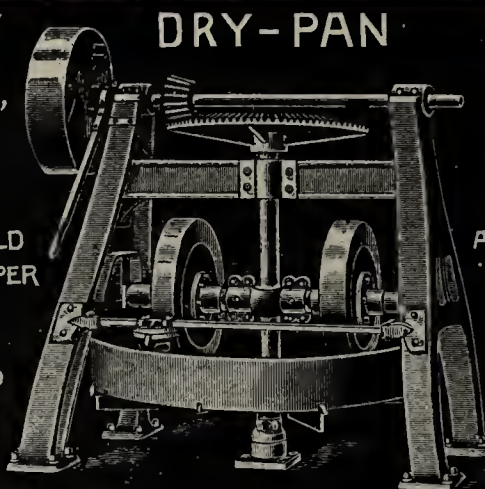
AND WHILE IT COSTS MORE TO BUILD, IS SOLD AT A PRICE AS LOW AS OTHER PANS OF CHEAPER GRADE. THE HOUSINGS ARE WARRANTED FOR FIVE YEARS.

CUSTOMERS ARE ALWAYS PLEASED

THE BONNOT COMPANY  
CANTON, O.

GENTLEMEN! THE DRY PAN PURCHASED OF YOU HAS BEEN IN CONSTANT USE AND HAS GIVEN ENTIRE SATISFACTION. WE WANT NOTHING BETTER. YOURS VERY TRULY

BRAZIL BRICK & PIPE CO.  
BY J. V. AYER, SECRETARY.



**THE**  
**BONNOT CO.**  
**CANTON, O.**

**A GOOD SCREEN**  
IS AS NECESSARY  
AS A GOOD MANAGER  
IN A SUCCESSFUL PLANT.

A GOOD MANAGER WILL SURELY INVESTIGATE THE "BONNOT" REVOLVING SCREEN. NO EXPENSE IS REQUIRED LOOKING AFTER IT. THE OLD STYLE SCREEN REQUIRES THE EXPENSE AND ATTENTION NECESSARY TO KEEP IT GOING.

THE BONNOT COMPANY,  
CANTON, O.

LOUISVILLE, KY. DEC. 27 '93.

GENTLEMEN! WE ARE VERY MUCH PLEASED WITH THE WORKING OF THE REVOLVING SCREEN. IT HAS BEEN IN CONTINUAL USE SINCE WE PURCHASED IT AND WE THINK IT DOES THE WORK BETTER THAN ANYTHING WE HAVE EVER TRIED.

YOURS TRULY,

KENTUCKY VITRIFIED PAVING BRICK CO  
BY M. J. BANNON, V. PRES. & GEN. MGR.

WHEN IN NEED OF A DRY PAN—EITHER IRON OR WOOD FRAME WRITE US BEFORE BUYING. WE MAKE THE STRONGEST DRY PAN ON THE MARKET—AT A PRICE SUITED TO THE TIMES

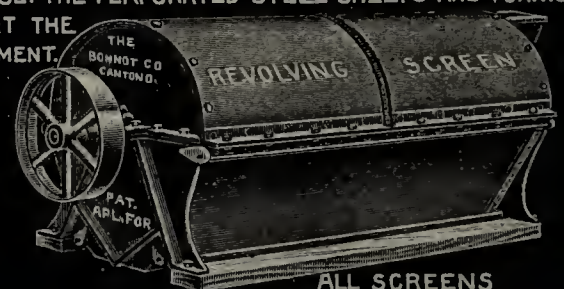
**PUG MILLS.**



IF YOU WANT THE LATEST THING OUT—A PUG MILL WITH ADJUSTABLE OUTLET—PRICE NO MORE THAN A CHEAP ONE. WRITE FOR PARTICULARS.

IF YOU WANT INFORMATION ON REVOLVING SCREENS ASK FOR SPECIAL TERMS ON SCREENS.

**HOW THEY ARE SOLD.**  
WE GUARANTEE THESE SCREENS TO DO CERTAIN WORK WRITE US WHAT YOUR DAILY OUTPUT IS AND WE WILL KNOW WHAT TO ADVISE. THE PERFORATED STEEL SHEETS ARE FURNISHED TO SUIT THE REQUIREMENT.



ALL SCREENS ARE WARRANTED TO DO EXACTLY WHAT IS CLAIMED FOR THEM



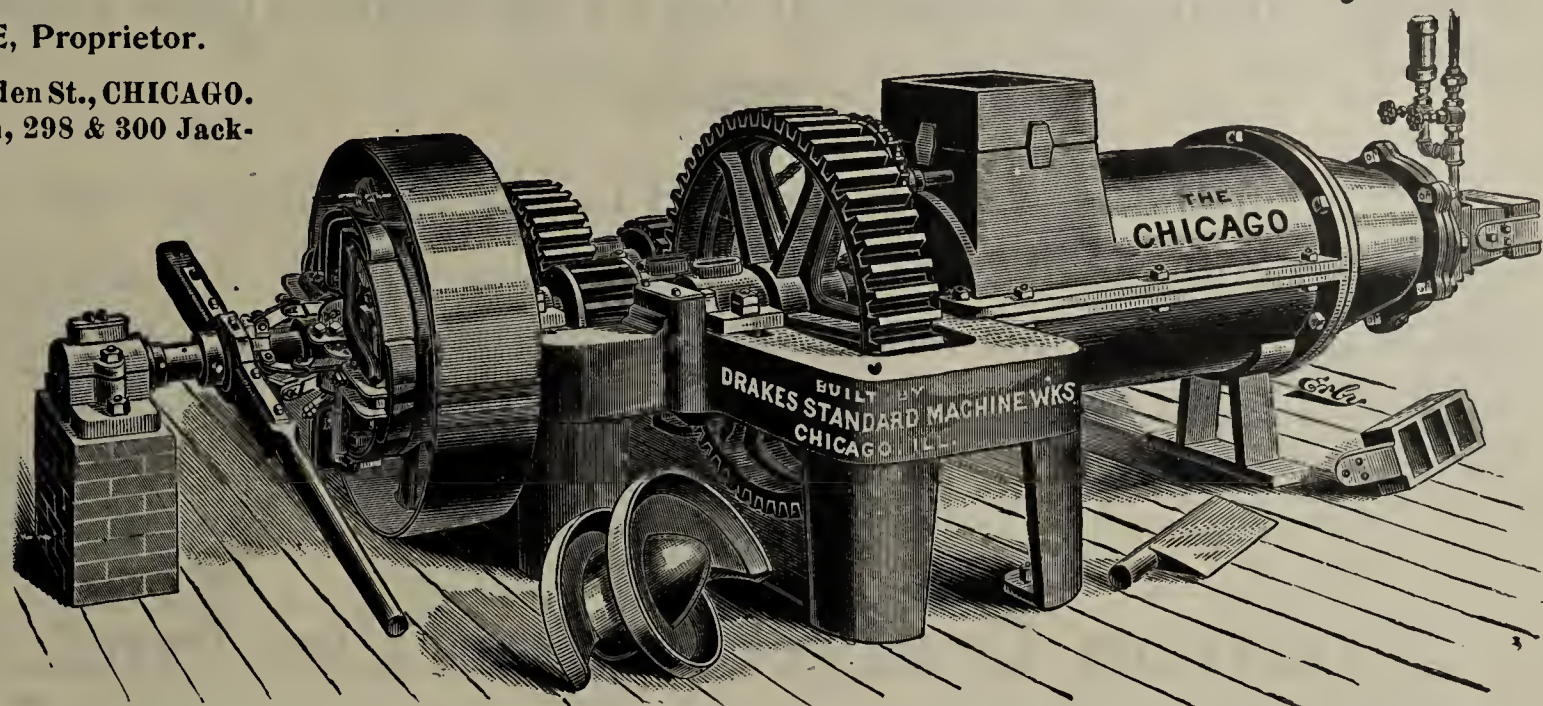
# DRAKE'S STANDARD MACHINE WORKS,

Manufacturers of All Kinds of Brick Machinery.

C. T. DRAKE, Proprietor.

Factory, 7 & 9 Garden St., CHICAGO.

Office & Salesroom, 298 & 300 Jackson Boulevard.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 50,000 brick per day. Surpassed by none. References: Turner Brick Co., Turner, Ill.; John Mooney, Highland Park, Ill.; A. H. Maynard & Son, Waukegon, Ill.; Myers & Toll, Chicago, and others.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, CLAY CRUSHERS, HAND REPRESSES, ETC., ETC.

Our "GRANULATORS" are the leaders in Chicago. So says Alsip Brick Co., who are running 11 Granulators; also Hayt & Alsip May, Purington & Bonner Brick Co.; Purington-Kimbell Brick Co.; Purington Brick Co., and many others.

**PRICES REASONABLE.**

**CORRESPONDENCE SOLICITED**

A large advertisement for J.H. &amp; D. LAKE, CO. The central part of the ad features a detailed illustration of a long industrial factory building with multiple chimneys emitting smoke. Above the factory, the text 'J.H. &amp; D. LAKE, CO.' is prominently displayed in a large, bold, serif font. To the right of the company name, 'MASSILLON, O.' and 'U.S.A.' are written. Below the company name, the words 'FRICTION CLUTCH PULLEYS;' are written in a stylized, curved font. To the right of the factory, the text 'MFR'S. OF PLAIN OR SPLIT PULLEYS, SHAFTING, HANGERS, Etc. ALSO COUNTER SHAFTS COMPLETE.' is written in a similar curved font. Below the factory illustration, the text 'FORMERLY OF HORNELLSVILLE, N.Y.' is visible. Surrounding the central text and factory illustration are several detailed technical drawings of various mechanical components, including different types of pulleys, shafts, and couplings, arranged in a border-like fashion.



# IT IS USELESS TO REPINE

Good brick made by good machinery and backed by good management will put you in the front rank....



Experiments are better handled by the rich suckers who profit by a practical training, but the Brickmaker who desires to keep the balance on the right side of his ledger wants machinery of an established reputation, and to obtain information of such machinery with prices and full particulars, address the manufacturers.

## Jonathan Creagers' Sons, Cincinnati, O.

IMPROVEMENTS IN BRICK MACHINES....IMPROVEMENTS IN DISINTEGRATORS....IMPROVEMENT IN THE ARRANGEMENT OF COMPLETE EQUIPMENT....PRICES INTERESTING.

### The IRON KING

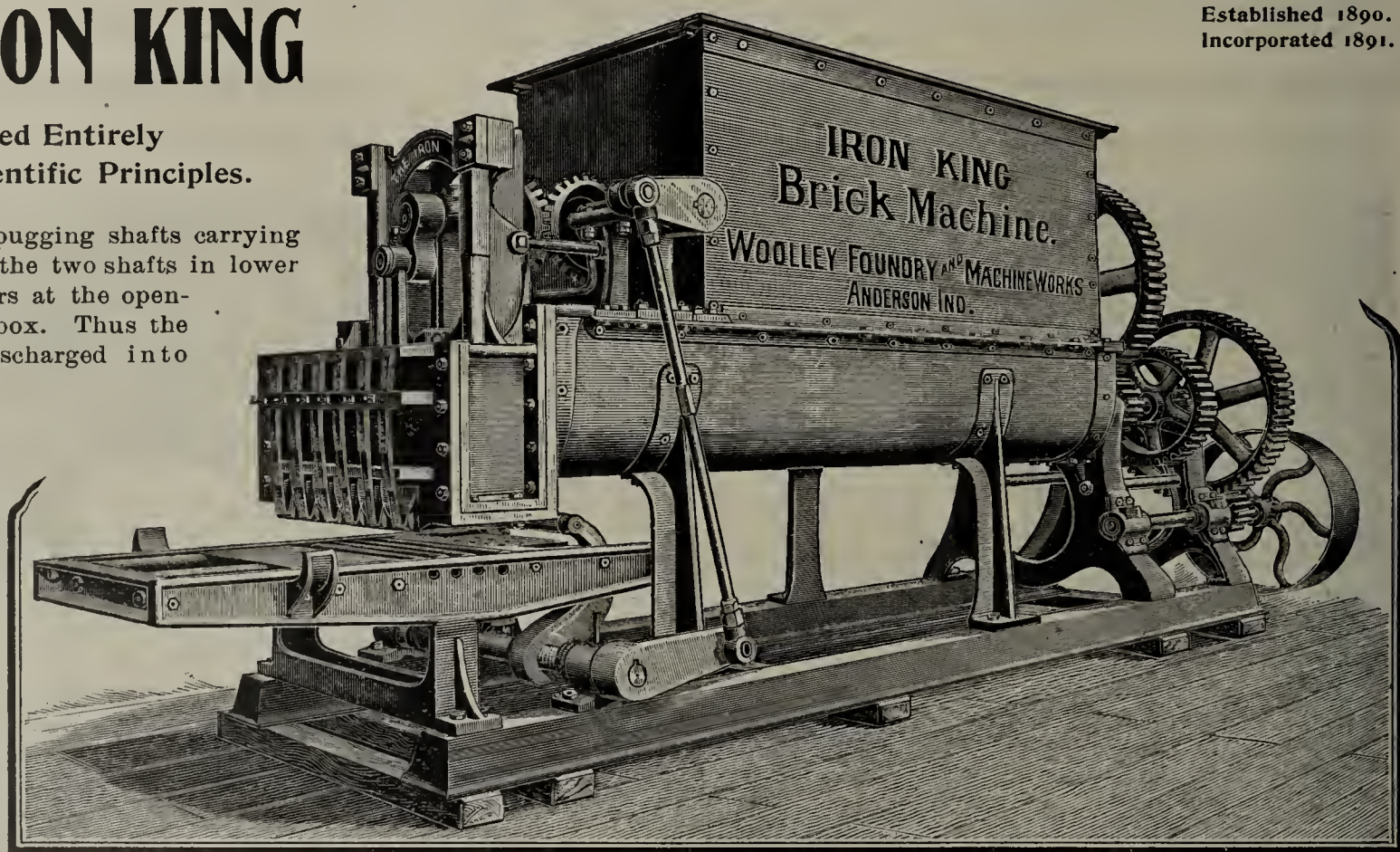
Is Constructed Entirely  
On Scientific Principles.

It has three pugging shafts carrying steel knives. On the two shafts in lower chamber are augers at the opening of the press box. Thus the clay is evenly discharged into the press box, insuring an even pressure on each brick. Parties who are familiar with what is commonly known as soft clay machines, will readily understand the advantages that we gain, by dispensing with the old wiper or mud wing, and substituting the more modern and

positive device known as the auger. This machine has more pugging capacity, is stronger and has more iron and steel in it, and will make stiffer brick than any machine using a sanded mold. This machine will bear investigation. Write for full description and testimonials, or come to our works and see the machine in stock, we can show it in practical operation in works near us. In conclusion, if you buy a machine without investigating the Iron King, you are the loser. Address,

WOOLLEY FOUNDRY & MACHINE WORKS, Anderson, Ind.

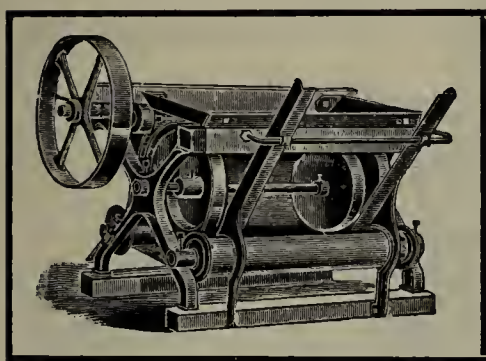
Established 1890.  
Incorporated 1891.



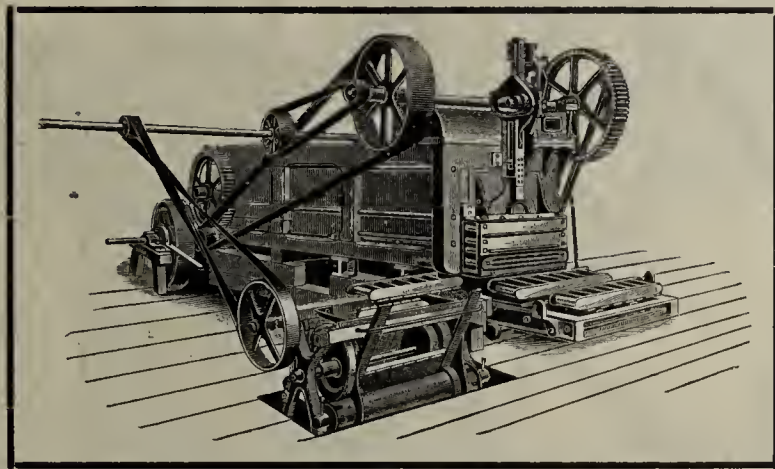


These are the Three Machines which

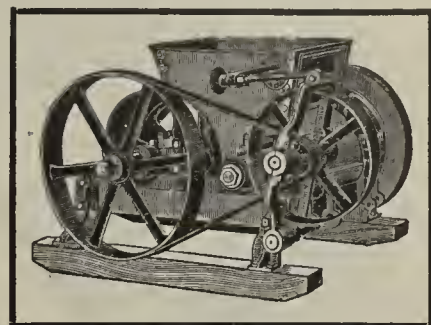
# C. & A. POTTS & CO.,



MOULD SANDER.



HORIZONTAL STOCK BRICK MACHINE.



DISINTEGRATOR.

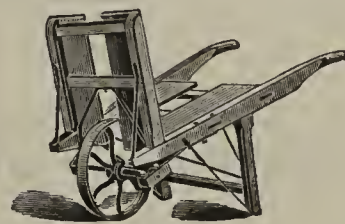
WILL ship on trial. GUARANTEEING them to work any clay direct from the bank, and make better brick, than can be made by any machine now on the market. These are the standard machines of America. Write, asking the nearest point to you where they can be seen in operation.

We also manufacture a full line of clayworking machinery including,



Brick Moulds.

Five sizes of Pug Mills, five sizes of Disintegrators. Clay Cars, Winding Drums, Elevators, Trucks, Barrows, Pulleys, Belting and Shafting.



As we manufacture all goods in our works we can guarantee them to be well made of good material, and save you all commissions.

See ad. on page 16.

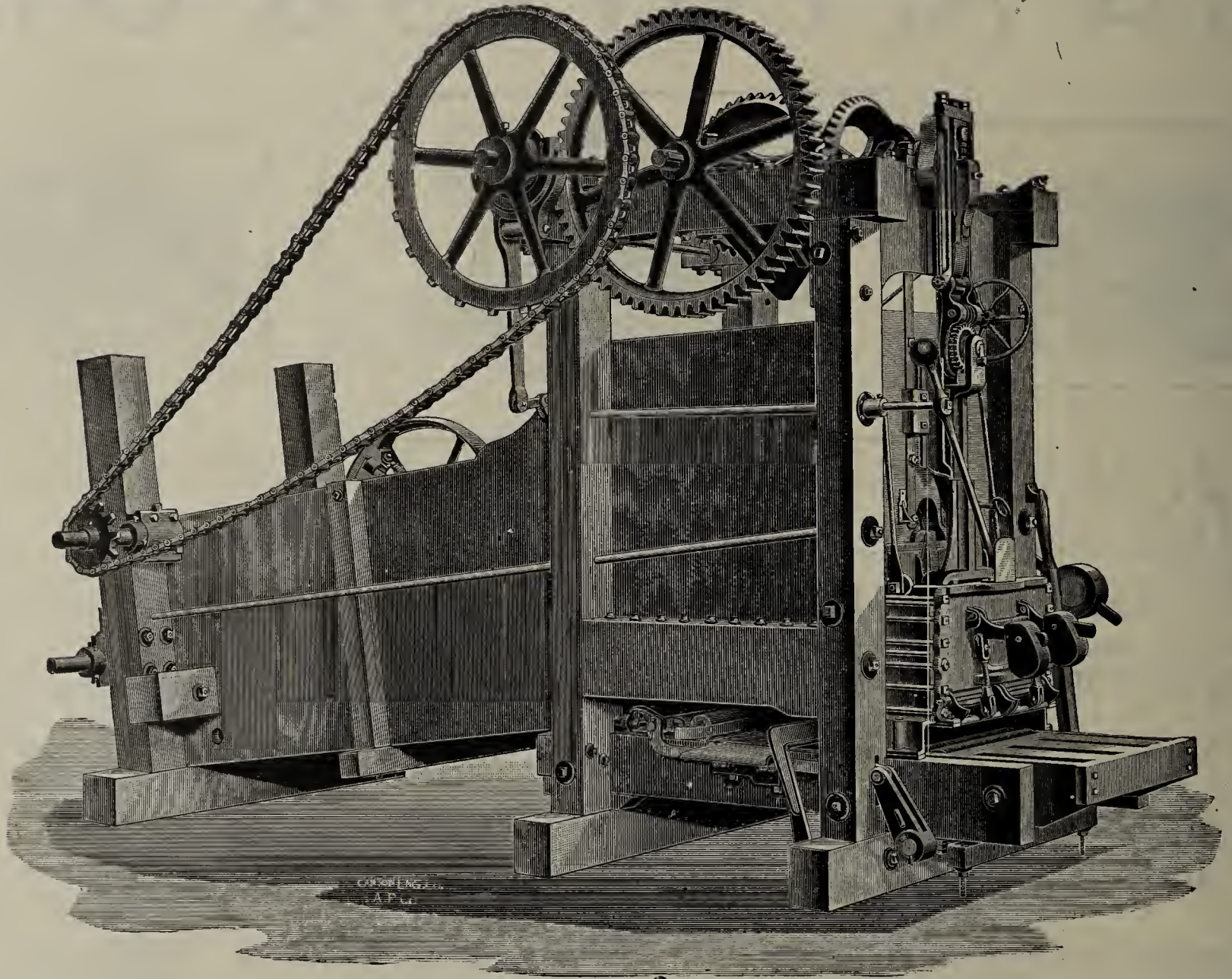
~~~~~

C. & A. POTTS & CO.,

INDIANAPOLIS, INDIANA.

OUR LATEST!

The "Tiffin" HORIZONTAL BRICK MACHINE



Possesses all the Good Points and
Patented Special Safety Devices

That have conduced to render our "Tiffin" Vertical Machine so popular with practical Brickmakers.

•✂ PRICES REDUCED. ✂•

Tiffin Horizontal Automatic Brick Machine.....	\$500
" Vertical " " "	400
" Horse Power " " "	300

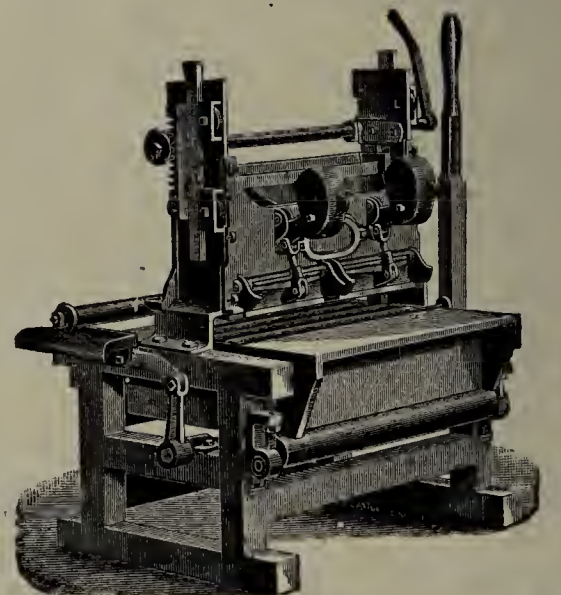
✂ If you have not received a copy of our Illustrated and descriptive Catalogue of Brick Machinery and Brickyard Supplies we will be pleased to mail you one.

TIFFIN AGRICULTURAL WORKS,

Manufacturers of Steam and Horse Power Automatic Brick Machines, Horizontal Pug Mills, Elevators, Crushers, Tilting Turn Tables, "Old Reliable" Brick Machines, Pug Mills, Trucks, Wheelbarrows, Molds, Etc., Etc.

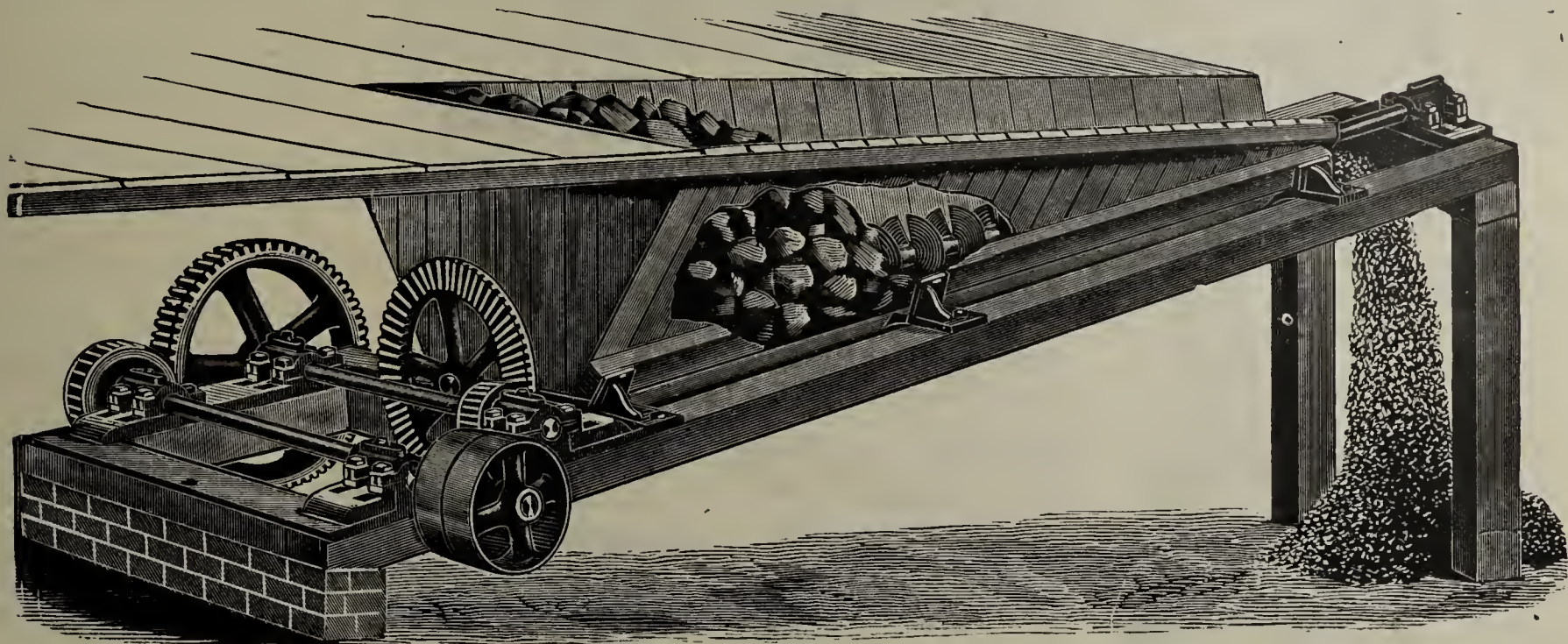
TIFFIN, OHIO.

The "Old Reliable"



MAINTAINS THE REPUTATION of being the best Machine on the market for use in small yards.

EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
 2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
 3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
 4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
 5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
 6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.
- This machine is sold entirely upon its merits.

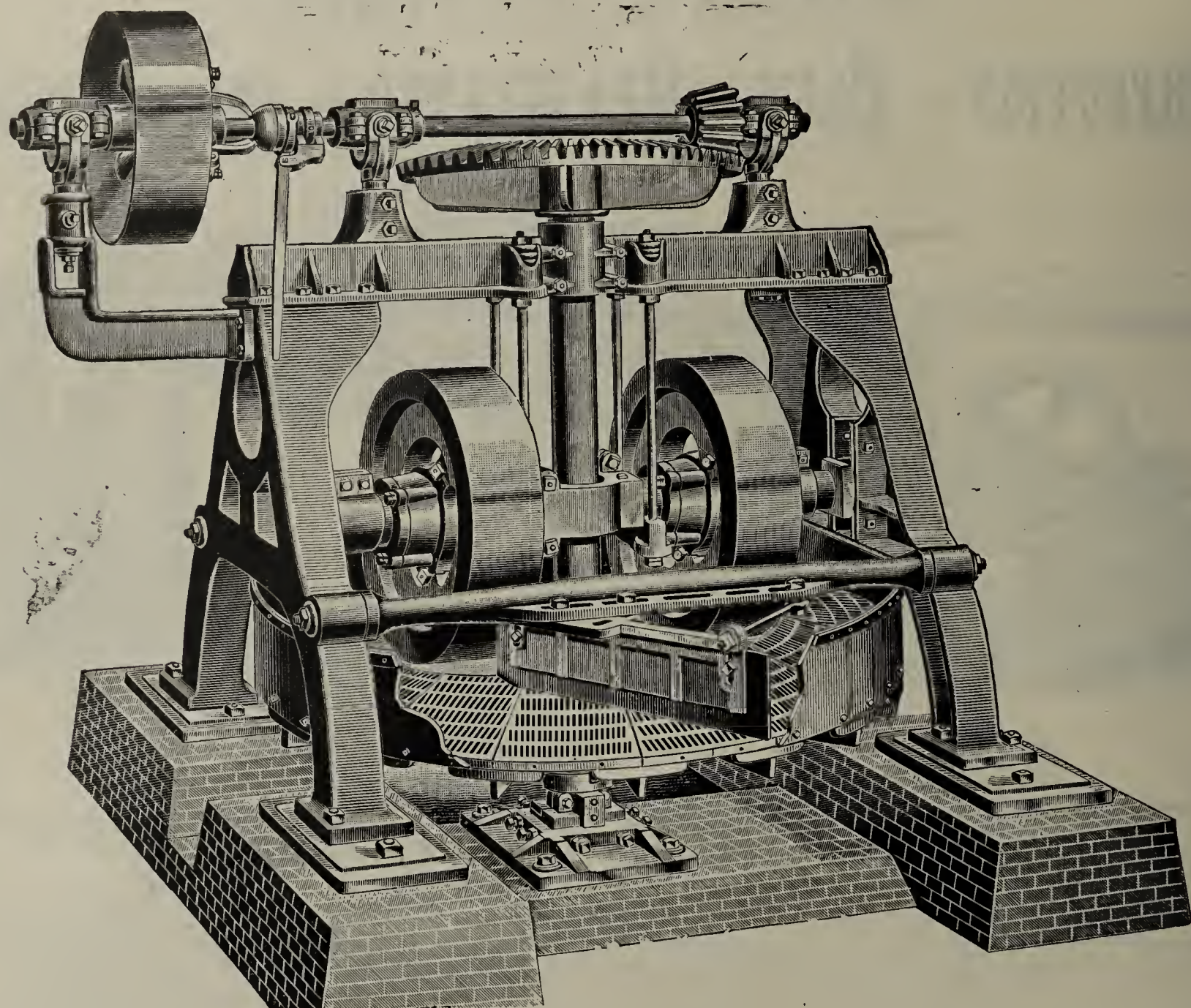
—REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

John Torrent,

MUSKEGON, MICH.

Mention Clay-Worker.

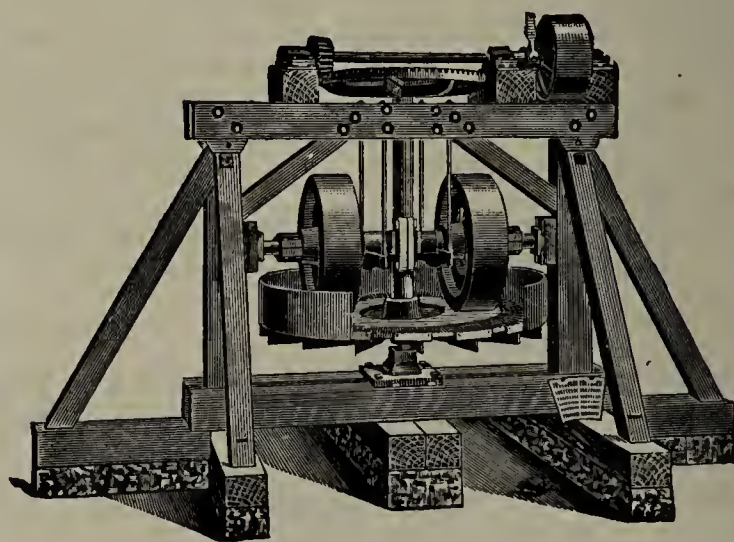
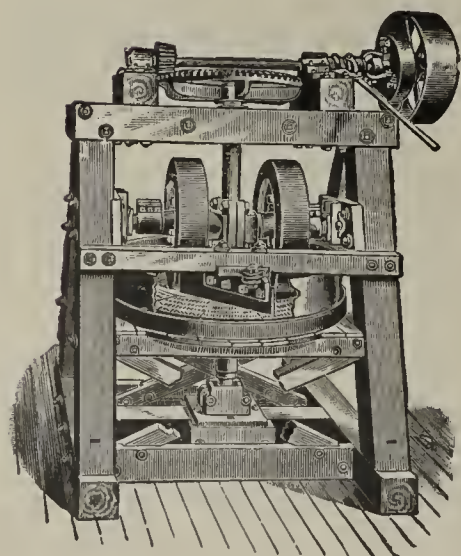


OUR SPECIALTY IS

DRY PANS.

IRON FRAMES,
WOOD FRAMES.

~~~~~  
All Sizes and Price  
to suit  
Any Size Plant.  
~~~~~



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

FROST ENGINE CO., Galesburg, Ill.,
U. S. A.

Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

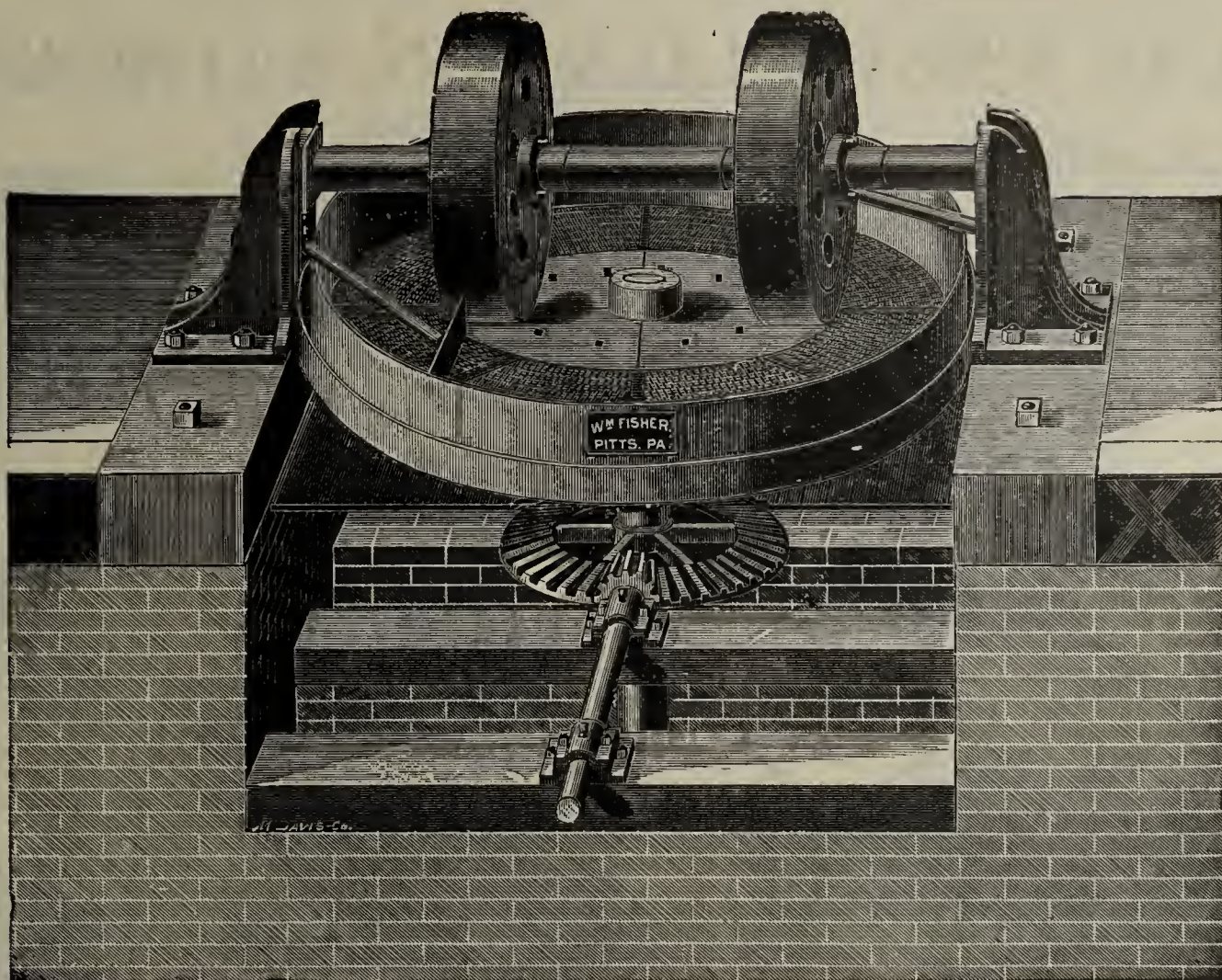
Pittsburgh, Pa.

Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and
Fire Brick Clay,
Limestone, Lime,
Sand, Phosphates,
Bones and other
refractory materials.

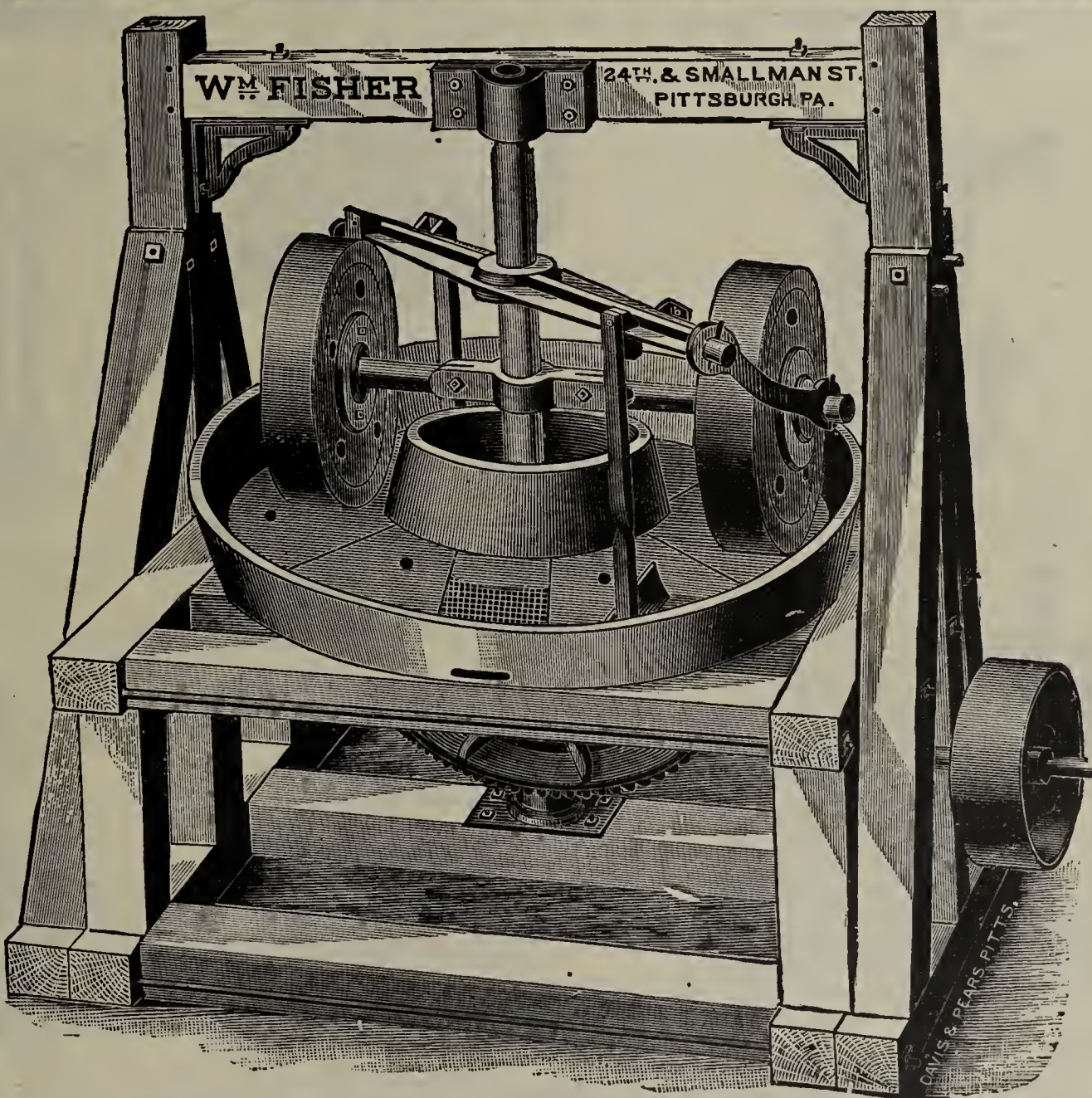


Wet Pans,

STATIONARY and REVOLVING,

FOR

Brick Works,
Steel Works,
Glass Houses,
Rolling Mills
and Paint Works.



PUG MILLS,

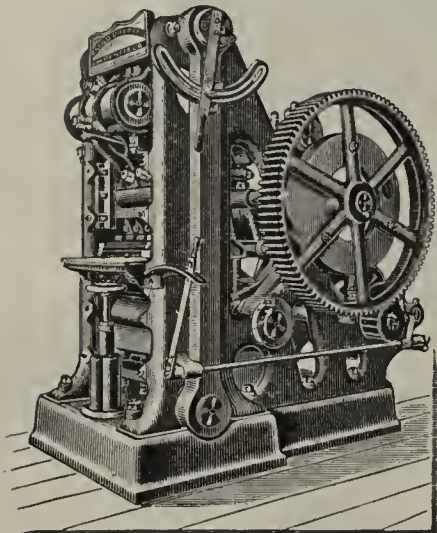
BLAKE CRUSHERS,

BRICK PRESSES.

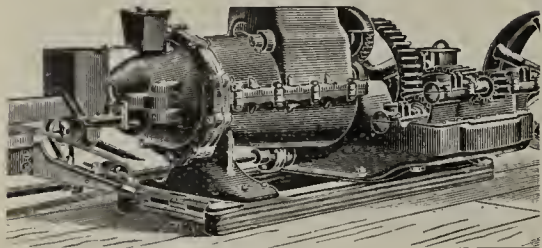
When writing for prices, state kind of material and capacity required.

J. W. PENFIELD & SON, WILLOUGHBY, OHIO, U. S. A.

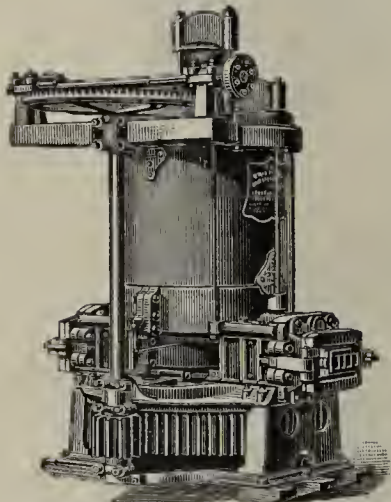
Some Things We Make:



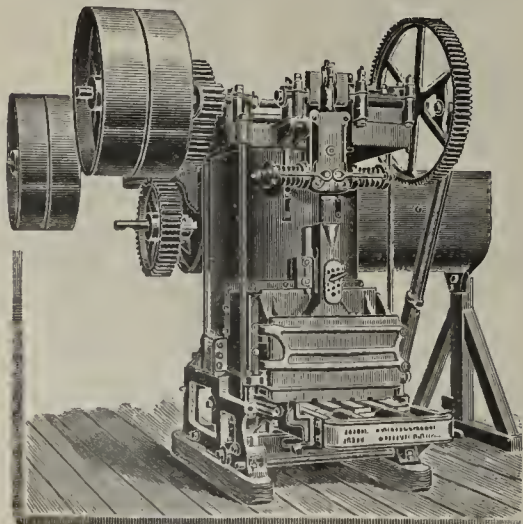
Dry Press Brick Machines.



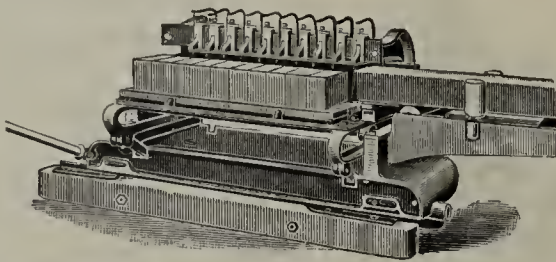
Auger Brick Machines;
Auger Tile Machines.



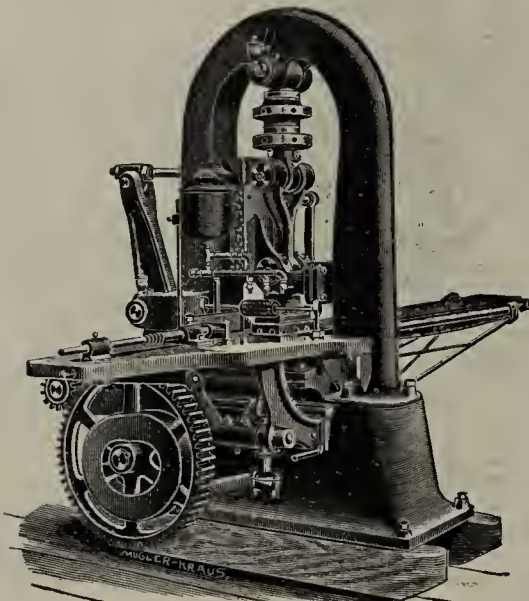
Plunger Brick Machines,
Also suited for making Tile, Fireproofing, Etc



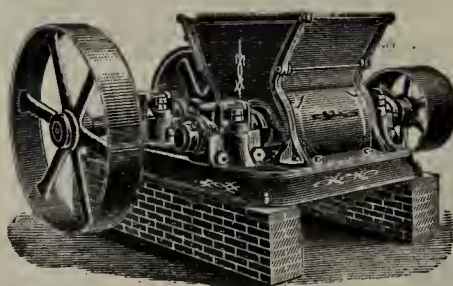
Stock Brick Machines,
For Sand-Mold Brick.



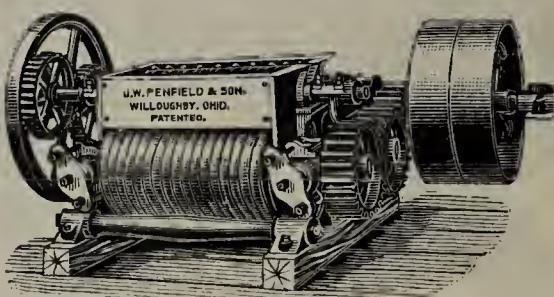
Board Delivery Brick Cutters.



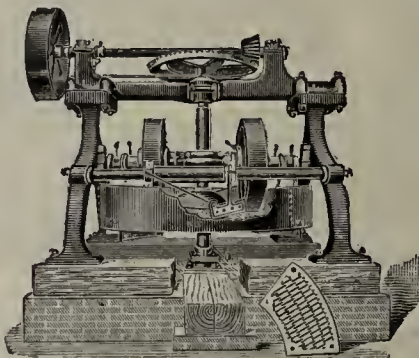
Brick Represses.



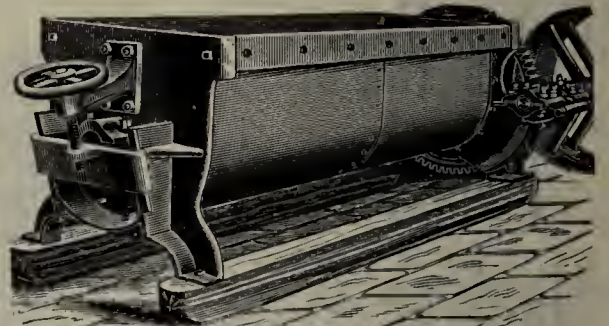
Disintegrators,
Singly or combined with Crushers or Pug Mills.



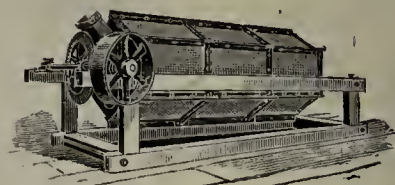
Clay Crushers; Stone Separators.



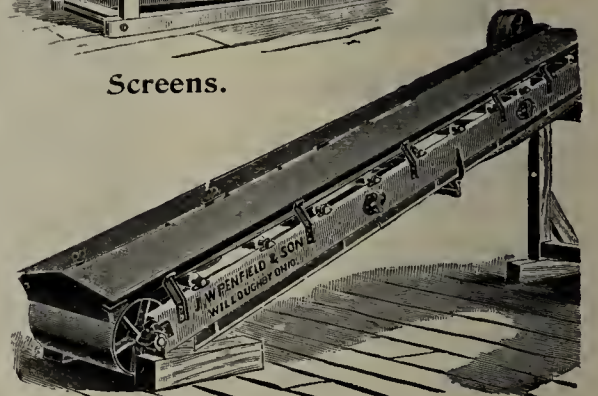
Dry Pans; Wet Pans.



Pug Mills; Granulators.



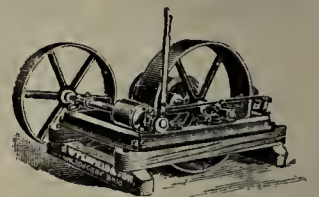
Screens.



Clay Elevators; Conveyors.

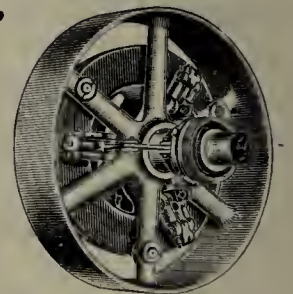
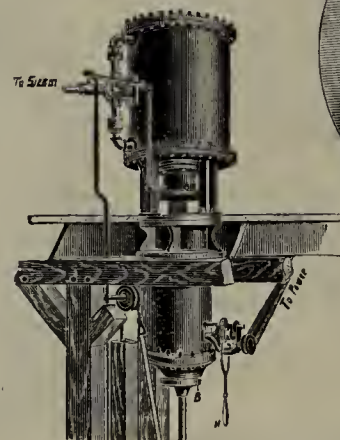


Clay Cars.



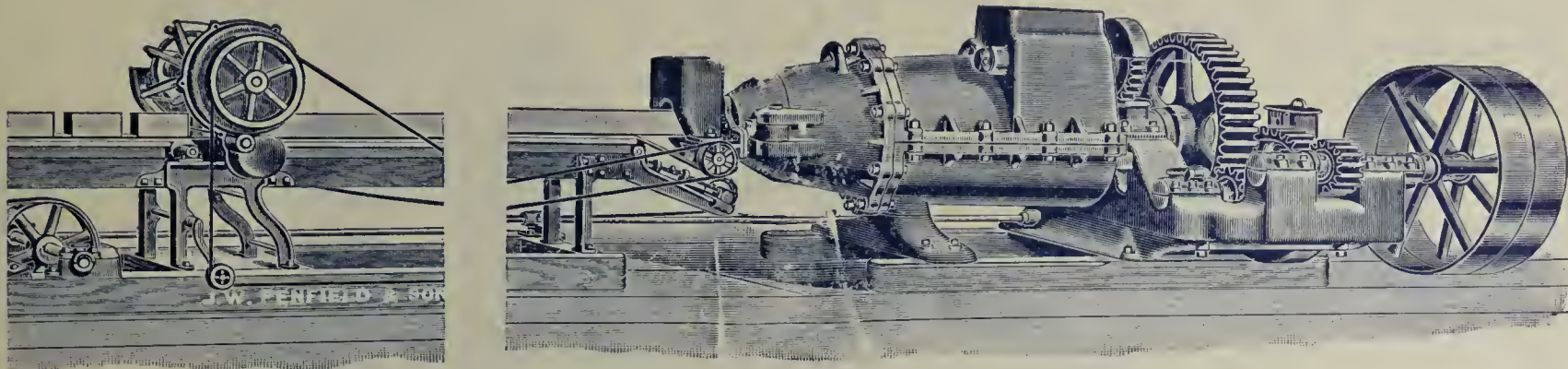
Winding Drums.

Barrows; Kiln Castings, Clutch Pulleys,
Sewer Pipe Presses,
Etc.



Send for Catalogue.

J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A.



PENFIELD AUGER BRICK MACHINE, AUTOMATIC CUTTER, ETC

THE WORKS OF.....

The Springfield Paving Brick Co.,

Were recently visited, in a body, by the members of the Illinois Brick and Tile Makers' Association, in convention assembled. From the resolutions they afterwards adopted, the following is an extract:

"We wish to express publicly our belief that the Springfield Paving Brick Co., has one of the most complete paving brick plants in all its parts, appliances and arrangements that we have ever seen. We wish to state further that, in our judgment, the high per cent of good paving brick turned out by this plant cannot be excelled if equalled by any other plant in the west."

It is but fair to state that the entire equipment of machinery in this plant was furnished by J. W. Penfield & Son, and that in a recent letter to them, the President of the Springfield Paving Brick Co., referring to these machines, says:

"I am glad to state that they have given us entire satisfaction. I may add that our business dealings with you have been as satisfactory as the machinery."

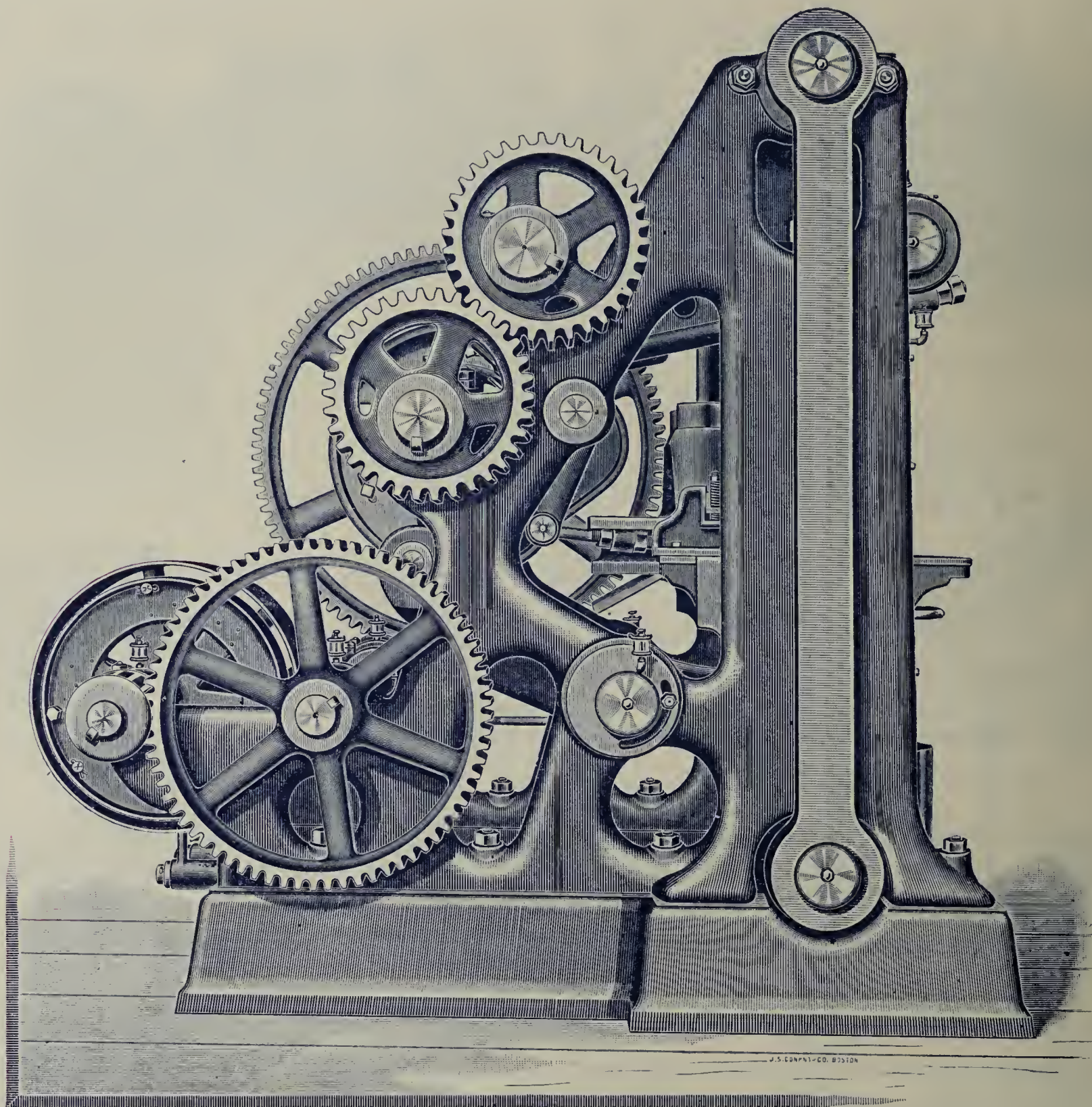
For catalogues and details of Penfield Machinery, address

J. W. PENFIELD & SON,

Brick and Sewer Pipe Machinery Makers,

WILLOUGHBY, OHIO, U. S. A.

J. W. PENFIELD & SON
WILLOUGHBY, O.



THE PENFIELD 4-MOLD DRY PRESS BRICK MACHINE. (SIDE VIEW.)

The PENFIELD DRY PRESS . . . BRICK MACHINE

Accomplishes all that other dry press machines do and then goes ahead and gives the brick an extra pressure with increased force and length of stroke. It holds the pressure on the brick longer than any other brick machine made.

THE REPRESSED DRY CLAY BRICK

Which it makes, represent the acme of perfection in the line of fine brick, and please both the brickmaker and the brick buyer.

Come and see the machine, or write.

J. W. PENFIELD & SON, WILLOUGHBY, OHIO, U. S. A.

RECEIVER'S SALE.

BARGAINS IN CLAY MACHINERY.

OWING to disagreement of the partners, I have been appointed Receiver of the well-known firm of

NOLAN, MADDEN & CO.,

In order to get a settlement at once, and that the business may be continued without interruption, I will offer for sale at a great reduction in price the following

Machinery Now on Hand which must be Sold at Once:

Six No. 1 Steam Power Soft Clay Brick Machines.

Five No. 2 Horse Power Soft Clay Brick Machines.

Ten No. 6-B Stiff Clay Auger Machines for Brick and Tile.

Ten No. 5-B Stiff Clay Auger Machines for Brick and Tile.

The above machines are from new patterns and are heavier and stronger than any machines formerly made by this firm.

Twenty No. 5 Brick and Tile Machines with endless belt cut-off tables and complete set of tile dies.

Six No. 6 Brick and Tile Machines with endless belt cut-off tables and complete sets of tile dies.

Ten No. 7 Brick and Tile Machines for light power—tile dies from 3 to 10 inches.

Ten No. 10 Upright Tile Machines for tile from 10 to 20 inches.

Fifteen Disintegrators.

Fifteen Clay Crushers.

Eight Soft Clay Pug Mills.

A large assortment of side-cut brick tables, end-cut brick tables, endless belt tile tables, side and end-cut lubricating brick dies of any size, and solid brick dies—side or end-cut—any and all of which will be **SOLD AT UNHEARD-OF PRICES.**

In addition to the above new and improved machinery, we have a large line of second-hand Brick and Tile Machinery that will be sold **VERY CHEAP.** This business will be continued, and the manufacture of their unsurpassed clayworking machinery carried on as usual.

If you want anything in that line, or supplies, write us at once for prices, as the business will go on, and patrons will be furnished repairs and supplies as heretofore.

JNO. F. SCANLAN, Receiver,

For **NOLAN, MADDEN & CO.,**

RUSHVILLE, IND.

REFERENCE: Rush County National Bank.

Actual Use Decides the Durability of a Machine.

MARTIN'S LETTER "A"

IS PRONOUNCED BY....



Practical
Brickmakers

TO BE ~~~~~

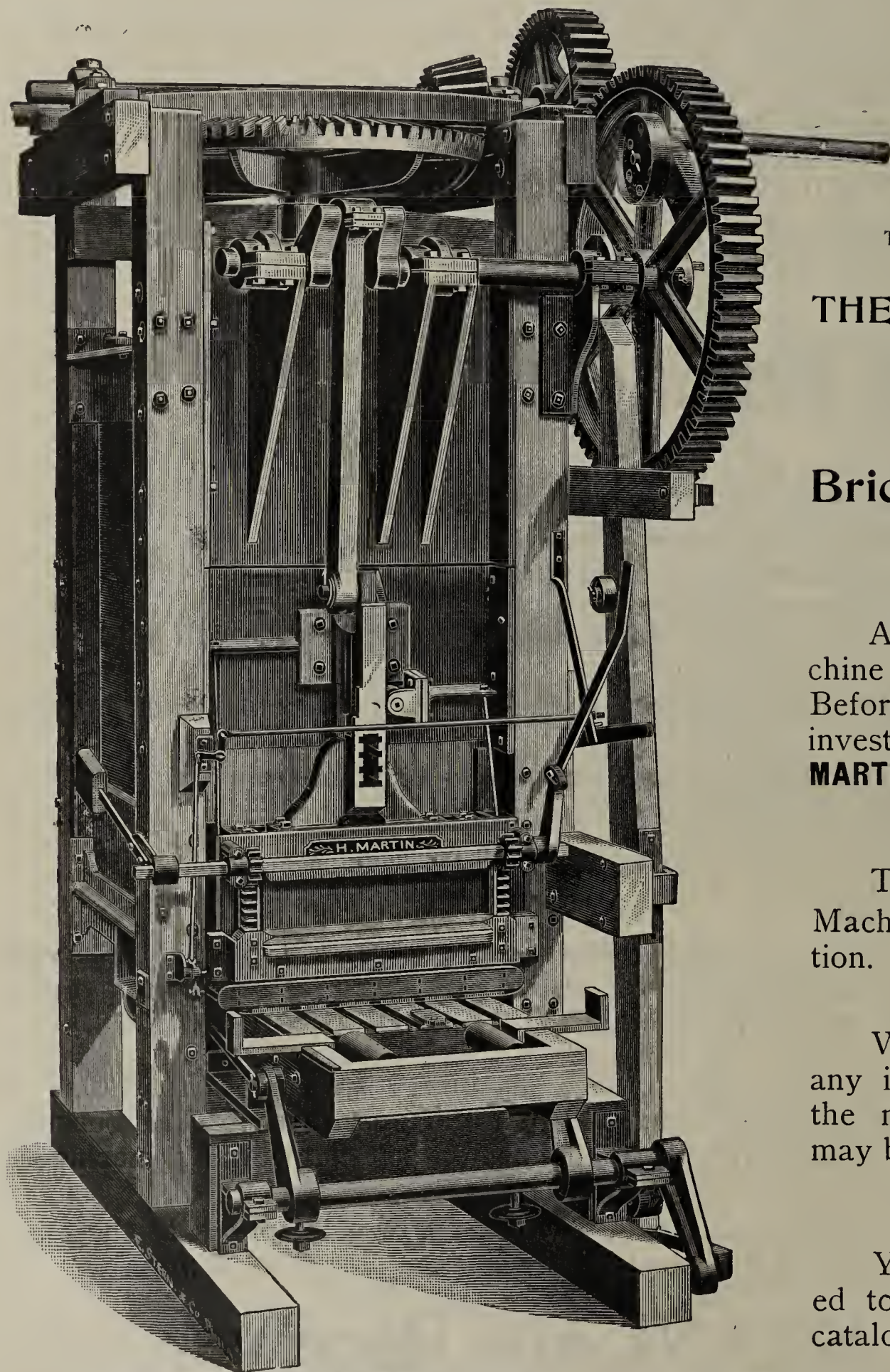
THE STRONGEST,
MOST PERFECT
~~~~~ AND BEST  
Brick Machine in Use.

Are you looking for a machine that will work your clay? Before buying, do not fail to investigate the merits of the **MARTIN**.

There are over 3,000 of our Machines now in practical operation.

We will cheerfully furnish any information in reference to the manufacture of brick that may be desired.

You are respectfully requested to write for our new 1894 catalogue

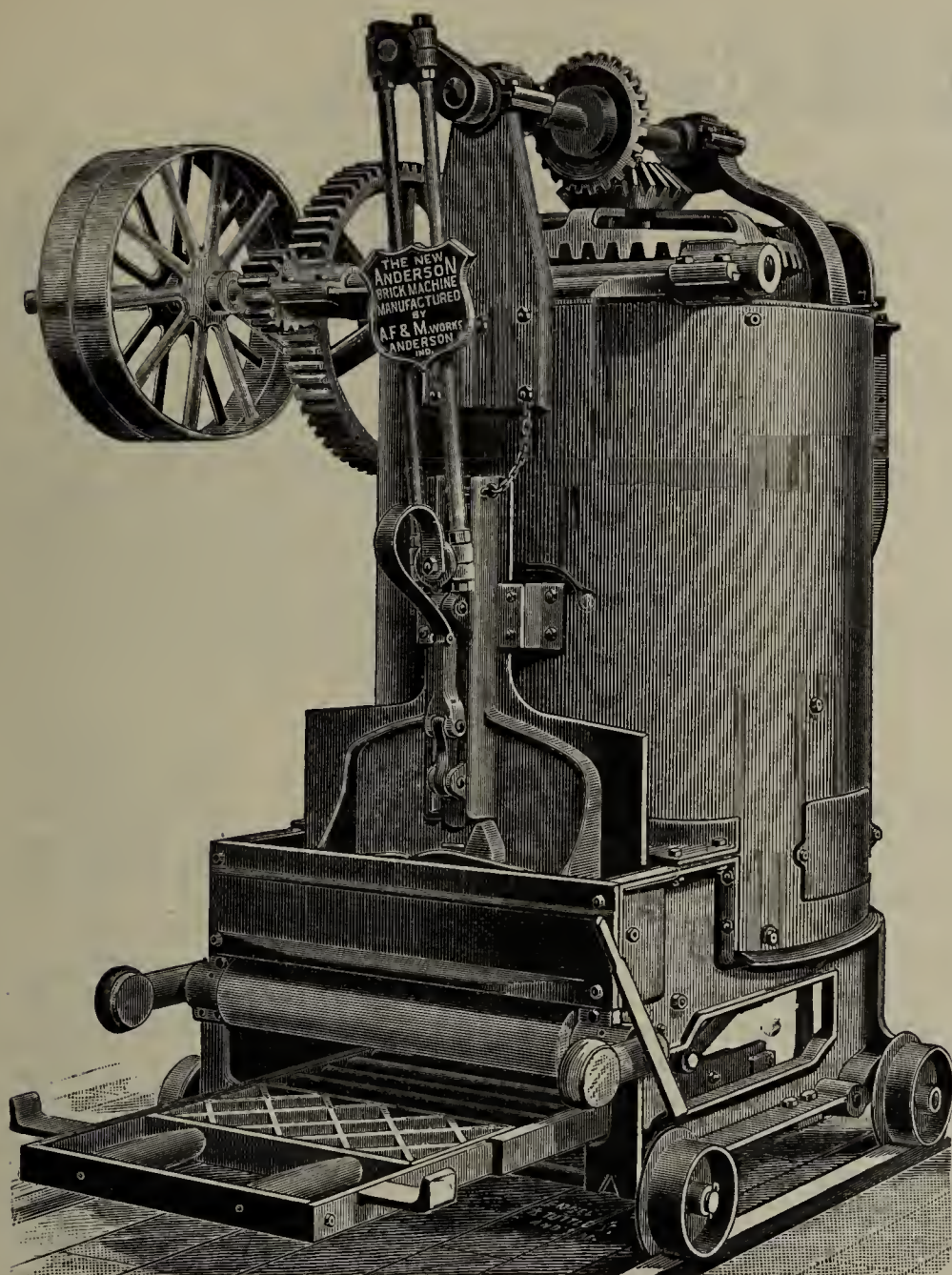


## THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

~~~~~ INCORPORATED ~~~~~

OFFICE: No. 36 E. James St.
WORKS: Cor. James and Christian Sts. }

LANCASTER, PA., U. S. A.



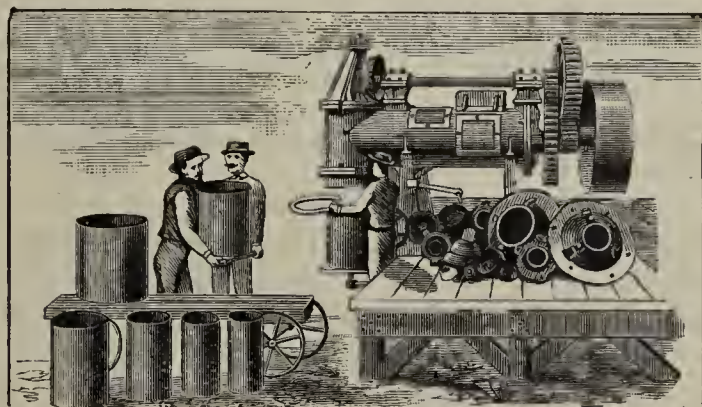
THE New Anderson Brick Machine

MANUFACTURED BY

THE Anderson Foundry & Machine Works

ANDERSON, IND.

THE NEW ANDERSON is the perfection of mechanism for the production of first-class brick from any clay that can be worked by hand, or any similar process. It is unequalled for capacity and strength. Write for full description.



The Greatest on Earth.

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 in. to 24 in. in diameter in a manner that defies competition.

Down Delivery for Large Tile.

Side Delivery for Small Tile.

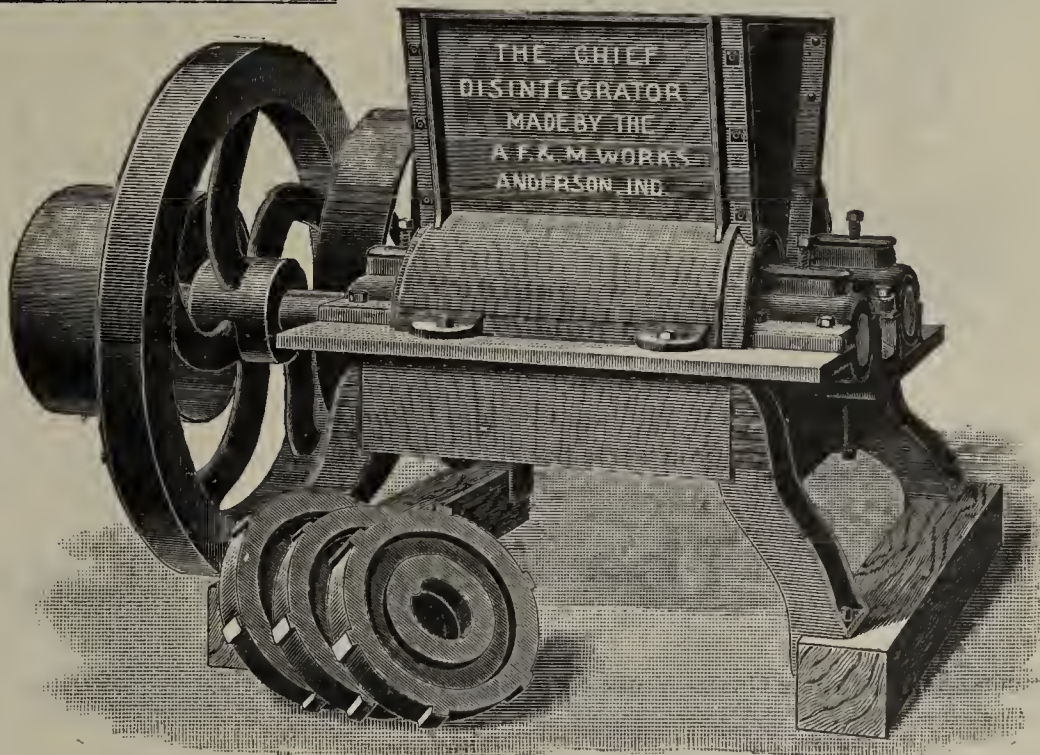


The Chief Disintegrator and Stone

SEPARATOR.

Unexcelled for reducing hard lumps of clay, dry bats and broken tile. It also separates stone from the clay. The high speed roll is composed of hard steel sections 10 inches in diameter, by 1 3/4 inches thick, which can be reversed on the shaft when dull or replaced with new sections when worn out, at a very small expense. Every Disintegrator is thoroughly tested and guaranteed to reduce any kind of clay, either wet or dry.

PUG MILLS,
DISINTEGRATORS,
TRUCKS BARROWS
And All Brickyard Supplies.



[Mention the Clay-Worker.]

Correspondence Solicited.

Fresh Evidence Monthly of the Highest Quality.



NEVER !!

No other "soft mud" machine ever did what Mr. Kline states below. His is a winter yard and now in operation. "Go and see" something *no other "soft mud" machine CAN do.*

THE WELLINGTON MACHINE CO.,
WELLINGTON, OHIO:

READING, PA., July 27, 1893.

GENTLEMEN:—The "Monarch" machine we bought of you last December is doing wonderfully well. It makes finer brick after it has been used a while, or worn in to operate the clay. This "Monarch" machine makes brick that we turn up without marking them, right after they are dumped on the pallets. The brick stay in perfect shape; the corners are perfectly filled out.

I manufacture with this machine thirty thousand brick in less than seven hours. The brick made for repressing are made in the morning and repressed in the afternoon, and then hacked in the shed to dry. I have turned out over four million brick with the "Monarch" machine while in operation from last December, and I have plenty of call for them. I don't need to go to make sale, they come to my works and buy before they leave.

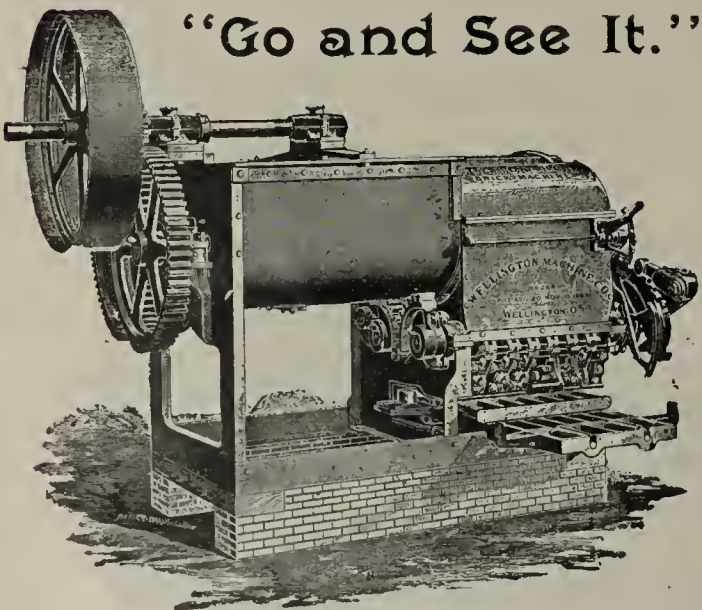
I have seen between thirty and forty brick machines, and none of them can do as fine work as the "Monarch." It is well geared and strong, and the expense of breakage is not worth talking about. It did not delay us.

I shall be pleased to show and fully recommend your machine to any one who is in need of one, and any one visiting our city can call upon us and inspect our "Monarch" personally.

Wishing you every possible success, which you deserve, I remain,

Very respectfully yours,

SIMON KLINE.



"Go and See It."

DON'T FORGET THESE FACTS.

That we worked five years developing the new principles in this machine, perfecting and simplifying every detail before we put it on the market.

That it is scientifically and mechanically constructed from the ground up, aiming not merely at goodness, but at perfection.

That it has 14 feet of pug mill (double), changing direction of movement of clay three times, cutting it all up.

That the presses are entirely in the mud. (This is the greatest point ever produced in a brick machine). Enabling moulding the stiffest possible material. Wear, leakage and friction are absolutely eliminated. This means much. Reflect on its importance.

That it is extremely simple. (Only four gears and none bevel.)

Immensely strong, (all iron and steel. Weighs 11,250 pounds.)

That long, easy moving, scientific leverages make its draft so light.

Investigate it now as it will last a lifetime, and is the "perfect machine" you have longed for so long. Only investigate is all we ask. GO AND SEE for yourself; the small cost of the trip, will be the best investment you ever made.

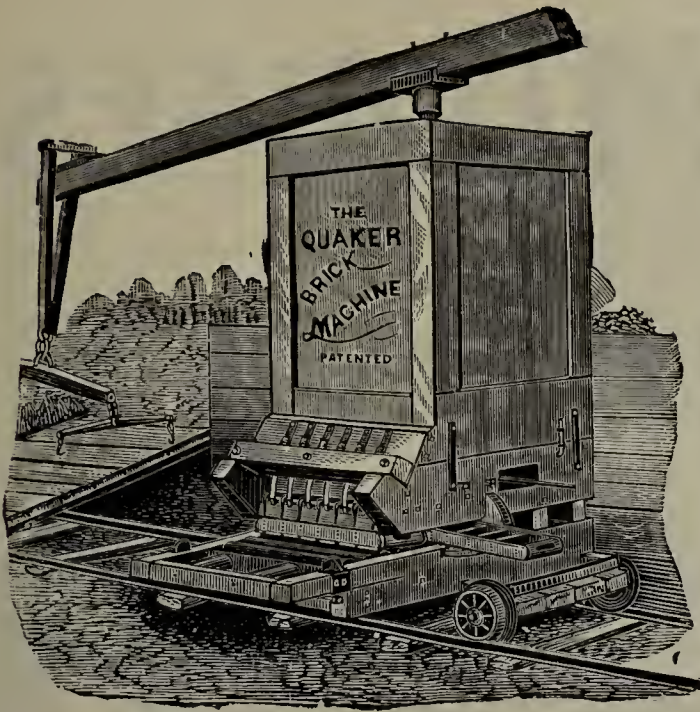
The Wellington Machine Co.,

Wellington, Ohio.

See the October CLAY-WORKER for list of 43 Happy Users.

THE "QUAKER"

Family of Machines, are the Most Used of Any Single Make of Machine.



The "New Model Quaker" Horse-Power Machine.

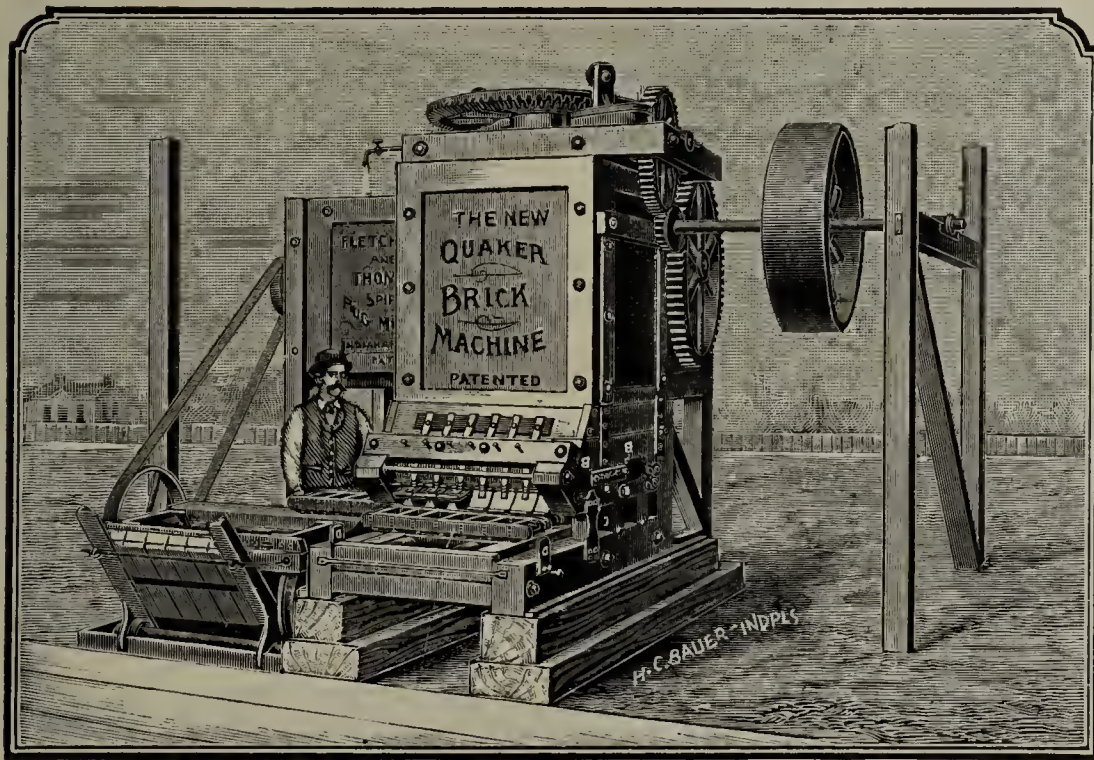
Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



Steam-Power Machines—Two Sizes

The "Regular" is the Horse-power Machine with necessary gearing for steam-power added.

The "Extra Heavy" is a much heavier, specially built machine, and has for years stood at the head of all upright, wooden framed machines.



THE combination of our "Extra Heavy Steam Power Machine" with a "Horizontal Pug Mill" makes an outfit that will take clay from the bank, and make as many brick per day as any gang can take care of. Has made 50,000 per day.



(FOUNDERS AND MACHINISTS.)

Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

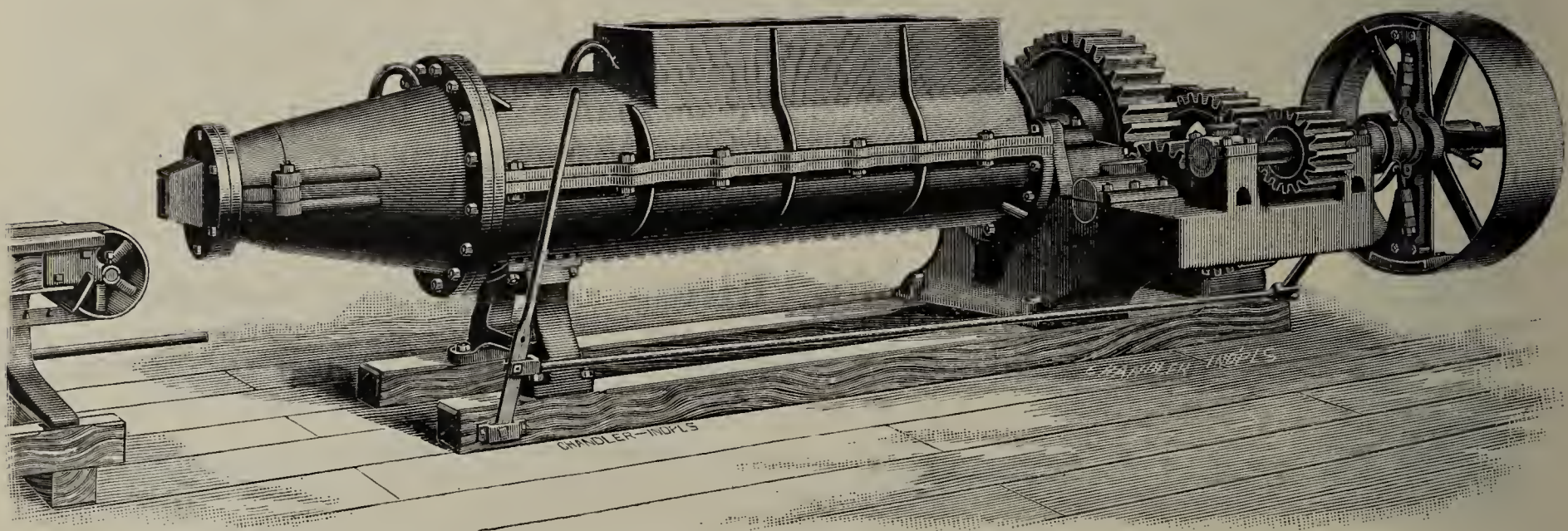
The Wellington Machine Co.,

Wellington, Ohio.

AUGER BRICK MACHINES

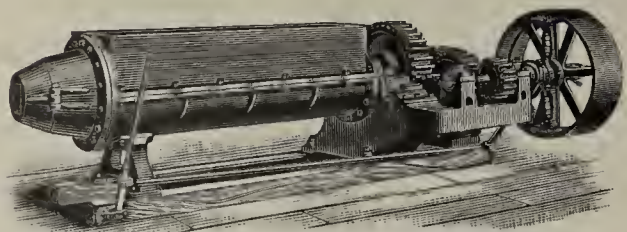
....FOR....

Street Pavers or Building Brick.

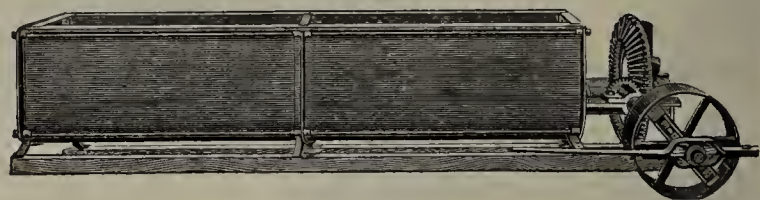


THESE are the heaviest and strongest machines of the class on the market. Cast Iron is cheap and we use lots of it in the construction of these Machines. The workmanship is the *best*. For Street Pavers this machine has no equal. It will make a dense and heavy brick, putting more clay in the square inch than any machine made. These are furnished with the *Best Automatic Cutting Table* ever offered the trade.

We also manufacture a complete line of Pug Mills and Granulators, having capacity of 25 M. to 150 M. Brick per day.



Extra Heavy Open Top Pug Mill.



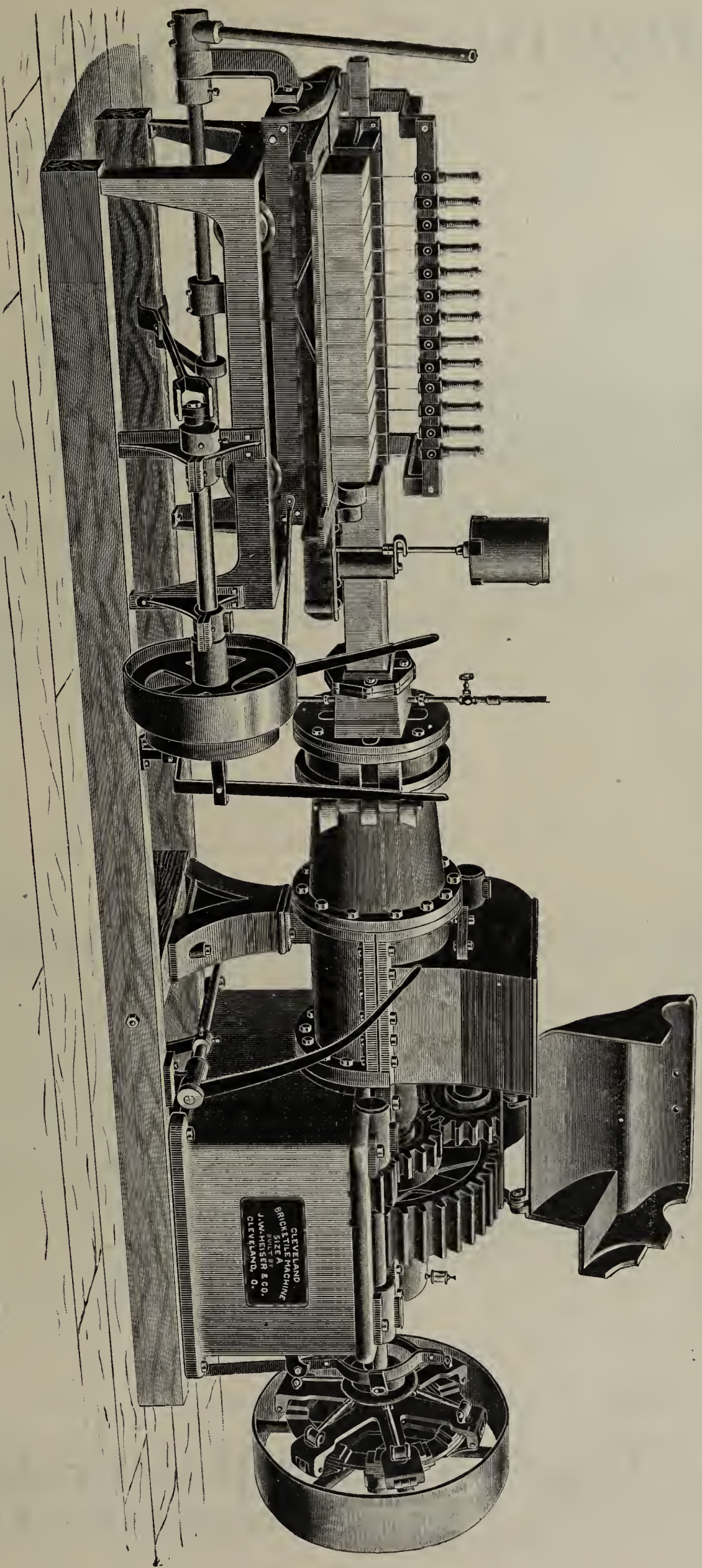
Open Top Mill for Soft Clay.

If in need of machinery of this kind it will pay you to write us for prices.

C. & A. POTTS & CO.,

INDIANAPOLIS IND.

The "CLEVELAND" CLAY WORKING MACHINERY.



Size "A" Machine with Patent Board Delivery Power Cutting Table. Capacity from 25,000 to 40,000 Brick per day..

ALL OF OUR MACHINERY IS BALL AND PIN BEARING AND....
GUARANTEED FOR ONE YEAR AGAINST WEAR OR BREAKAGE.

If you want superior machinery, improve your product, save money and have a balance on the right hand side of your Ledger, write to us for Catalogue and description of our machinery.

J. W. HEISER & CO., Manufacturers of CLAYWORKING MACHINERY, Cleveland, Ohio.

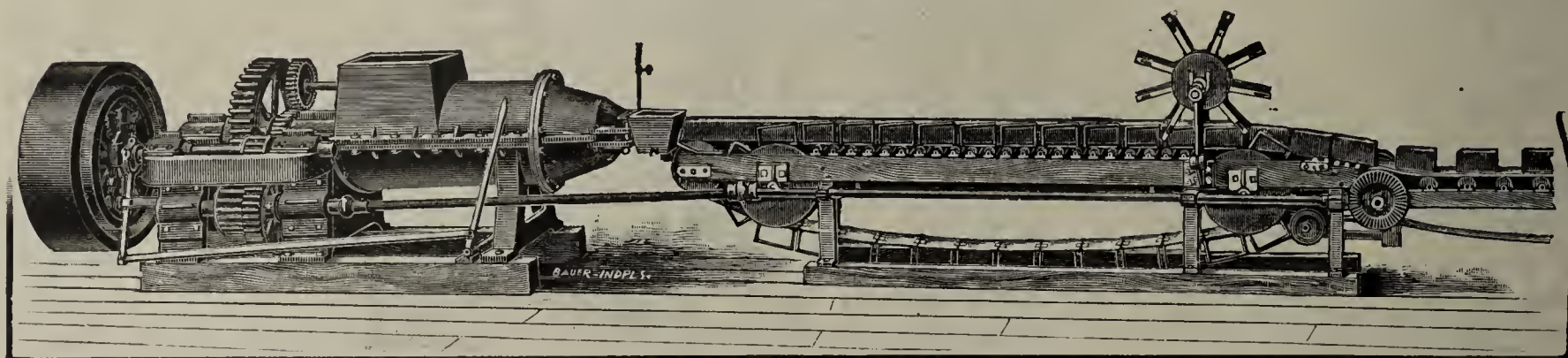
IMPROVED BRICK and



TILE MACHINERY,

MANUFACTURED BY

THE DECATUR LEADER MFG. CO.



Auger Machine with Automatic Cutter and Sander.

— OFFICE OF —

THE ABINGDON PAVING BRICK & TILE CO.,

MANUFACTURERS OF

Paving and Building Brick.

ALL SIZES OF DRAIN TILE CONSTANTLY ON HAND.

ABINGDON, ILL., January 8th, 1894.

THE DECATUR LEADER MFG. CO., Decatur, Ill.,

GENTLEMEN:—Please send us one of your improved sanders; also the improvements for your Automatic Cut-off Table. We must say that we are much pleased with the machinery that we bought from you. We have been running brick and tile machines of different kinds for over eighteen years, but never run one yet with as little expense as yours. We have run the Leader now for fifteen months, and have not had five cents expense for repairs. The machine makes four thousand brick per hour; also nice tile, and very fast. Your Automatic Cut-off Table is a daisy and we would not do without one. It paid for itself in one year.

Respectfully Yours,

THE ABINGDON PAVING BRICK & TILE CO.,

CHARLES PISTER, *Manager.*

Our line is complete. Send for printed matter.

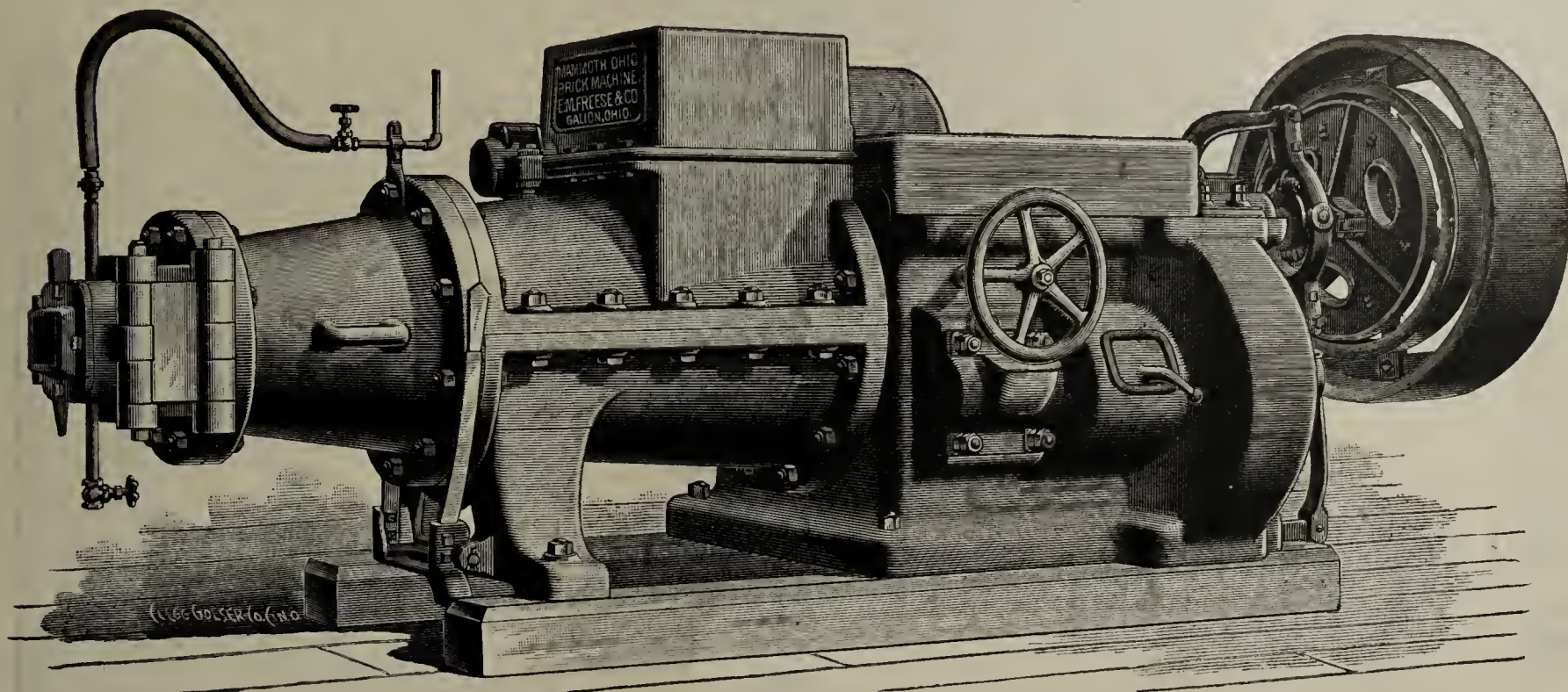
THE DECATUR LEADER MFG. CO.,

[Mention the Clay-Worker.]

Decatur, Ill., U. S. A.

SUPERIOR BRICK MACHINERY.

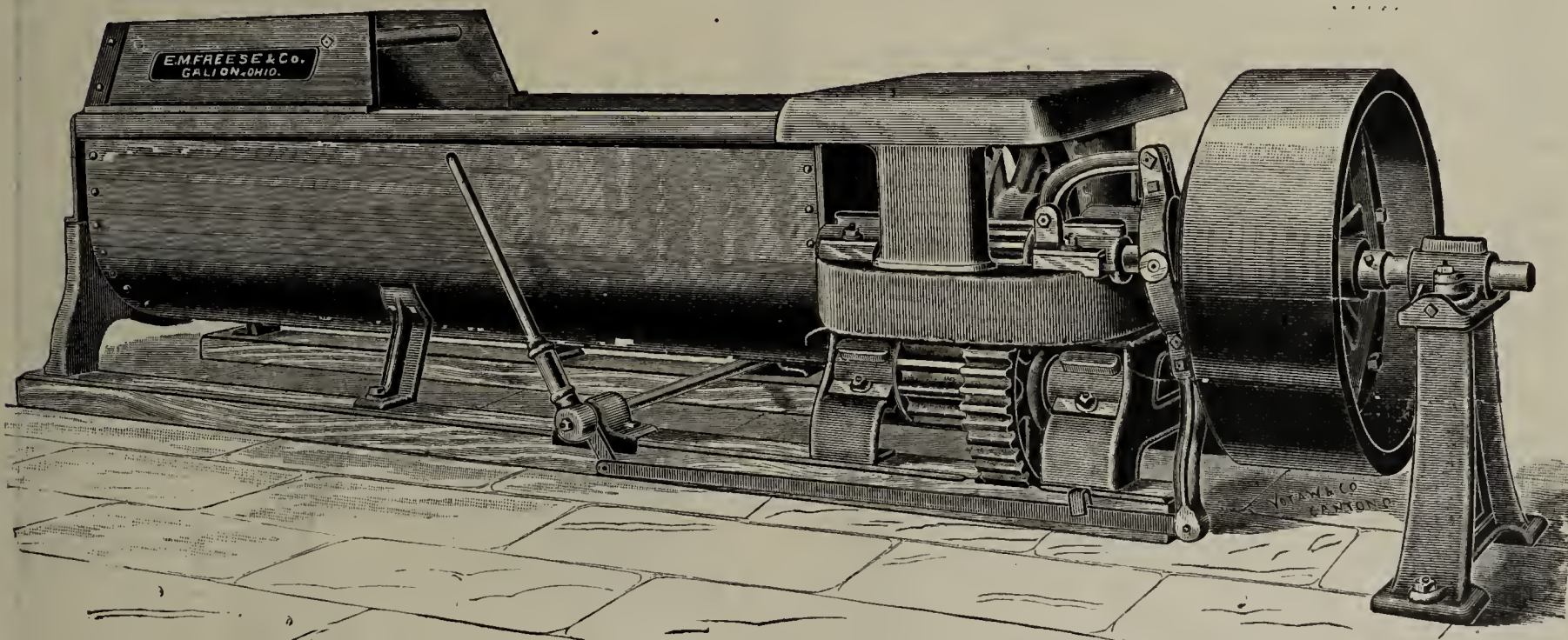
*For Paving, Building and Fire Brick.
Substantial, Simple, Practical.
Best Material and Workmanship.
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

PUG MILLS THAT PUG THE CLAY.



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

IT WILL PAY~~~~~

ADDRESS E. M. FREESE & CO.,

GALION, OHIO.

NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

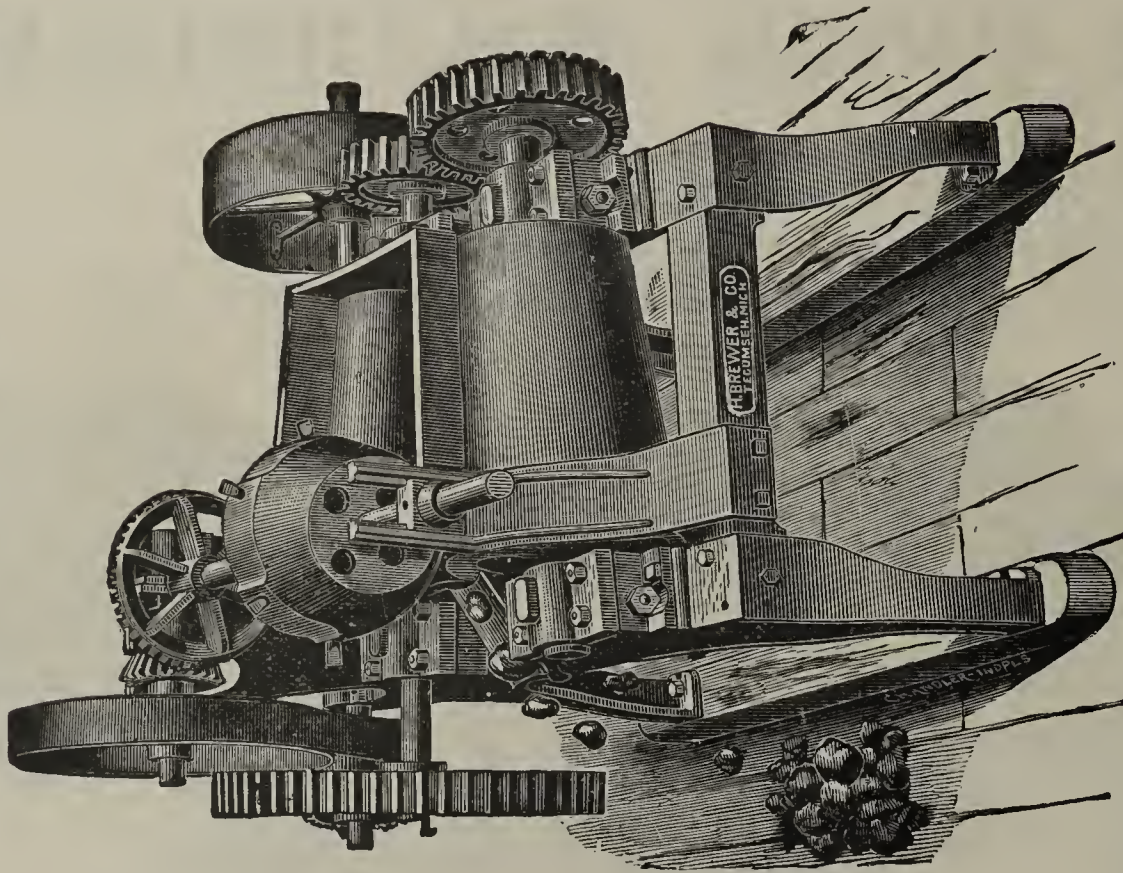
The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

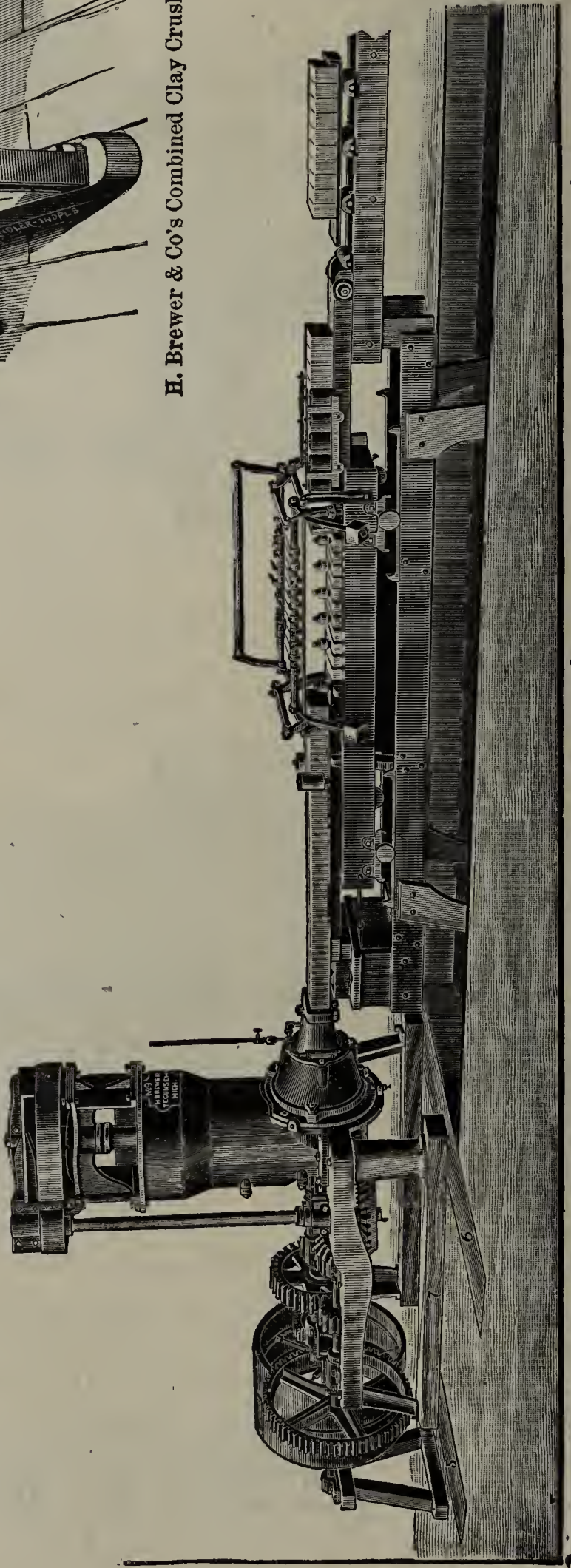
H. BREWER & CO.,
Tecumseh, Mich.

[Mention the Clay-Worker.]

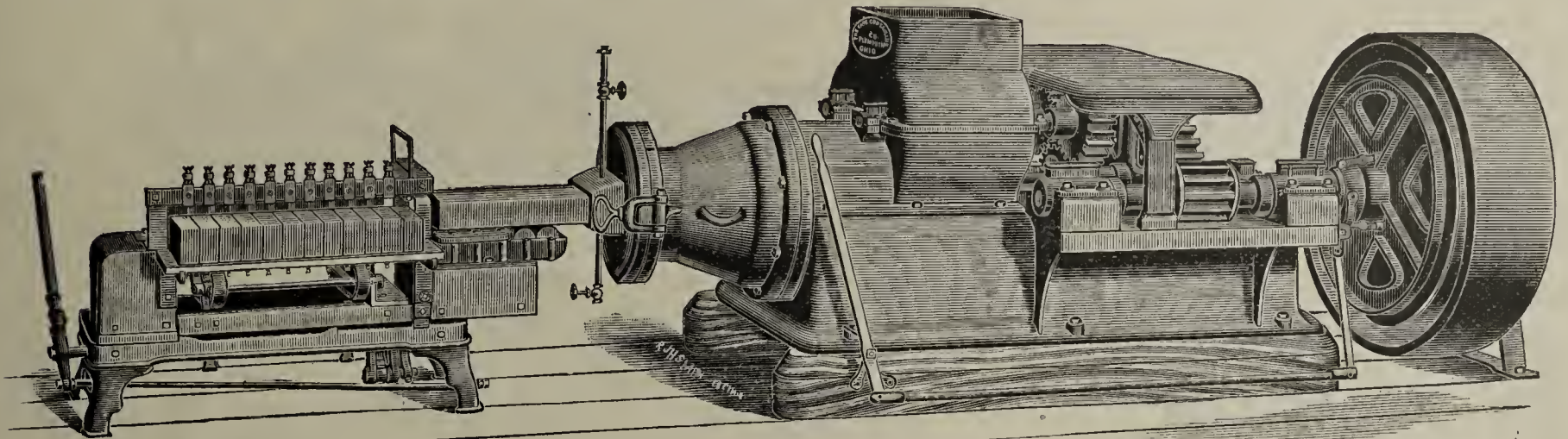


H. Brewer & Co's Combined Clay Crusher and Stone Separator.

The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.

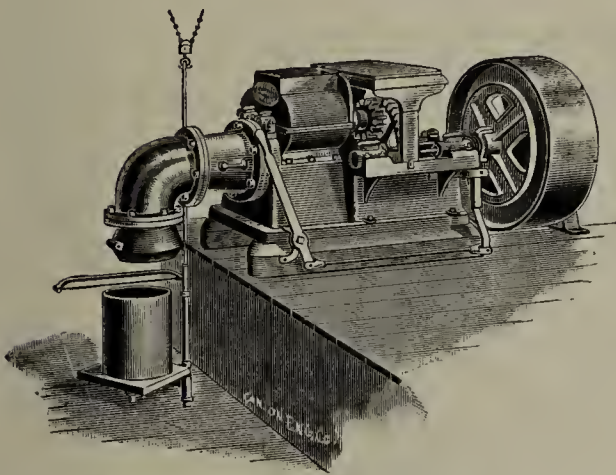


"PLYMOUTH" BRICK AND TILE MACHINES



'A' Machine, with Board Delivery Cutting Table.

COMPLETE, RELIABLE,
STRONG, DURABLE,
INCOMPARABLE.



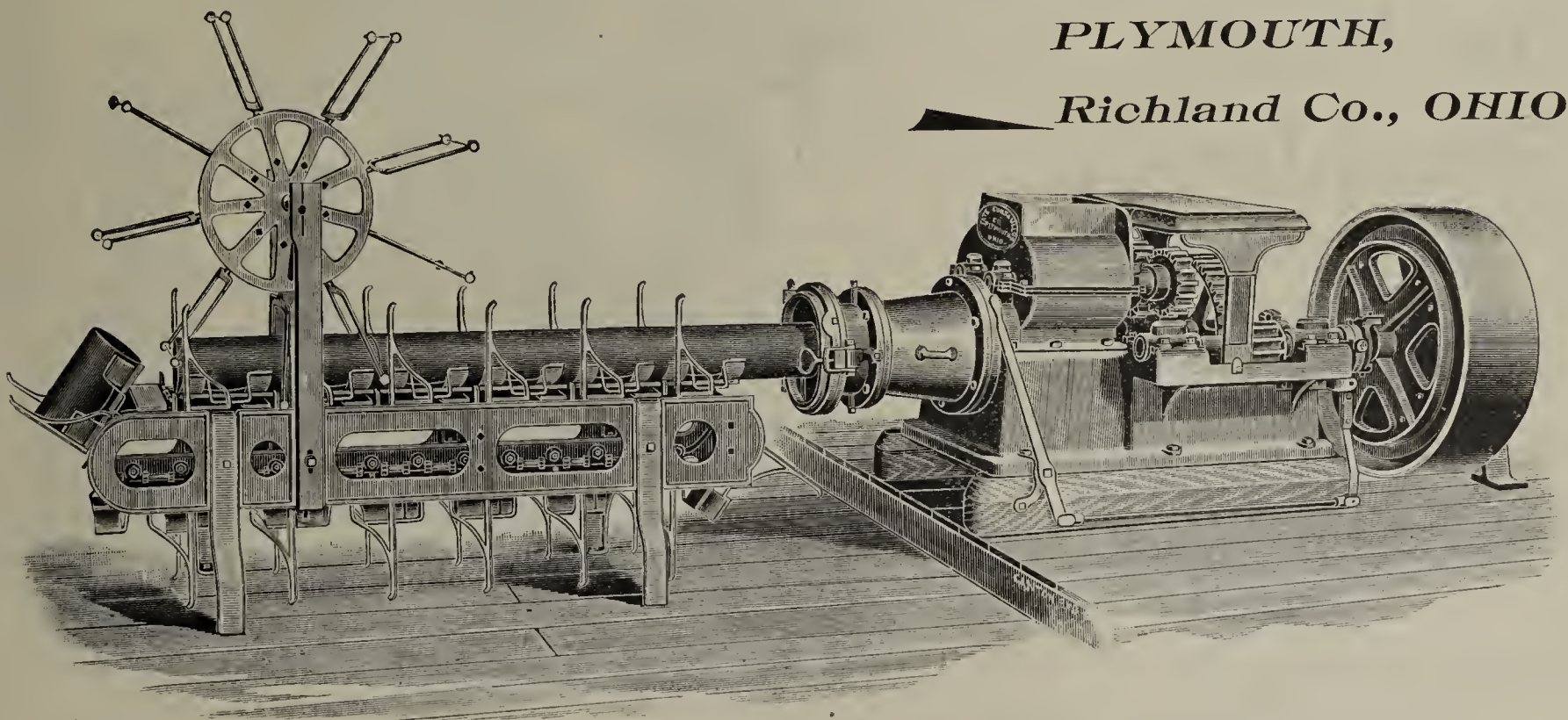
'D' Machine. With Elbow Attachment for Delivering Large Tile on End.

Send for Catalogue and Estimates On Entire Outfits.

THE FATE-GUNSAULLUS CO.,

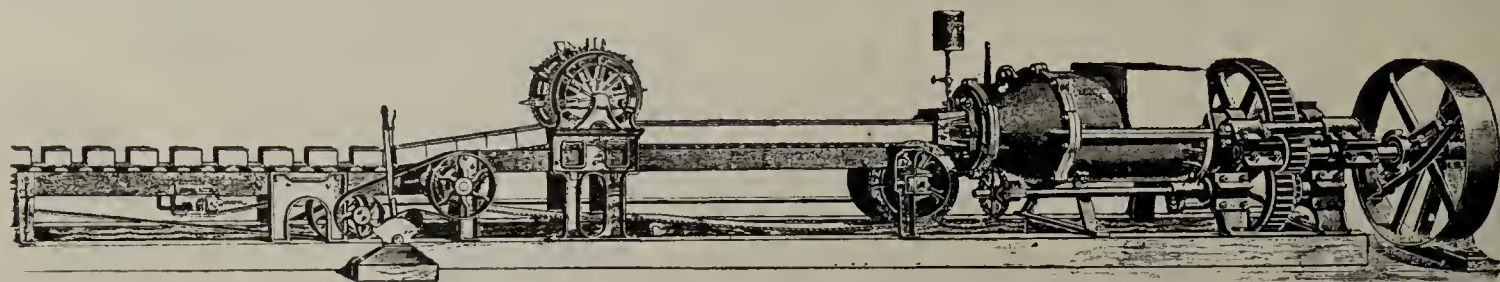
PLYMOUTH,

Richland Co., OHIO.



"D" Machine, with Automatic Cutting Table. For cutting tile from $2\frac{1}{2}$ to 8 inches; also building blocks.

THE FREY-SHECKLER CO.



No. 1 GIANT BRICK MACHINE AND AUTOMATIC CUTTING TABLE.

A WISE man will not build a house upon the sand. Neither will a wise clayworker buy inferior machinery. We claim for our machinery every prerequisite for the successful manipulation of clay into any of its known forms.

We are to-day equipping **Eight Complete Plants** for brick and Terra Cotta manufacturers who have spent their life time in the business and who are beyond a doubt competent judges of Clayworking Machinery.

Question—If the practical Brick or Tile manufacturer knows nothing of the appliances used in his line of business, who does?

Answer—No one.

We want every reader of the CLAY-WORKER to write us or call upon us in person and we will assure him that we have *the Best on the Market, and only the Best*. If you cannot come we will send our representative to you.

The Frey= Sheckler Co.,

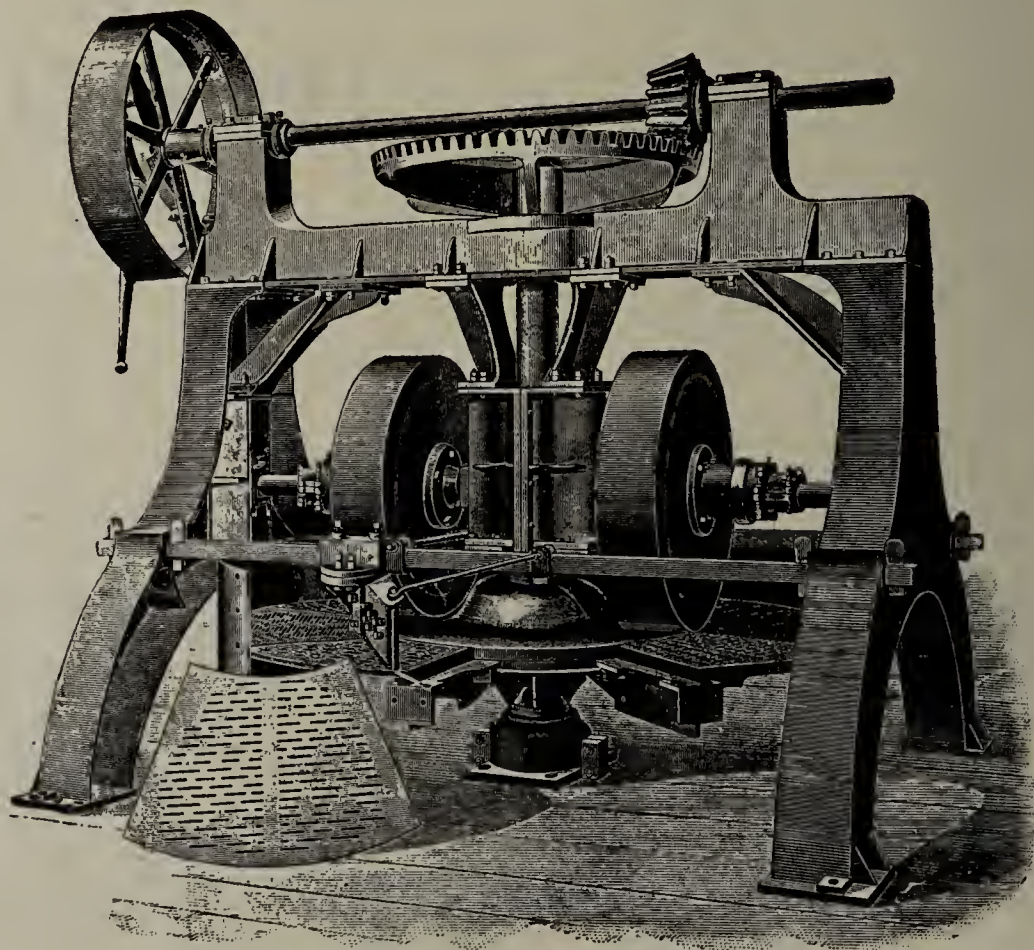
Manufacturers of....

Brick, Tile and Terra Cotta Machines,
Pug Mills, Represses, Dry and Wet
Pans, Grushers, Disintegrators, En-
gines and Boilers, Etc., Etc.

Builders of THE BUCYRUS STEAM TUNNEL DRYER,

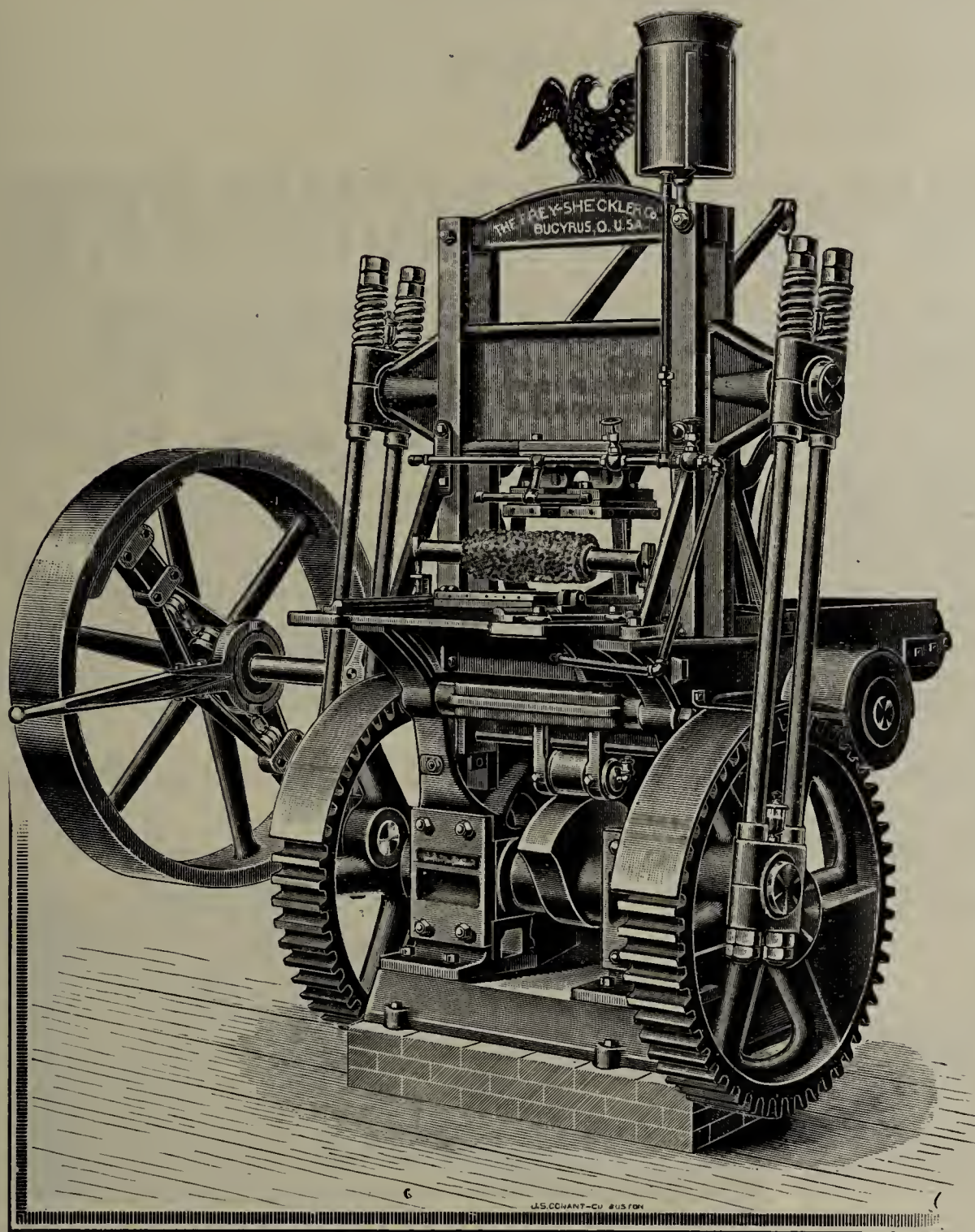
BUCYRUS, OHIO,
U. S. A.

Send for Machinery and Dryer Catalogue.



NINE FOOT DIAMETER ALL STEEL AND IRON DRY-PAN.

NO TOGGLE JOINTS.



EAGLE STEAM POWER DOUBLE DIE REPRESS.

Its Points of
SUPERIORITY.

SIMPLICITY,
STRENGTH,
GOOD
WORKMANSHIP,
ACCURATE
FEED,
ACCURATE
DELIVERY,
DURABILITY,
NO TOGGLE
JOINTS.

In actual trials in the same factories, side by side with its competitors our EAGLE REPRESS has won in every test.

We have recently, in three factories, set up our EAGLE REPRESS alongside of rival Represses, leaving the customer to keep the one preferred, and in every instance the EAGLE was purchased and the other rejected.

THE FREY-SHECKLER COMPANY,

MANUFACTURERS OF A
Complete Line of Clay
Working Machinery.

BUCYRUS, OHIO,
U. S. A.

BUILDERS OF
The Bucyrus Steam
Tunnel Dryer.

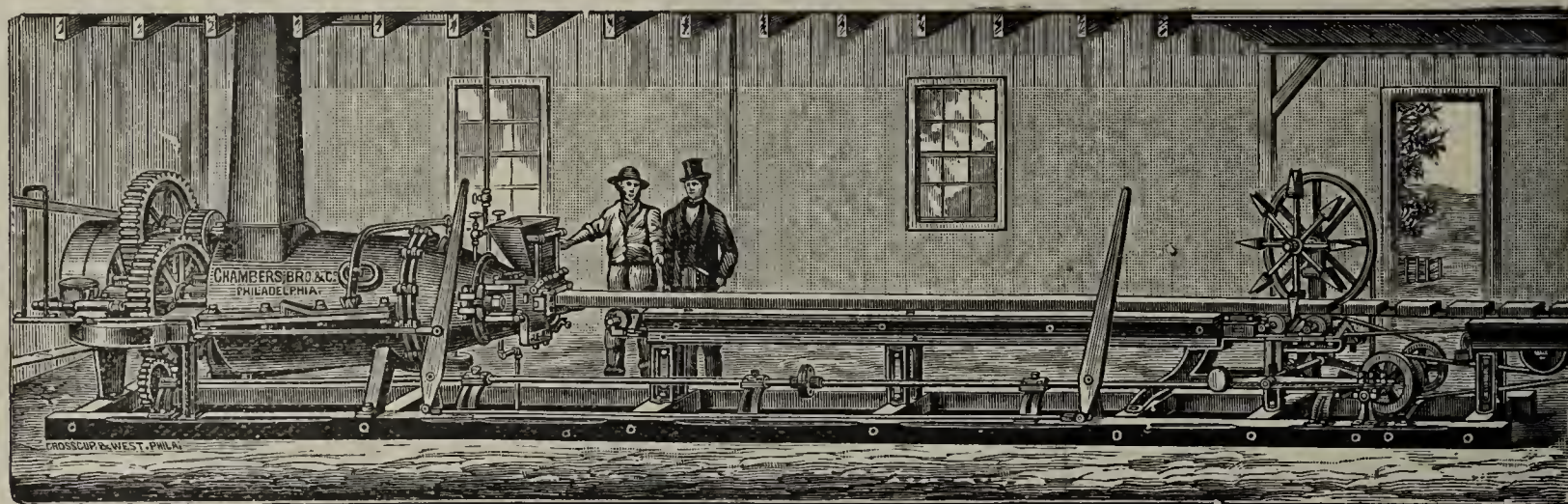
Send for our 1894 Machinery and Dryer Catalogue.

CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

IMPROVED BRICKMAKING MACHINERY.



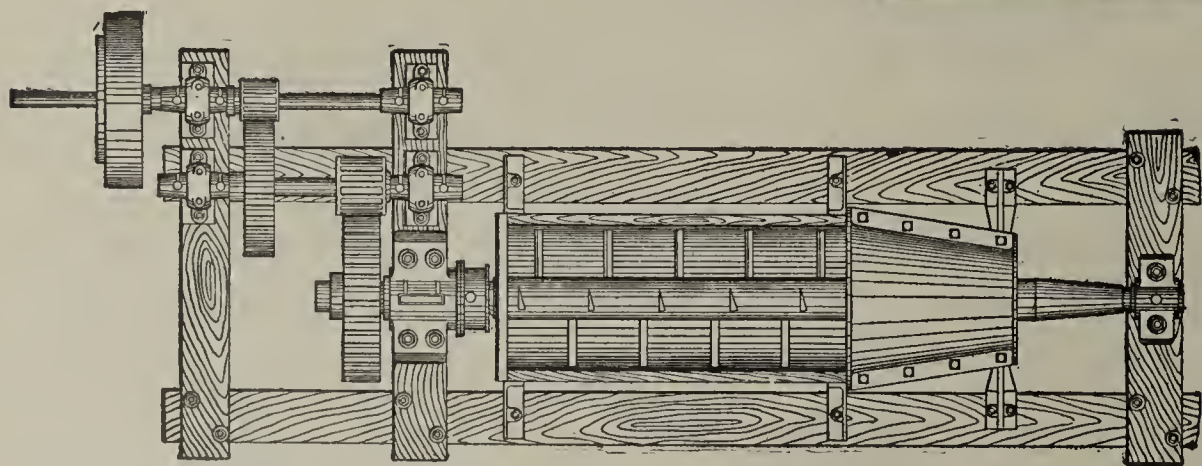
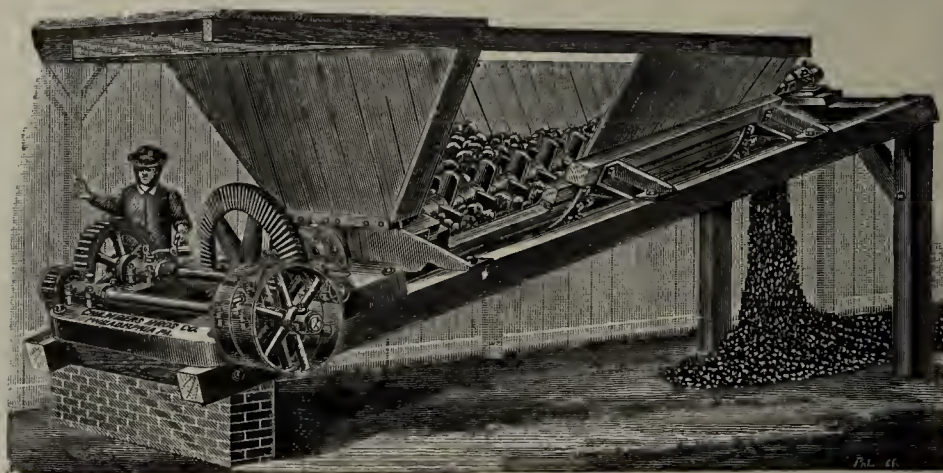
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]

CHAMBERS BROTHERS CO.,

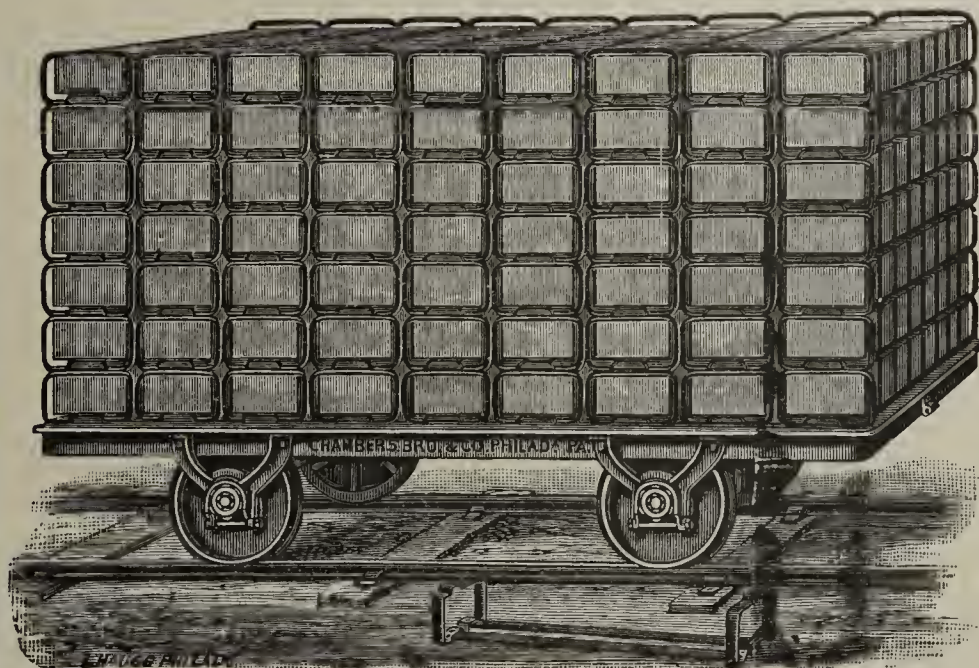
Fifty-Second St., Below Lancaster Ave.,

◆◆ PHILADELPHIA, PENN. ◆◆

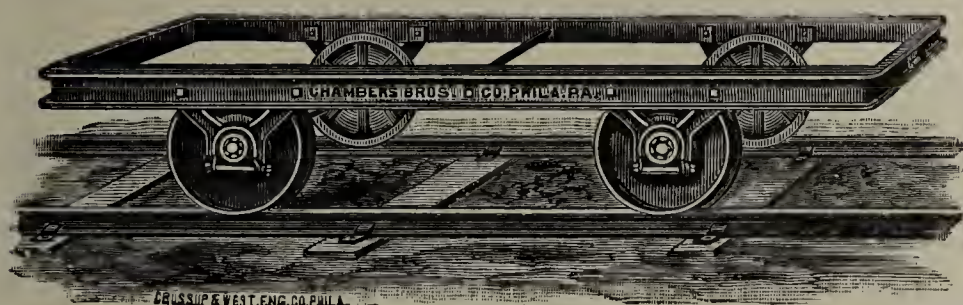
IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

Cars and Complete Equipment
For Artificial Dryers of
all Kinds.

STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

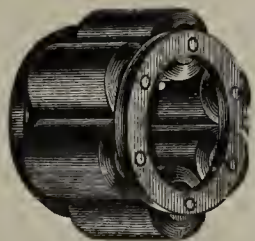


(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

See ad. on front cover page.

[Mention the Clay Worker

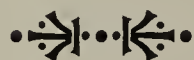


—● FROM THE ●—

LARGEST BRICK WORKS

.....IN THE.....

EASTERN STATES.



AFTER USING FOUR "NEW HAVEN" MACHINES
TWO YEARS the FOLLOWING OPINION IS FREE-
LY EXPRESSED:

BOSTON, Oct. 18, 1893.

THE MCLAGON FOUNDRY CO., New Haven, Conn.:

GENTLEMEN—It gives us pleasure to note from your letter that your machines are selling so well. You have a good Machine, and certainly have a knack of keeping in touch with your trade.

You want our opinion of your machines. After two year's use of them we can hardly put it stronger than to say that we are satisfied with their performance.

As you know, we selected your Machines after a somewhat thorough personal examination into the claims of a number of makes. We insisted on certain guarantees, which at the time you thought pretty stiff, but which your machines met thoroughly, and we have seen no reason to regret that we selected them for our work.

We also wish to bear witness to the prompt and courteous manner in which you have transacted all business with us.

Wishing you continued success, we are,

Yours truly,

BAY STATE BRICK CO.,

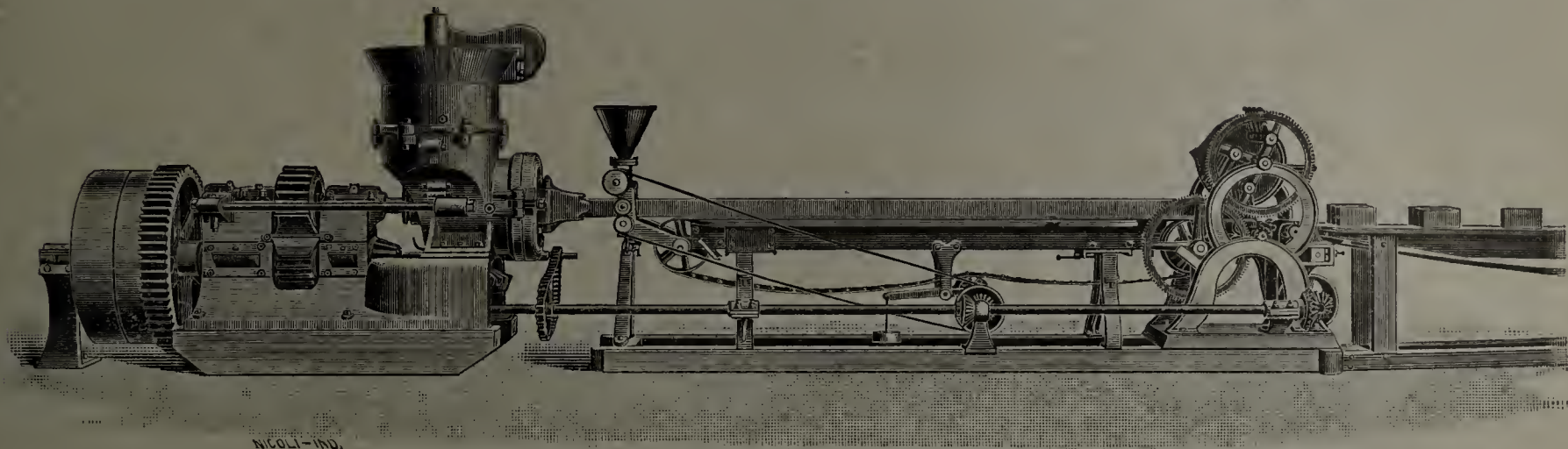
H. P. MALLORY, *Treasurer.*

WATCH THIS PAGE.

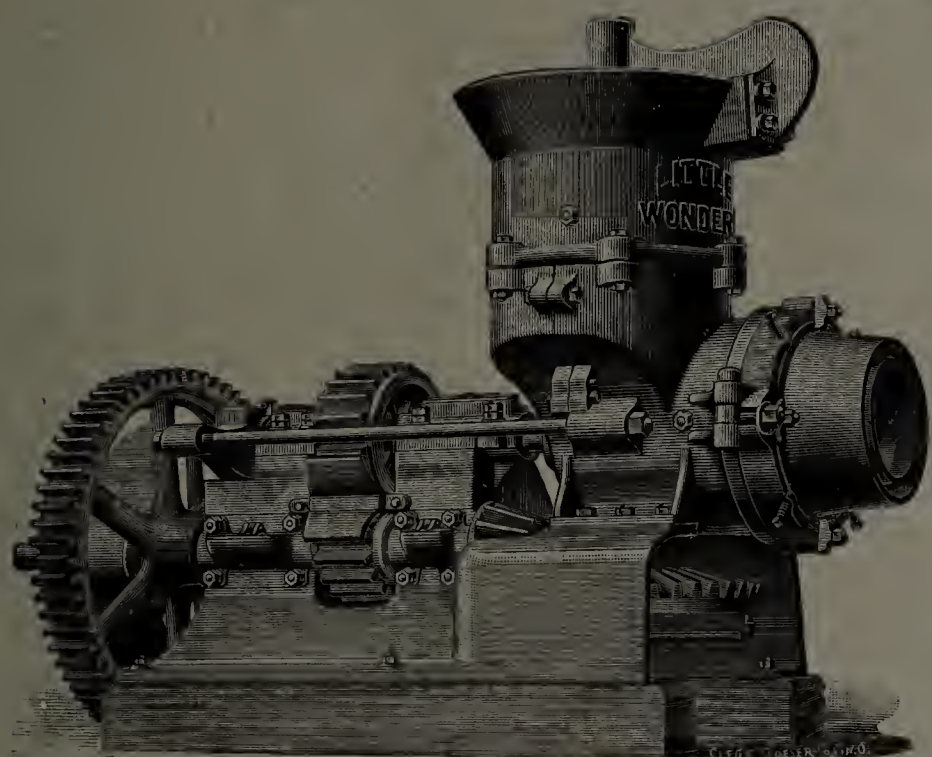
The McLagon Foundry Co.,
NEW HAVEN, CONN.



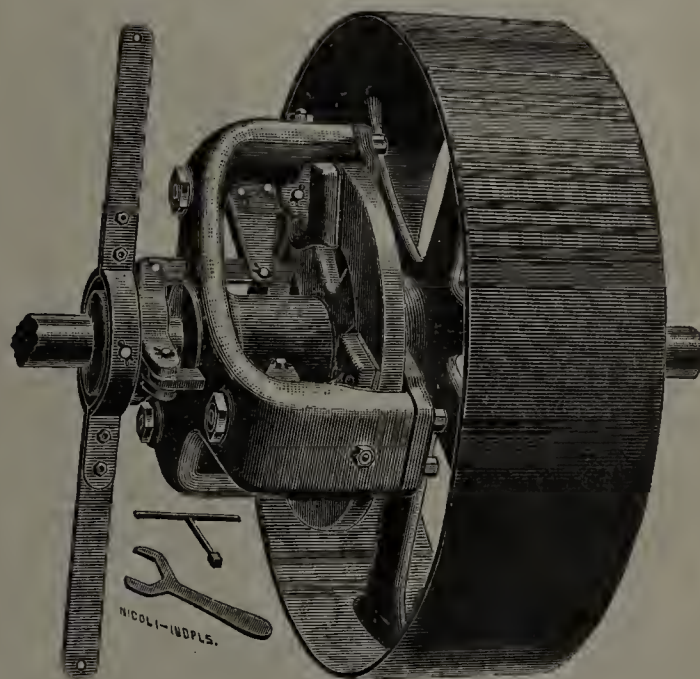
The WONDER'S IN NEW DRESS.



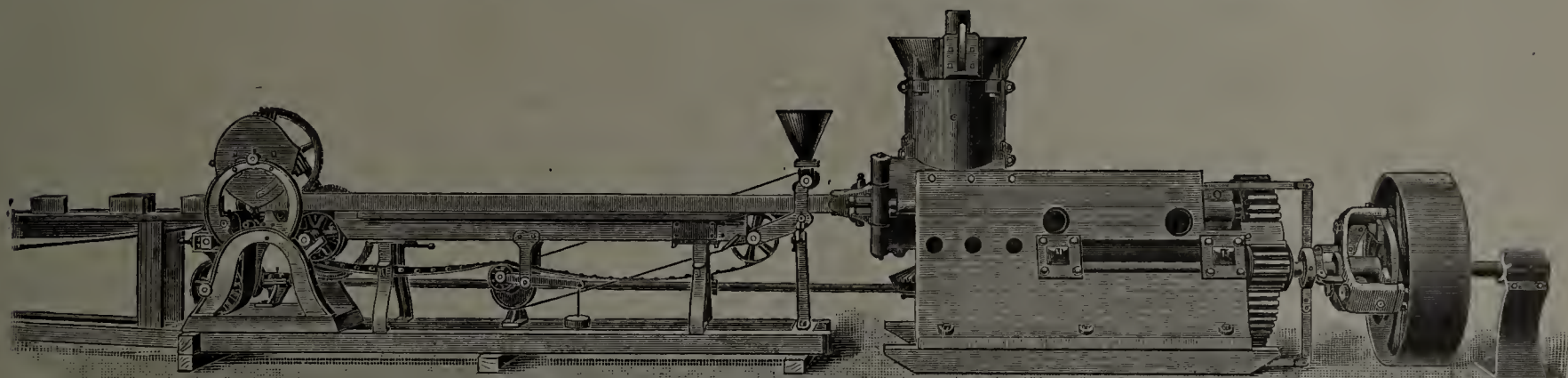
Little Wonder Brick Machine with Cunningham's Automatic Cutter and Sander. 25 M. daily Capacity.



Little Wonder Brick and Tile Machine.



Friction Clutch Pulley.



Big Wonder Brick Machine with Cunningham's Automatic Cutter and Sander. 60 to 75 M. daily Capacity.

The Wallace Mfg Co.,

When You Send for Further Particulars
Mention the CLAY-WORKER.

FRANKFORT, IND.

The Problem of Drying Clay Products Cheaply, Expeditiously and without
 •❧ Injury, has been Solved. ❧•

THE LATEST IMPROVED IRON=CLAD DRYER

Contains the principles required to absorb the moisture from clay just as nature does it. It has taken years of experiment, careful study and incessant hard work and great expenditure of money, to get there. The results shows progress unexcelled by any other brickmaking appliances.

The wonderful attainments grouped together in this Dryer are all covered by good sound patents, protecting patrons and ourselves in a thorough manner, enabling us to carry out a vital principle in drying, without being interfered with, and we are now prepared to furnish all materials needed for Dry Houses of any specified capacity for a small advance on original cost, without charging our patrons for any royalty whatever, and are protecting customers and ourselves, by bringing suit against all infringers, as rapidly as they can be reached.

We herewith append a synopsis of decree ordered in our favor by the Honorable Judge Augustus J. Rick, on 22d day of January, 1894, at the City of Cleveland, Ohio.

IN CHANCERY, No. 5013.

FINAL DECREE.

It is ordered, adjudged and decreed that the letters patent in said complainant's bill of complaint, mentioned, to wit: No. 210,999 issued December 17th, 1878; No. 274,282, issued March 20th, 1883 and No. 336,511 issued February 10th, 1886, are in all respects good and valid letters patent of the United States; that the said complainant is the owner of and is entitled to the exclusive right in, to and under said recited letters patent and in and to said inventions and improvements severally secured thereby as set forth in complainant's bill of complaint.

It is further ordered, adjudged and decreed that a writ of injunction, according to the prayer of the bill of complaint, be issued from and under the seal of this Court perpetually restraining and enjoining the said defendants, their and each of their agents, employees, servants, attorneys and workmen, and all other persons acting by and under their authority, from any further infringement of the said letters patent or either of them, and of the exclusive right of the complainant thereunder.

[Signed] AUGUSTUS J. RICKS, U. S. Judge, etc.

Before placing your order, write us for Illustrated Catalogue and any other information required.

WOLFF DRYER CO.,

358 Dearborn Street, Room 304,

CHICAGO, ILL.



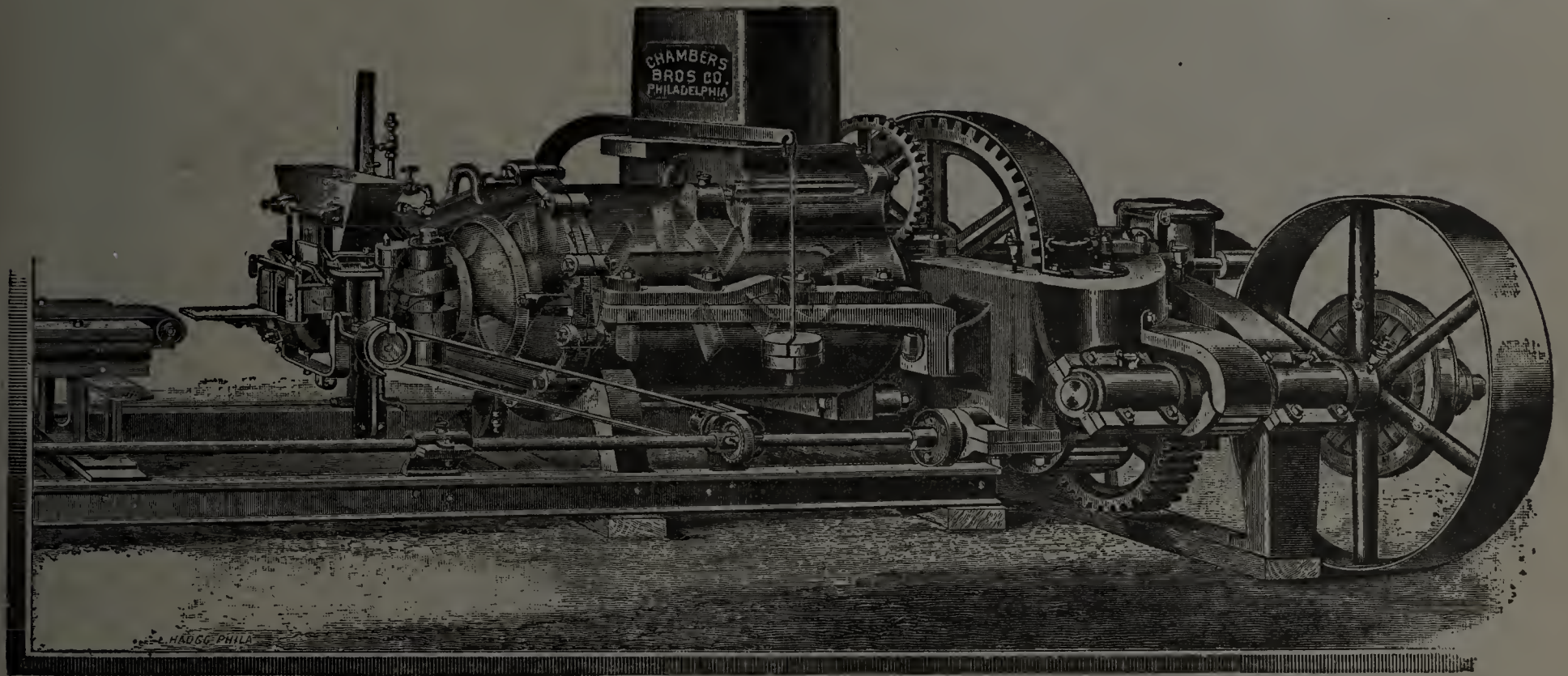
THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXI, No. 4.

INDIANAPOLIS, IND., APRIL, 1894.

\$2.00 a Year in Advance.

Brick Making Machinery,



Chambers Brothers Company,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,

J. E. EASTES, Chicago Agent,
203 South Canal Street.

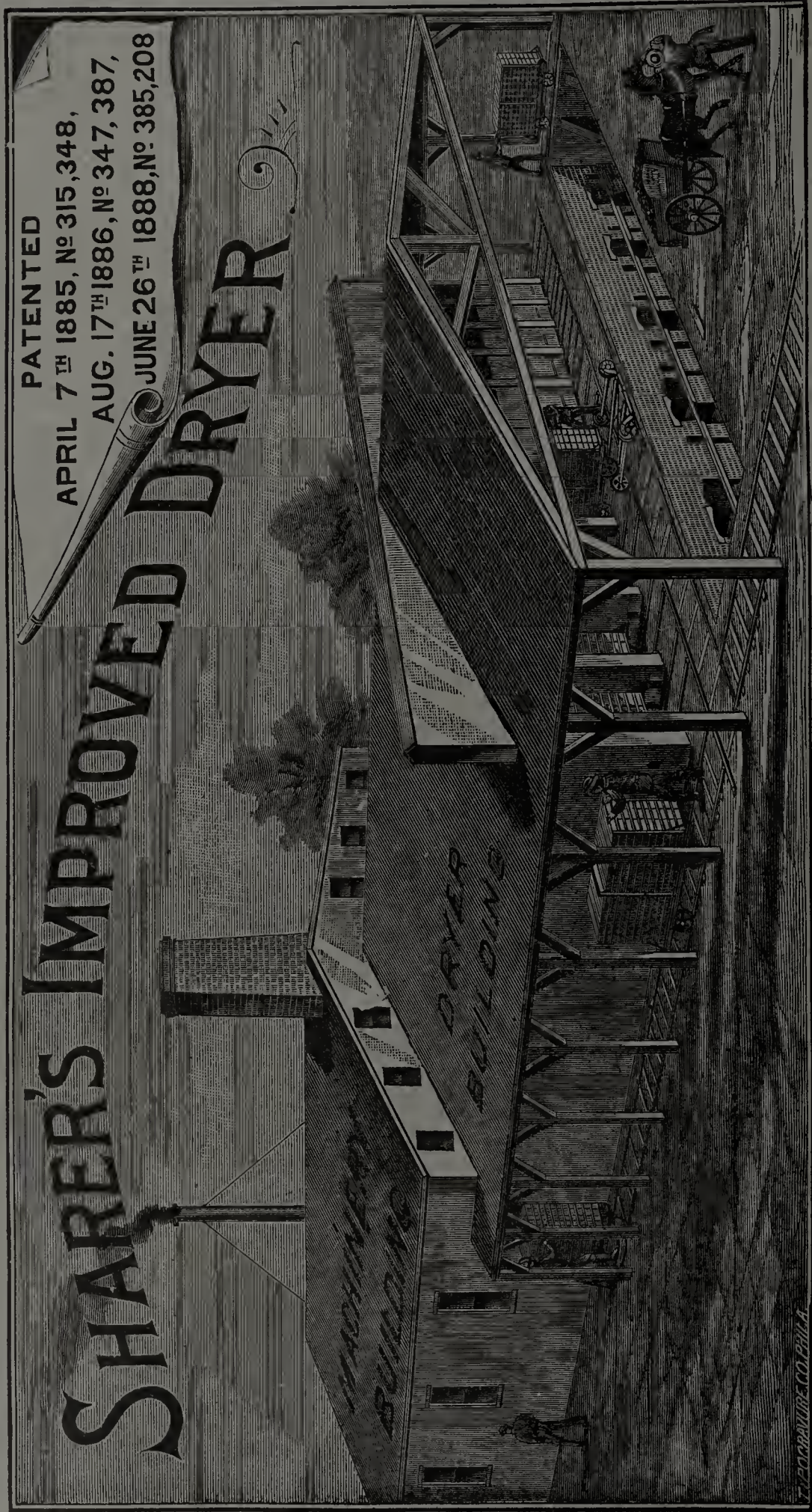
PHILADELPHIA, PA.

See ads. on pages 514 and 515.

THE SHARER DRYER AND CONSTRUCTION CO.,

BRICK MANUFACTURING EXPERTS.
CONSTRUCTING ENGINEERS. ÷ CONTRACTORS AND BUILDERS.
COMPLETE PLANTS A SPECIALTY.

Builders of All Kinds of Dryers and Kilns for Drying and Burning any and all Kinds of Clay Products.



Owners of SHARER'S IMPROVED DRYER;
SHARER'S IMPROVED CALORIFIC KILN.

Manufacturers of Cars, Transfer Cars, Turn Tables, Furnace Castings and Complete Dryer and Kiln Equipments.

... ..Dealers in All Kinds of Clayworking Machinery, Engines, Boilers, Shafting, Pulleys, Etc.
New plants built and equipped complete in every particular. Old plants remodeled and modernized. Clays tested and analyzed. Plans and estimates furnished.
Information costs you nothing. Send for Catalogue "C."

SHARER DRYER & CONSTRUCTION CO.,

TORONTO OFFICE: 71 Adelaide, East, Toronto, Ont., Canada,
HUGH CAMERON, Manager.

Rooms 506 and 507, The Mutual Life Building,
N. W. Cor. 10th and Chestnut Streets,
PHILADELPHIA, PA.

For Clay Screens

..USED...

In Making Brick,
Tile, Terra Cotta,
etc., etc.

Also for Dry Pan,
Pulverizer, Chute,
Shaking and Re-
volving Screens.



Heavy Iron and Steel Plates

Punched for sizing
Coal, Coke and
Ores; Macadam,
Concrete, Railroad
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS
—USED FOR—

CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

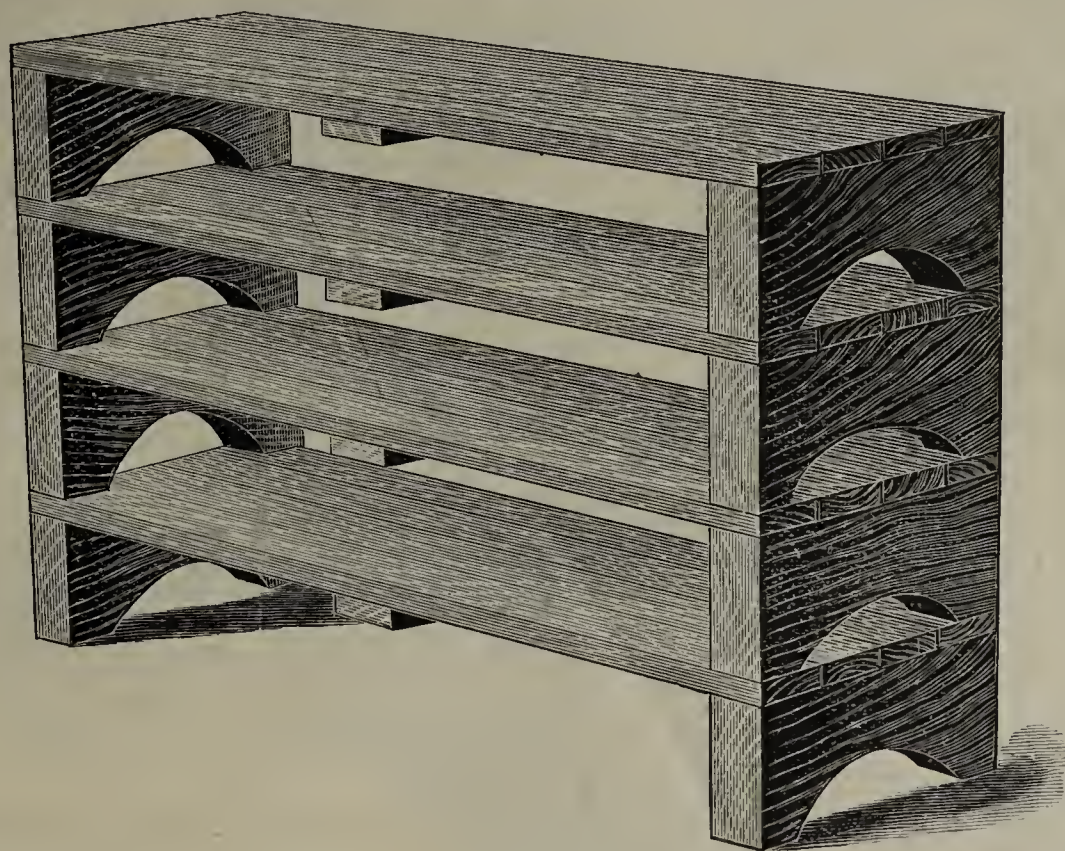
THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,
CHICAGO, ILL.

WOODEN BRICK PALLETS

WOODEN
BRICK
PALLETS



STYLE C.

WOODEN
BRICK
PALLETS

We manufacture all styles and sizes. Write to us direct for descriptive circulars and prices.

WM. B. MERSHON & CO., = Saginaw, East Side, Mich.

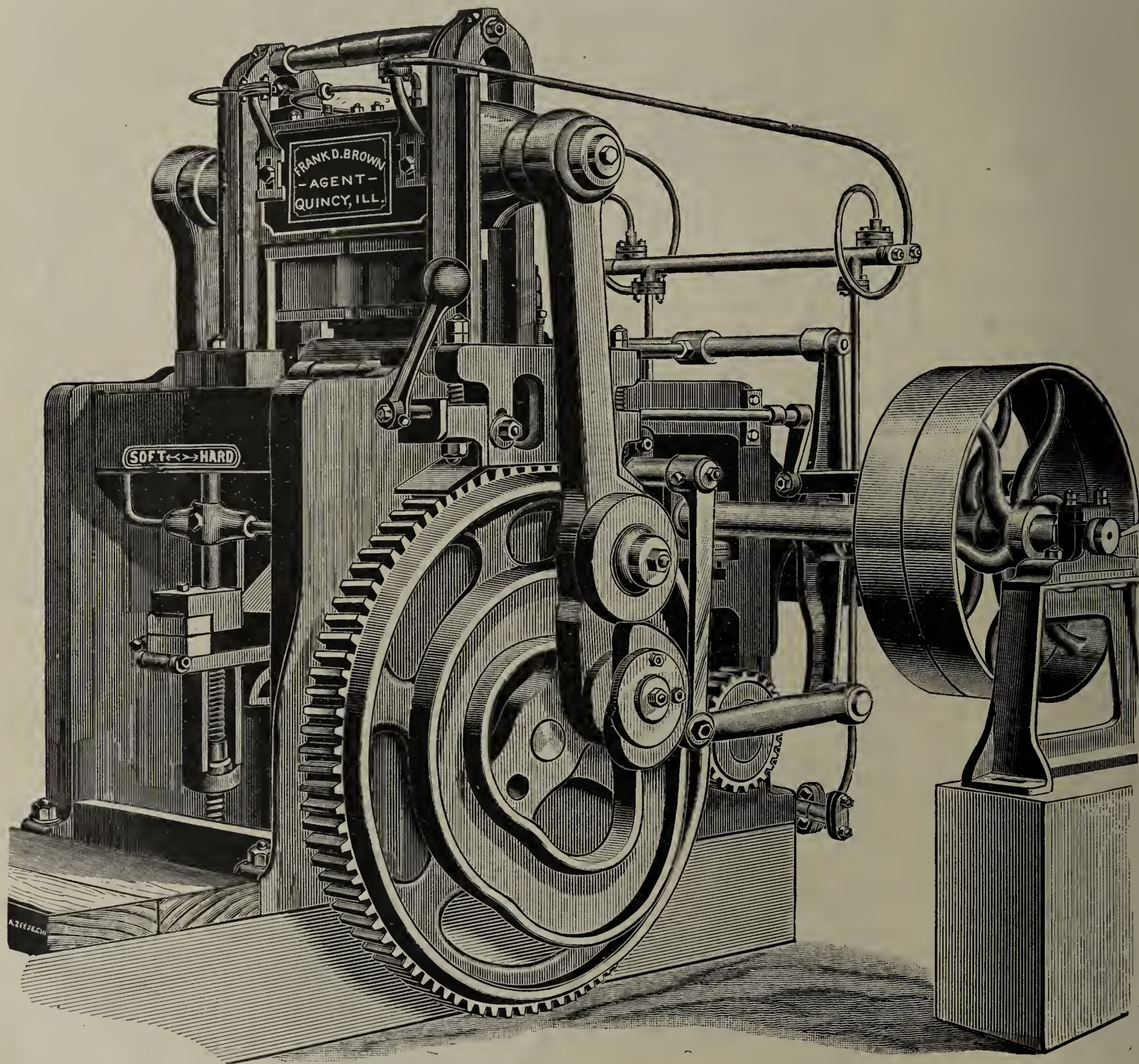
WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

•✠HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.✠•

Best, Cheapest and Most Durable Press in the World.

*—One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

[Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

FRANK D. BROWN, Room 18 Major Block,
Cor. La Salle & Madison Sts. **Chicago.**

The Ross-Keller Brick Machine.

(Triple Pressure)

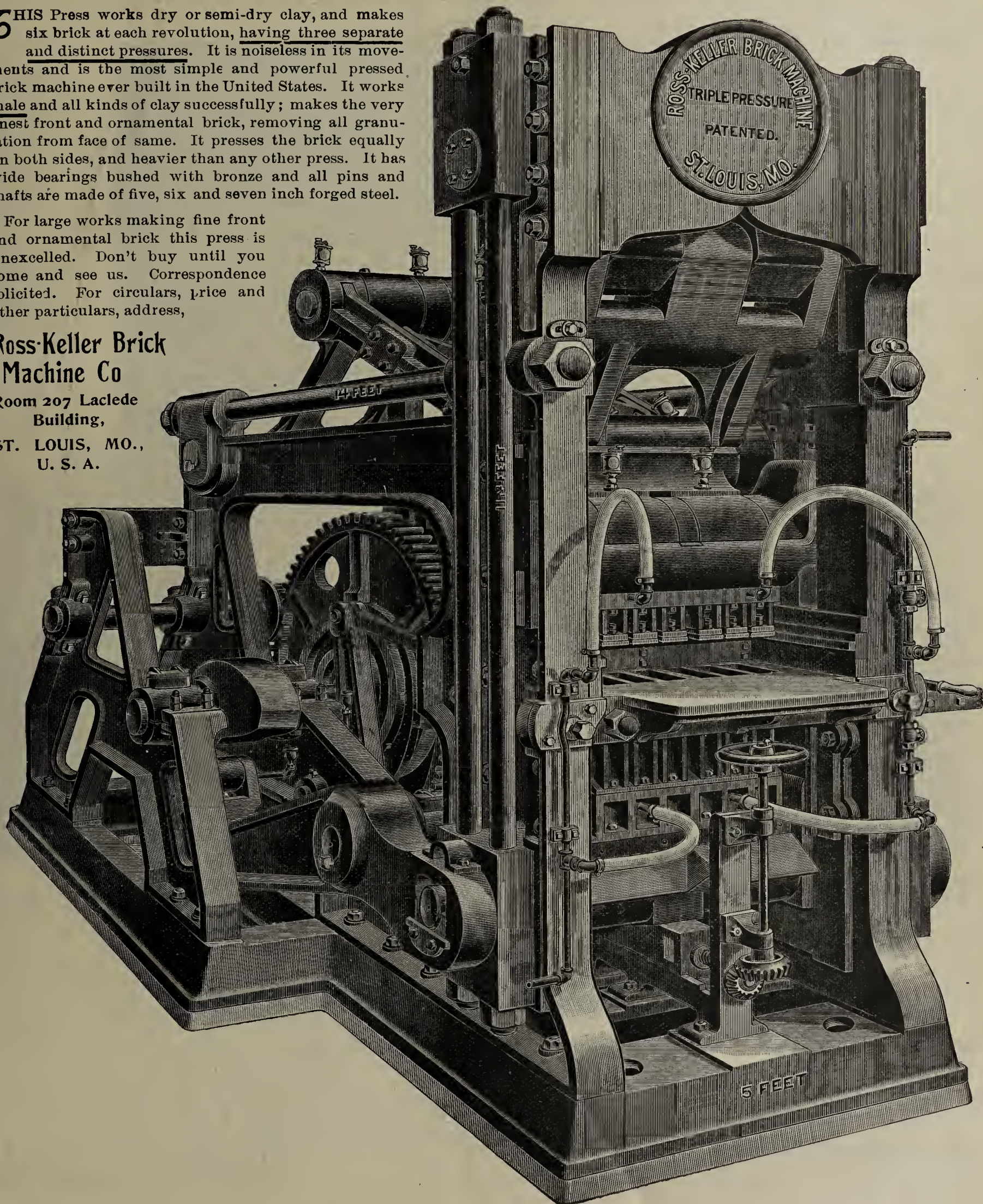
Weight 75,000 Pounds, Capacity 35,000 to 40,000 Brick Per Day.

THIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five, six and seven inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address,

**Ross-Keller Brick
Machine Co**

Room 207 Laclede
Building,
ST. LOUIS, MO.,
U. S. A.



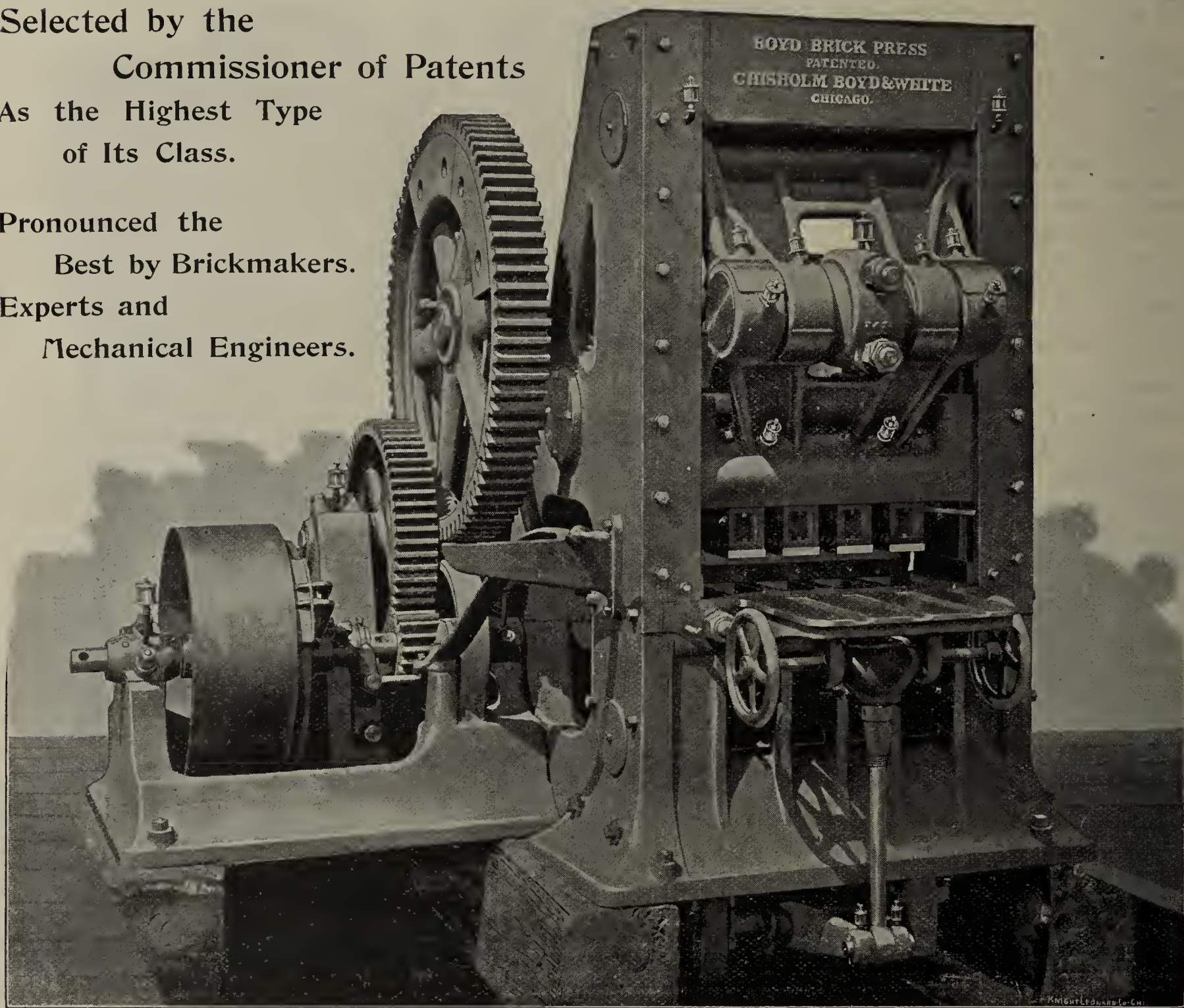
TRIUMPH OF THE BOYD PRESS

. . .  ALL THE HONORS.

AWARDED A MEDAL AND DIPLOMA.

Selected by the
Commissioner of Patents
As the Highest Type
of Its Class.

Pronounced the
Best by Brickmakers.
Experts and
Mechanical Engineers.



THE BOYD BRICK PRESS IS THE ONLY AMERICAN BRICK MACHINE
TO RECEIVE A MEDAL, DIPLOMA, OR OFFICIAL MENTION AT

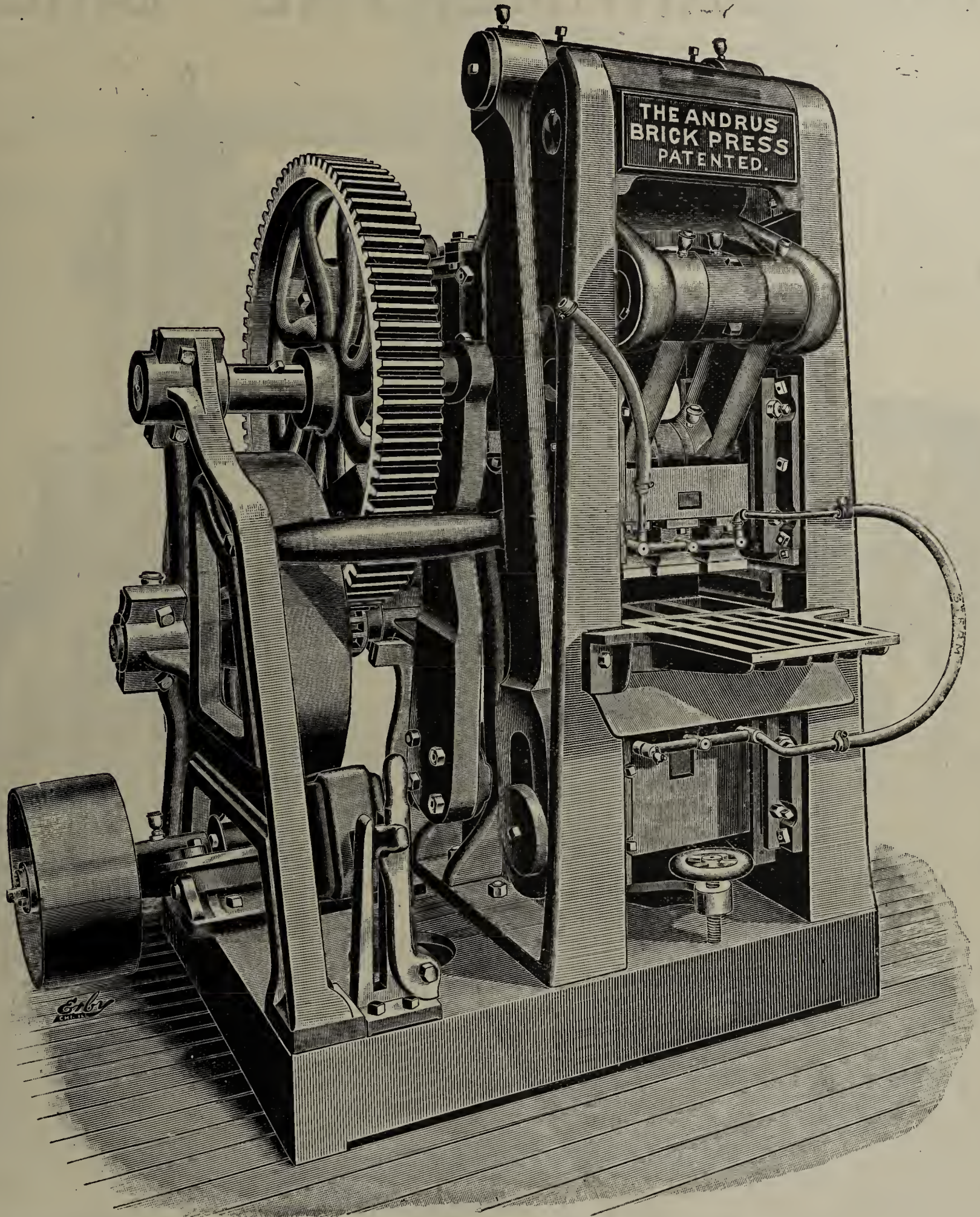
✧ The World's Columbian Exposition. ✧

Monon Block:
324 Dearborn Street.

CHISHOLM BOYD & WHITE,
Chicago, Ill., U. S. A.

The NEW ANDRUS DOUBLE PRESSURE 3-MOLD BRICK PRESS

Within the Reach of Any Responsible Brick Manufacturer.



Write for new Catalogue of our 3 and 4 mold Presses and new terms to suit the times. Address

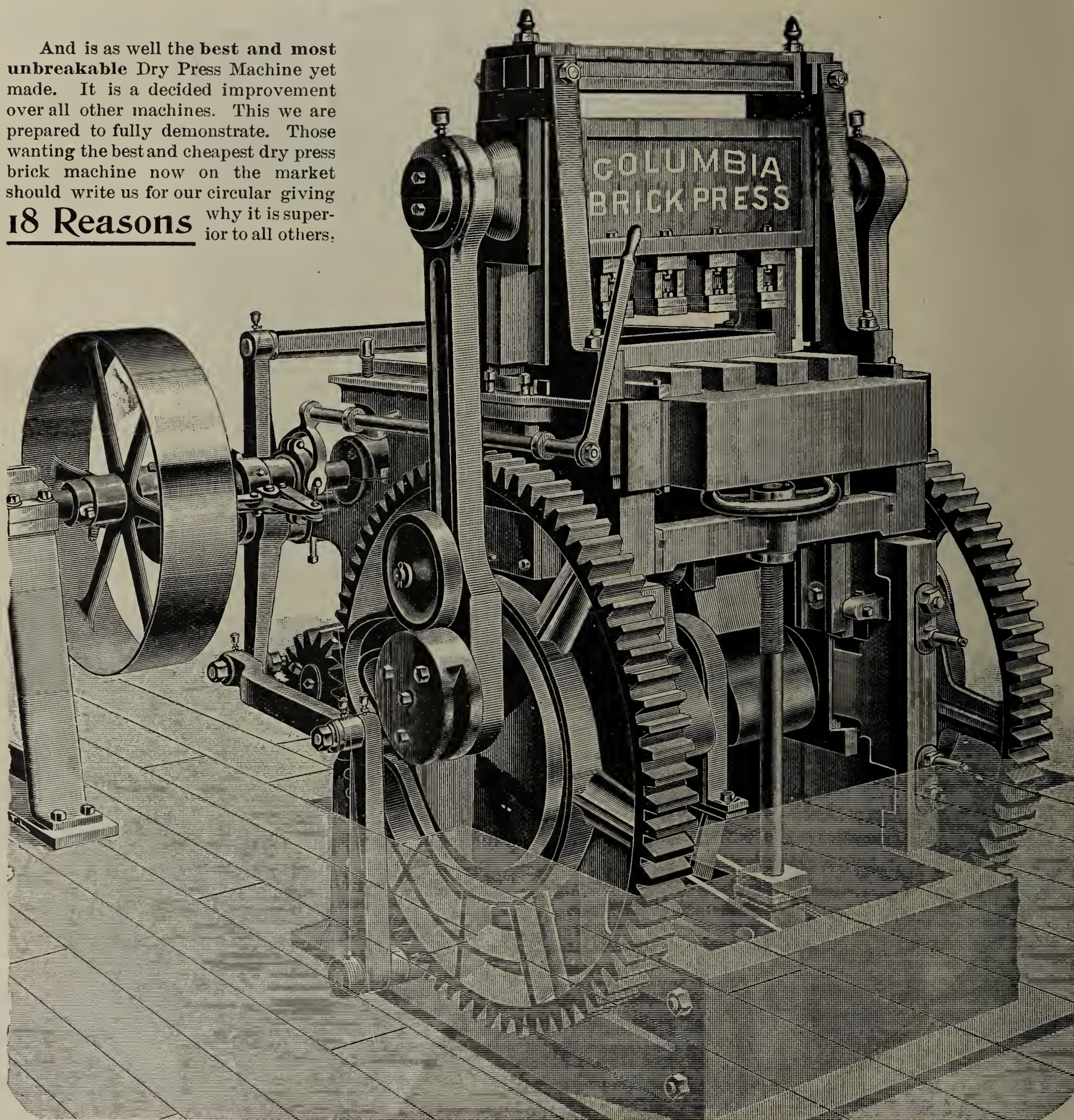
H. O. WHITNEY, General Agent,
General Office and Factory, KEOKUK, IOWA.
KEOKUK, IOWA.

❖ THIS ❖ PRESS ❖

IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF

FINE ORNAMENTAL BRICK

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

COLUMBIA MANUFACTURING CO.,

Send your clay and we will test it and send you the results....

2119 N. Ninth St., ST. LOUIS, MO.

THE SIMPSON CROWNED KING.

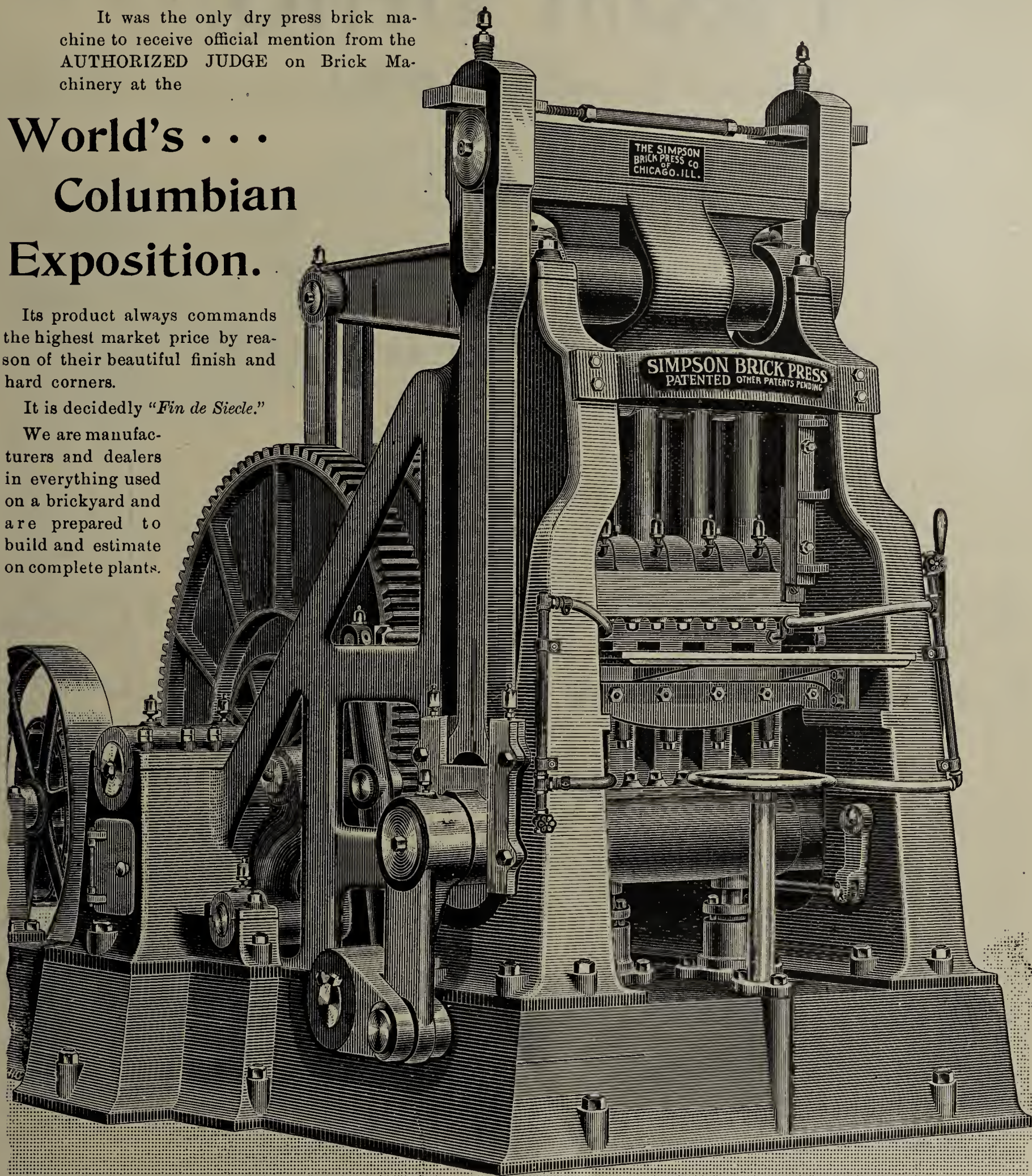
It was the only dry press brick machine to receive official mention from the AUTHORIZED JUDGE on Brick Machinery at the

World's . . . Columbian Exposition.

Its product always commands the highest market price by reason of their beautiful finish and hard corners.

It is decidedly "*Fin de Siecle.*"

We are manufacturers and dealers in everything used on a brickyard and are prepared to build and estimate on complete plants.



THE SIMPSON BRICK PRESS CO.,

Agents for Canada:

WATEROUS ENGINE WORKS CO., Brantford, Ont.

415 Chamber of Commerce Bldg, CHICAGO, ILL.

· · FROM OHIO. · ·

The following letter we just received from one of the best known and most successful brickmakers on the Ohio River.

CHAMPION BRICK WORKS COMPANY,

MANUFACTURERS OF AND WHOLESALE DEALERS IN

Red Pressed, Ornamental & Common Brick,

OFFICE, 400 MAIN STREET.

WELLSVILLE, O., March 20th, 1894.

UNITED STATES BRICK PRESS WORKS,

No. 79 Dearborn St., Chicago, Ill.

GENTLEMEN:—In reply to your inquiry of the 17th inst., asking my opinion of the Four-Mould U. S. Brick Press, placed in my works last summer, permit me to state that I spent nearly a year investigating the merits of different dry press brick machines, before finally selecting the U. S. Machine, and the results up to date have fully justified my expectations. The machine is simple in design, very strong and durable, runs smooth and with little power, and so far has cost nothing for repairs. We are making brick that we do not believe can be surpassed by any other yard in the country, from a very fine bottom clay and from shale, at the rate of twenty-four hundred and eighty (2480) per hour. Twelve years ago we commenced to manufacture brick by hand; two years afterwards we added a soft mud machine; a year from that time we added another soft mud machine and a dryer; three years ago we added a stiff mud machine and double the capacity of our dryer; last summer we put in your machine, and that is the only one running on our yards to-day. A first-class brick is the only kind that can be sold now, and if the orders continue to come in as they have the past two weeks, you may expect another order for a Four-Mould this summer. If you have any "doubting Thomases" on hand send them here.

Very truly yours,

(Signed,) THOS. H. SILVER.

We are prepared to furnish drawings and estimates, and to equip complete Semi-Dry Pressed Brick Plants, in any part of the country, and guarantee the same.

For any information pertaining to dry pressed brick, write or see

United States Brick Press Works,

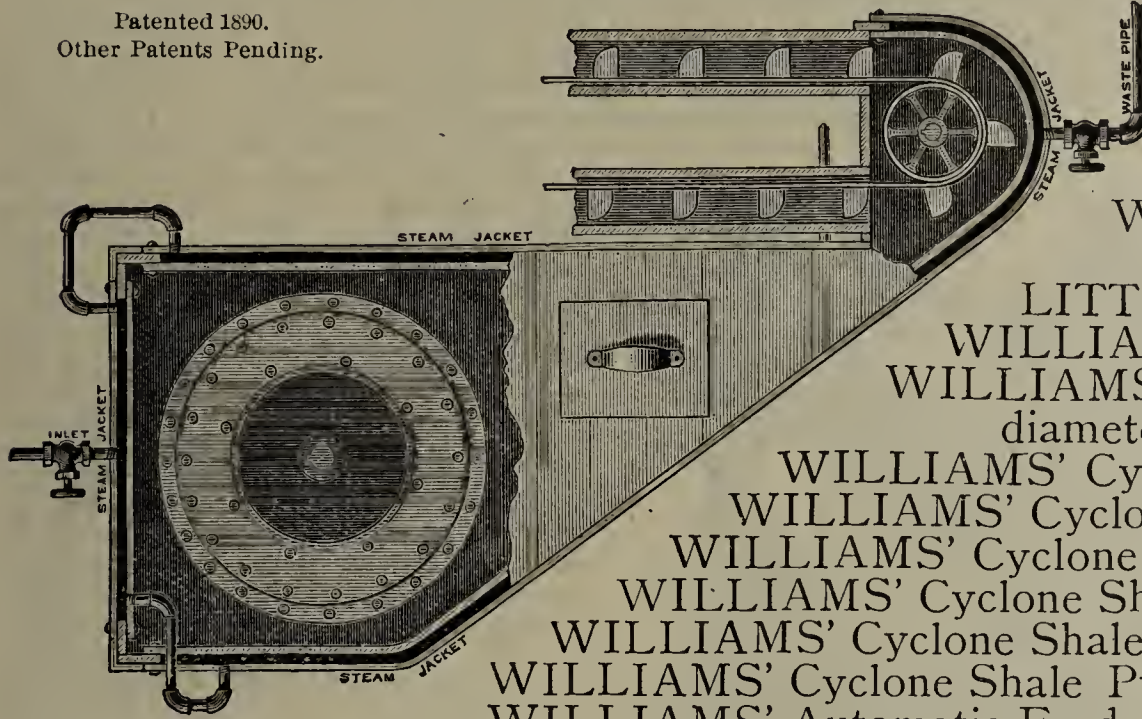
OSWALD KUTSCHE, Proprietor,

1111 to 1113 Unity Bldg., 79 Dearborn St.,

CHICAGO, ILL.

WILLIAMS' CLAYWORKING MACHINERY.

Patented 1890.
Other Patents Pending.



WILLIAMS' Clay Elevators.
WILLIAMS' Triple Roll Clay
Crushers.

WILLIAMS' Brick Trucks,
Three sizes.

WILLIAMS' Revolving Clay
Screen.

LITTLE'S Steam Jacket for Pulverizers

WILLIAMS' Clutch Pulleys and Couplings.

WILLIAMS' Cyclone Clay Pulverizer 30 in.
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.

WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.

WILLIAMS' & LITTLE'S Patent Steam Clay Screen.

WILLIAMS' Pony Pulverizer for Testing Clay and Shale.

WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Clay Cultivators.

WILLIAMS' Clay Bunchers.

WILLIAMS' Brick Barrows.

WILLIAMS' Complete Outfits for Dry Press Brickmakers.

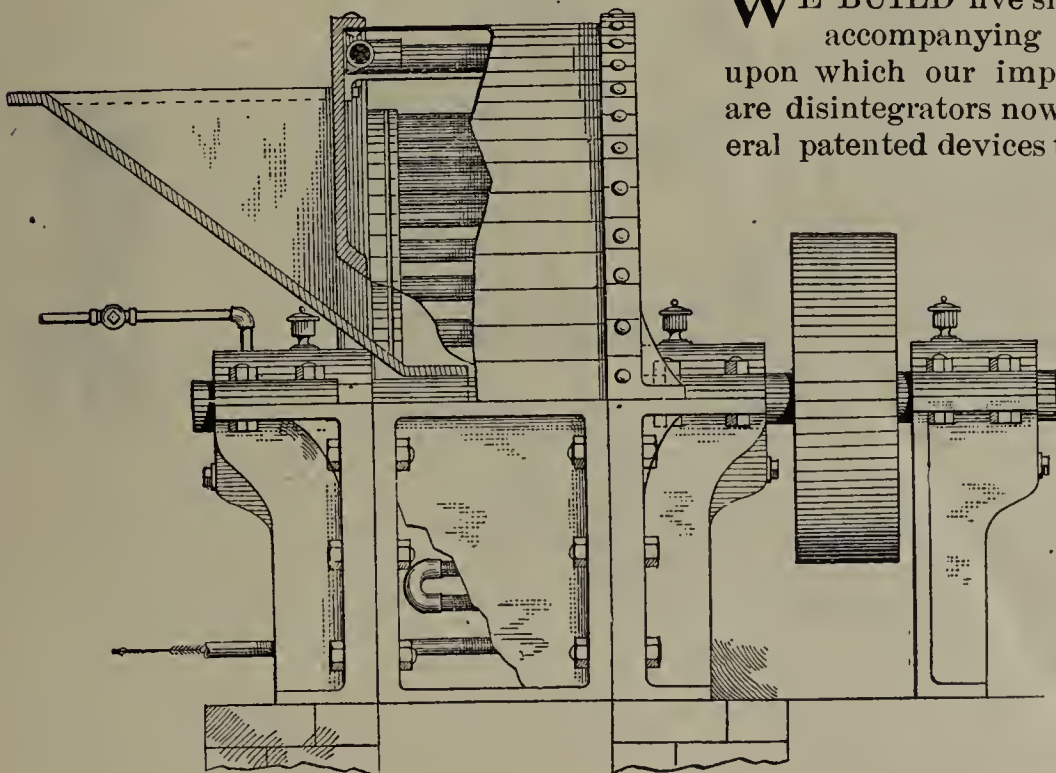
WRITE TO **M. F. WILLIAMS & CO., 2705 and 2707 N. Broadway. ST. LOUIS, MO.**

IMPROVED Clay Disintegrators

(OUR OWN PATENT.)

LARGE CAPACITY WITH LITTLE POWER ❖

FOR PULVERIZING COMMON CLAY, FIRE CLAY, SLATE,
PAINT, BONES, FLINT AND ORE OF ANY DESCRIPTION.



WE BUILD five sizes ranging from 30 to 60 inches in diameter. The accompanying cut will give the reader an idea of the principle upon which our improved pulverizers are constructed. While there are disintegrators now on the market somewhat similar, ours have several patented devices that makes them much more efficient and durable.

The steam jacket shown in the cut is an especially valuable feature and prevents any tendency to clogging when damp material is used, a great advantage, as all who have had any experience in handling moist clay will readily concede.

Another improvement (our own invention) consists of self-oiling, dust-proof journal boxes, which insure smooth, easy running, and reduces the strain and wear to the lowest possible degree.

Our Disintegrators are built for service. We have a large number of them in use on different materials and all are giving entire satisfaction.

We will be pleased to furnish full description of machines and testimonial letters from users.

IF YOU WANT THE BEST, WRITE US FOR PRICES, ETC.

Schoellhorn-Albrecht Machine Co.,

MANUFACTURERS,
609-610 North Levee,
ST. LOUIS, MO.

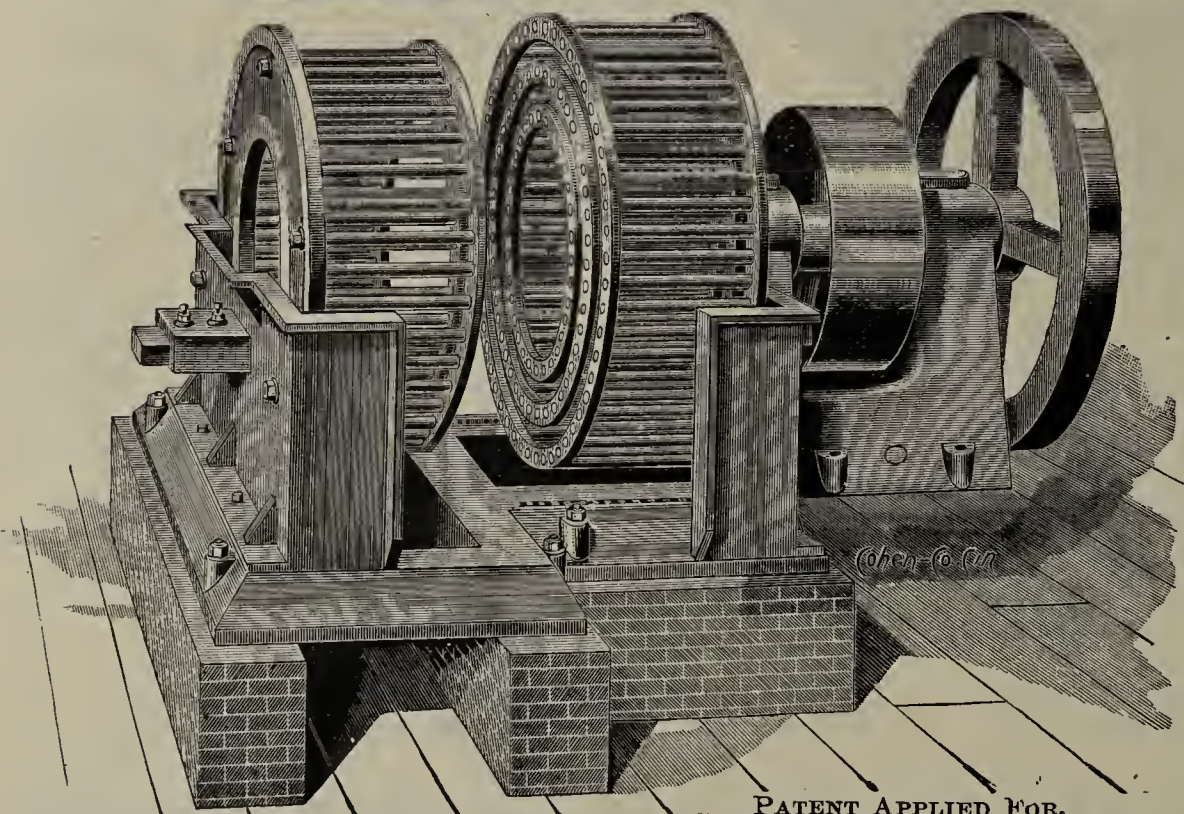
Description.



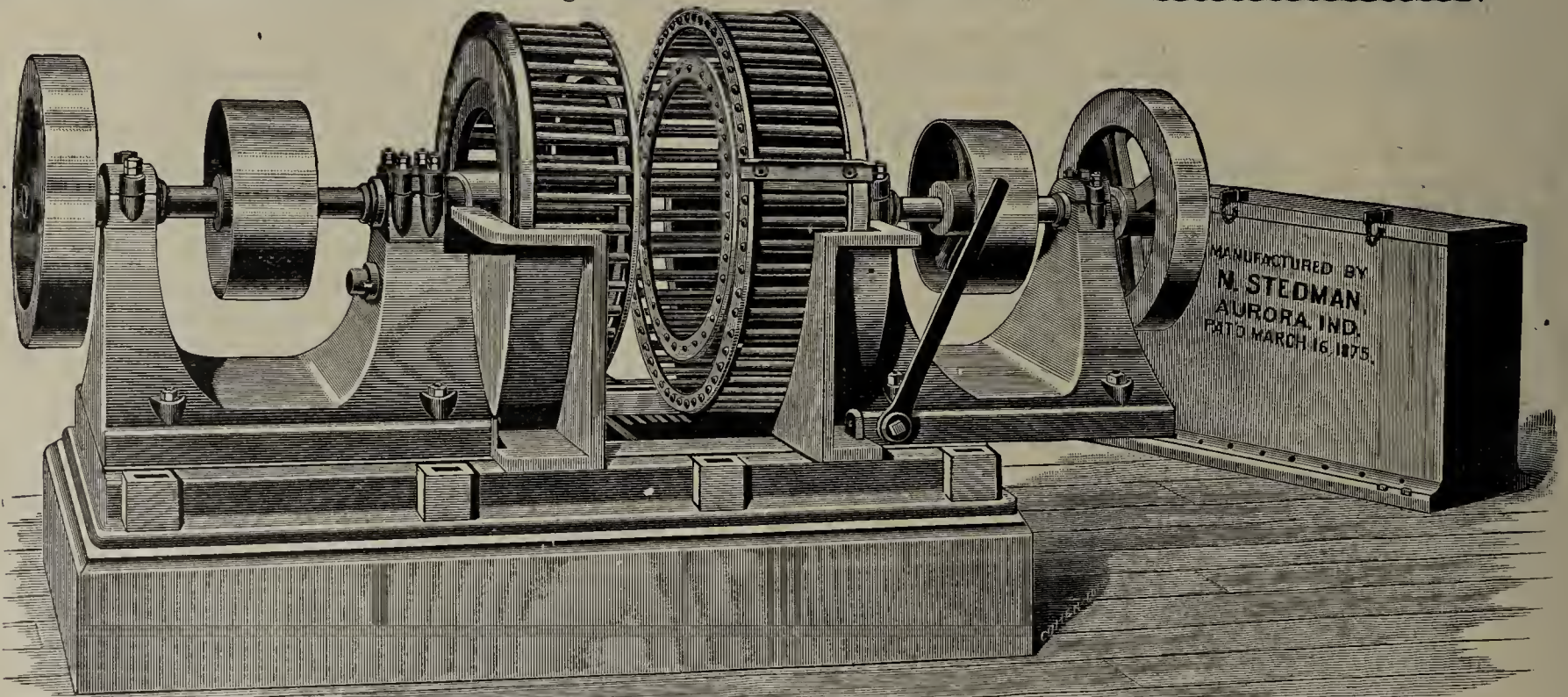
This Disintegrator is especially designed for pulverizing clay for making "FINE PRESSED BRICK."

The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loomy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our DOUBLE CAGE DISINTEGRATOR which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



NOTICE.—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our SINGLE REVOLVING CAGE DISINTEGRATOR. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

Mention the CLAY-WORKER

STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.

— AN EXPLANATION OF — COLD FACTS!

Draw Your Own Conclusions.

IN the discussion of kilns in the N. B. M. A. Convention at Chicago, for special purposes, it was noticeable when an up-draft kiln was referred to, some one would remark that an up-draft kiln would not answer the purpose for the reason that the cold air coming in contact with the bricks in the arches would damage the ware." We wish to call attention of brickmakers to this point,

The bricks in the arches or bottom of our up-draft kilns are as thoroughly protected from cold air, as are the top brick in a down-draft kiln.

So much for this; now we maintain that we can obtain a more uniform degree of heat from top to bottom with an upward draft which is natural, than can be obtained with a downward draft, which is forced and unnatural, and with an arch over an up-draft kiln a larger per cent. of hard building brick can be produced; without an arch two courses only on top are salmon.

Now as to comparative cost of putting in the down and the up-draft kilns.

| | |
|---|----------|
| The average cost of a first class up draft kiln to hold 200,000 brick, is | \$ 1,500 |
| The average cost of a first class down-draft kiln to hold 200,000 brick, is..... | 5,000 |
| Saving to the brickmaker in first cost on one kiln..... | 3,500 |
| Saving to the brickmaker on three kilns this size, (which are necessary for a small plant)..... | 10,500 |

We are ready to verify these estimates.

For the best and cheapest kiln in use to-day for burning building bricks, the "Morrison Up-draft Kiln" with late improvements is unrivaled.

If you have any doubts about it, address

R. B. MORRISON & CO.,

PROPRIETORS,

ROME, GA., U. S. A.

For further proof. —

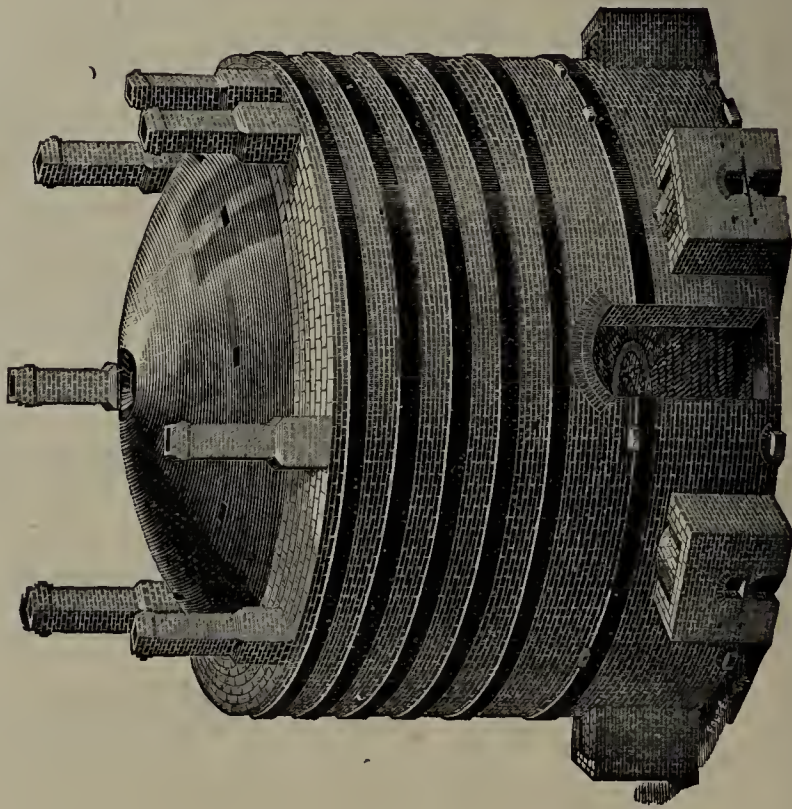
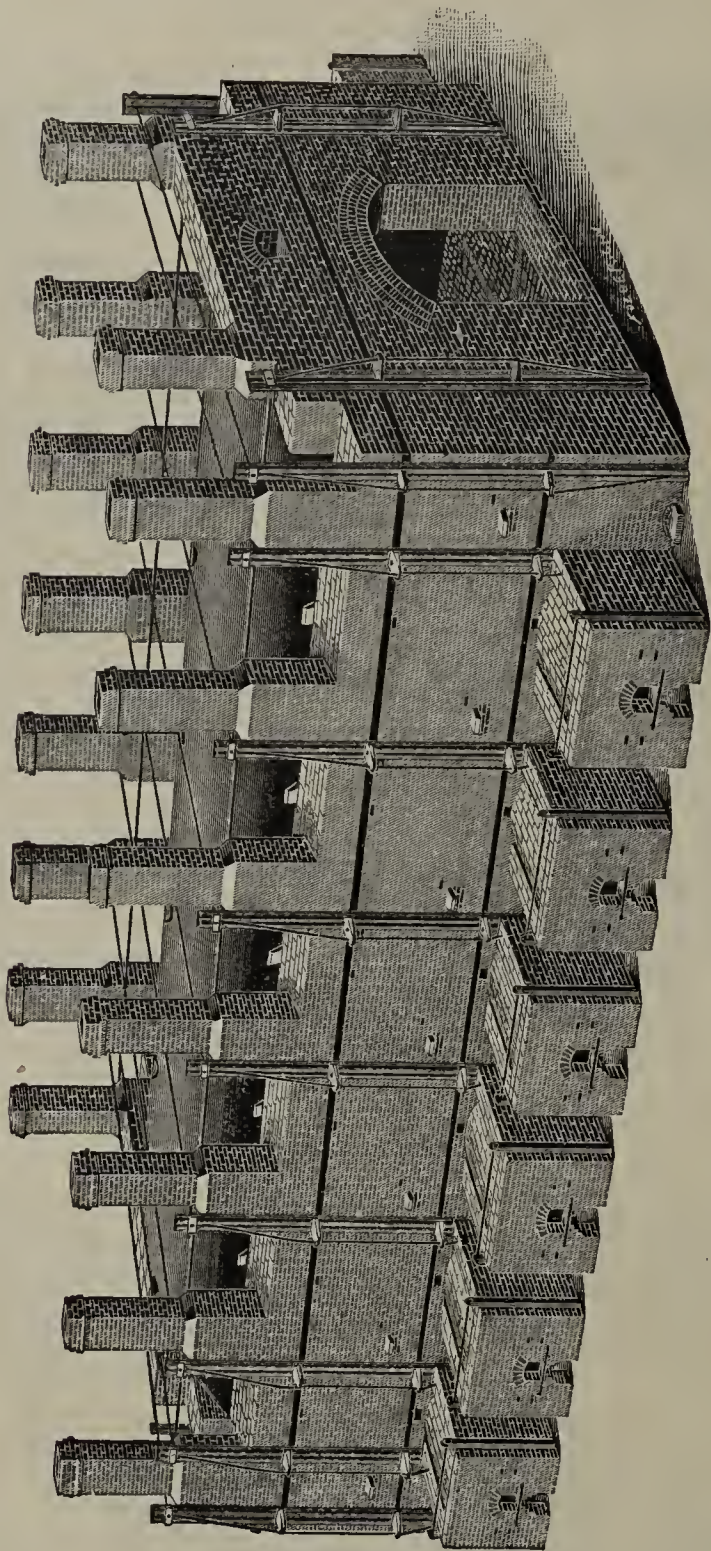
The Eudaly Improved Down-Draft Kiln.

LINCOLN, NEB., January 18, 1894.

MR. W. A. EUDALY, Cincinnati, Ohio,
My Dear Sir:—I take great pleasure in recommending your Kiln, after investigating and experimenting with most every Kiln on the market. It is a very true saying that "a man profits by experience." This I think I have had in the past few years at a cost of thousands of dollars. I have burned in your Kilns over sixty millions of Paying Brick in the past six years. I cheerfully and truthfully say in my opinion it is the best Down-Draft Kiln on Earth, for the following reasons: Easy to operate the Kiln at all times being under the absolute control of the burner; easy to fill and empty; as economical of fuel and labor as any Down Draft Kiln; cheaper to construct than any Down Draft Kiln having same capacity, and same amount of material in its construction, as the Brick are all common stock sizes. This testimonial I give you for the benefit of some poor brickmaker who has not been through the mill, and if some day in the future I find that I have saved a fellow brickmaker from paying out thousands of dollars in experimenting, I will have been well repaid for expressing my views on this subject. Wishing you and your Eudaly Kiln continued success. I am as ever

Yours very truly,

J. A. BUCKSTAFF.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

W. A. EUDALY,
 64 Johnston Buildings,
 Cincinnati, Ohio.

THE · KILN · OF · THE · PERIOD.

THE "PERFECT KILN."

Sercombe's Patent.

Designed on Economic and "Common Sense" Lines, for Burning Brick, &c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.
 Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

NOTE WHAT THE USERS SAY.

Sample of English Testimonials.

From Messrs. W. T. WRIGHT & CO., Albion Brick Works, Sileby.

SILEBY. July 14, 1892.

TO MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT & CO.

Third kiln now ordered.

From Messrs. WILLIAM THOMAS & COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,
 Fulton Fire Brick and Mining Co.

FROM CANADA.

MESSRS. SERCOMBE, OSMAN & WARREN.

DEAR SIR:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular (Extract.) Yours truly,

N. B.—Messrs. Carroll & Co. are erecting one kiln, and contemplating erecting others.

TORONTO, February 28th, 1893.

CARROLL, VICK & CO.

References can be given to over Forty first-class firms already. For further particulars please apply to

SERCOMBE, OSMAN & WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER.

AGENTS FOR CANADA R. H. PYNE & CO., Yonge St., TORONTO.

W. H. KELSO, President.

PAUL BOEHNCKE, Treas. & Sec'y.

MAX A. TH. BOEHNCKE, Gen'l Mgr

P. O. Address:
Centinela,
Los Angeles County,
California.



THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:
Inglewood, California.
Tel. Address:
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,
No. 474,807, May 17th, 1892.

BOEHNCKE'S

Several other U. S. Pat-
ents applied for.

UP AND DOWN DRAFT

Continuous Brick Kiln.

12 Kilns in Operation
...in the...
United States.

5 Kilns in course of
construction
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

DON'T LOSE TIME TO INVESTIGATE.

Beware
of
Infringe-
ments.

ADVANTAGES OF THE KILN.

1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

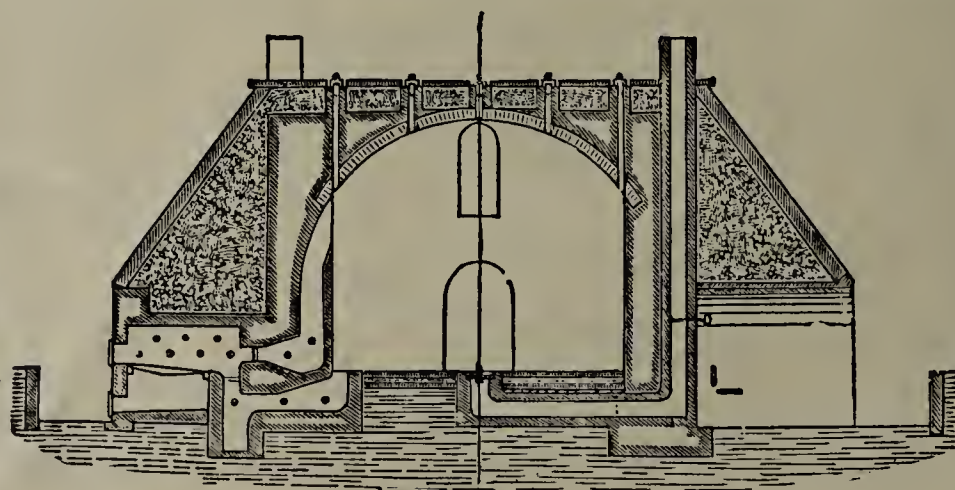
Write for Circulars to

Centinela Brick Kiln & Drier Co.,

Box 35,

Centinela, Cal.

COMMON SENSE KILN.

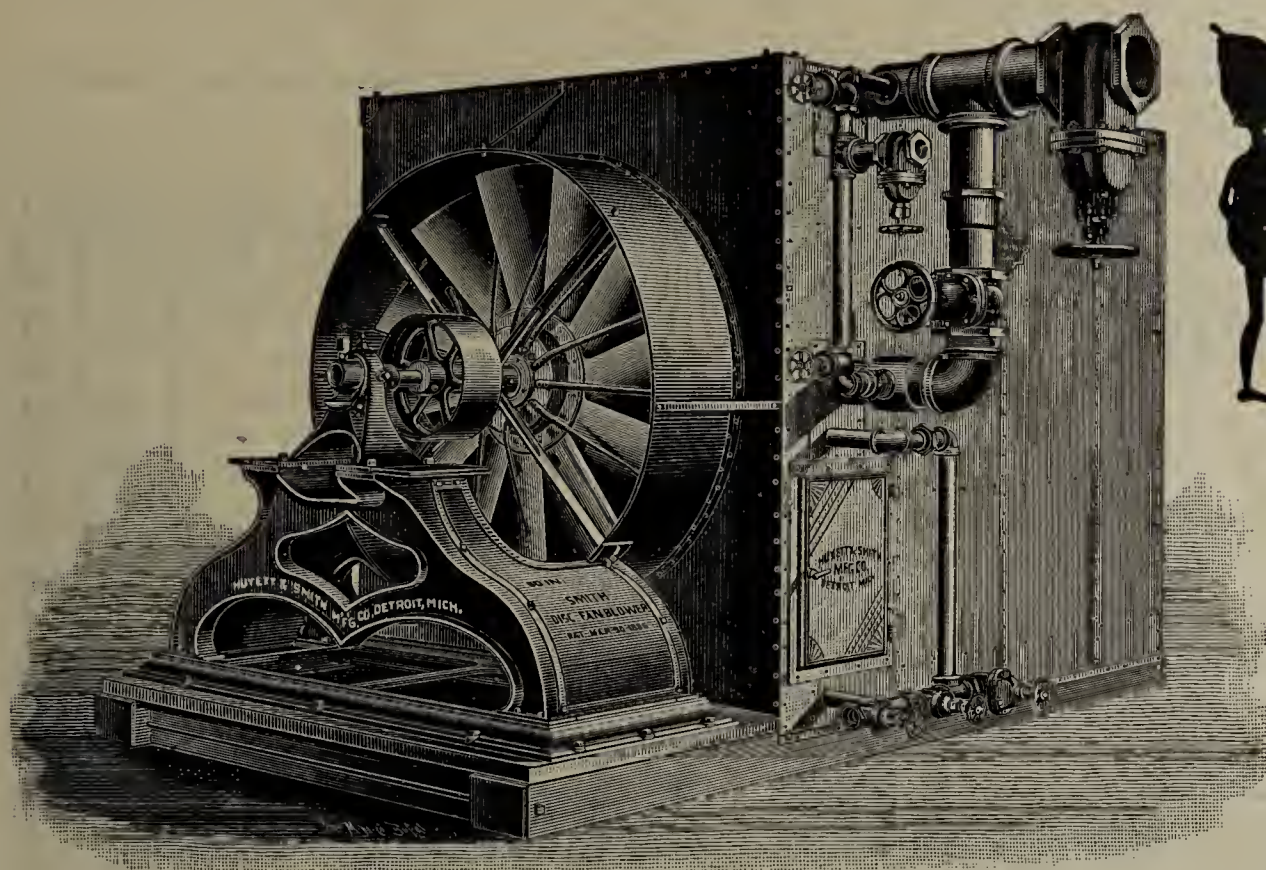


Patent No. 475,433.

FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

A NEW BRICK DRYER.

We have also Boehncke's Brick Drier, which is very economical



A Good Dryer

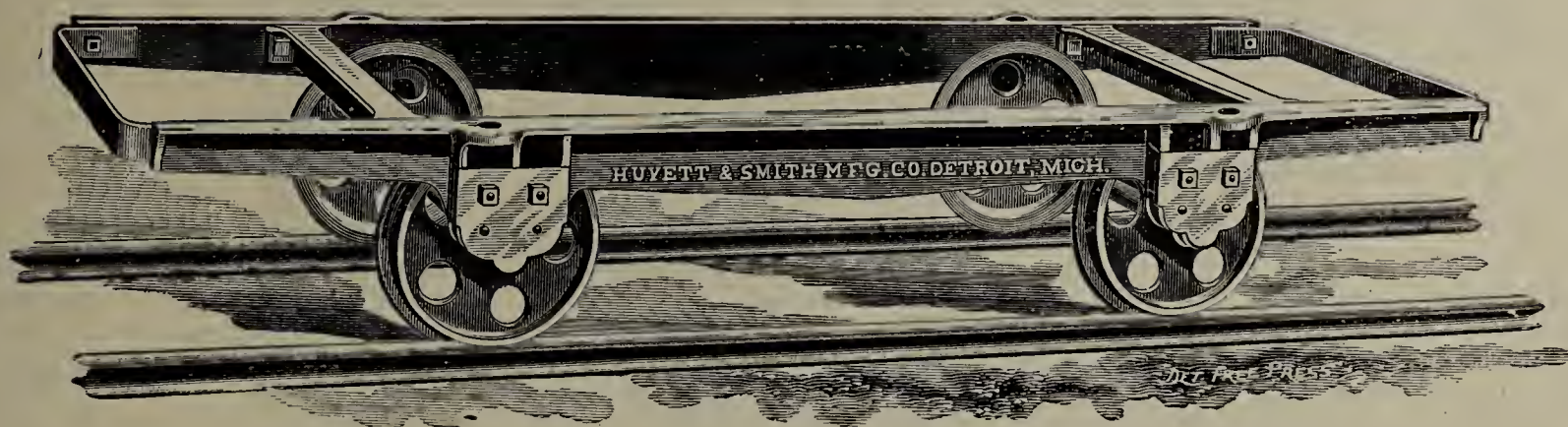
Is a cheap Dryer
but a cheap Dryer
is not always a
Good Dryer.

We do not claim to have
the cheapest Dryer as to
first cost, but do claim it to be
the cheapest to the purchaser when
EFFICIENCY,
ECONOMY IN OPERATION
and **DURABILITY**
are taken into consideration.
Give us a chance to explain it
to you.

The Huyett & Smith Mfg. Co.

— DETROIT, MICH. —

SMITH HOT BLAST BRICK DRYER



Speaking of our *IMPROVED BRICK CAR* a prominent manufacturer says:

"I have used several other makes but never saw anything to compare with this. We only have a fall of one inch in eight feet in our tunnels; with the other cars we had to use a windlass and several men to move them down, but now one or two men alone handle them with ease."

WRITE FOR PRINTED MATTER.

The Huyett & Smith M'f'g Co.,

Main Office and Works, 1,400 Russell St.,

DETROIT, MICH.

NEW YORK, 26 Cortlandt Street.

CHICAGO, 31 South Canal Street.

BOSTON, 48-54 Union Street.

.....BRANCHES.....

PHILADELPHIA, 118 Custom House Place.

SAN FRANCISCO, 21 Fremont St.

LONDON, ENG., 13 Little Trinity Lane, E. C.

A Pointed Statement:

WRITE
... US.

If you take all the good points that are claimed for all other Brick Driers, and add all these points together, the sum total will not begin to equal the good points contained alone in

Write Us

For our printed matter.
This page isn't large
enough to even begin
the story.

CORROBORATIVE TESTIMONY. . . .

PHILADELPHIA, PA., March 19, 1894:
THE STANDARD DRY KILN Co.,
Indianapolis, Ind.

Gentlemen:—Your contract with us is now completed to our entire satisfaction. The test has been made and guarantee more than filled. Drier accepted and a full settlement made by us to you for same, and we gladly give you the following endorsement:

Your system embodies all the necessary features to dry brick perfectly and economically.

Our drying capacity is 80 M. soft mud brick every 24 hours, made on the Henry Martin machines.

In 12 days from beginning your work you had the Drier ready for steam. The promptness in completing your work, the high grade of material furnished, the superiority of workmanship throughout your entire system, together with the perfect results obtained from Drier, (in our experience as practical brick manufacturers of over 25 years in this market) *has never been equalled.*

We are able to make and dry as perfect a brick as was ever turned out in this market, absolutely free from "bats."

You are at liberty to refer to us.

Yours truly,
WEBSTER, GILLESPIE & CO.,
Per Henry C. Webster.

THE STANDARD NATURAL DRAFT BRICK DRIER.

In buying anything, whether a Drier, or a House, or a Railroad, it is the part of wisdom to

Look to the End.

Our Drier isn't the cheapest, if you consider first cost alone, but if you look to the end—to the results—it is undoubtedly the Drier for the economical man to buy.

Here's Another Point.

Our equipment is high grade in every respect—particularly so is our cars. Our Catalogues will point out just where, just how, just why they surpass other makes.

The Standard Dry Kiln Co.,
Patentees and Sole Manufacturers,
INDIANAPOLIS, IND. • LOUISVILLE, KY.

Main Office and Warerooms, 184 So. Meridian St., INDIANAPOLIS.

Write Us.

THE CLAYWORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXII.

INDIANAPOLIS, IND., APRIL, 1894.

No. 4.

Written for the CLAY-WORKER.

ARTISTIC ARCHITECTURE.

BY LOUIS H. GIBSON.

THE subject of this sketch is a window of the sixteenth century. It was constructed in stone and the decoration is carved. We selected it because it is adaptable for use in clay.

It is the practice at the present time to model all of the higher grades of sculptural work in clay, and when it is to be carved in stone a plaster cast from the clay model is made and this is used by the sculptor to guide him in his work. This is a roundabout method. This design, having been modeled in clay, should be burned so that all of the spirit and life which may be given to it through work in so tractable a material as clay, may be preserved in permanent form in the burned product—terra cotta.

Architects do not complain of the lack of artistic ability among terra cotta modelers, but it is true that very little satisfactory decorative sculpture is done in stone. Stone carving or decorative forms are usually stiff, hard, mechanical in character and to

that extent far from satisfactory. I say this is usually the case. It is not always so. In our own city many conscientious efforts have been made to secure good stone carvings; that is, carvings of high artistic merit. The price of good work has been paid repeatedly, but the artistic

result has rarely, if ever, been satisfactory to the architects of this section. The clay model has been made, in two instances at least, by a modeller from the terra cotta works. The casts have been produced and used as a model by the stone cutter, but it has never come

from the stone cutter's hands in satisfactory shape. It has partaken of the stiffness, a rigidity which has stamped it as clumsy, inartistic.

In the case of our Soldier's Monument, one of the great blemishes is the female heads above entrances. These were modeled by the sculptor, the same who modeled the crowning figure. The model was beautiful—the copy of it in stone is bad. The work of an artist was shown in the plaster reproduction, but the stone cutter was not equal to the occasion.

The greatest development in decorative sculpture at this time is from the hand of the terra cotta modeler. His deft fingers have sown the seeds of good taste all over this broad land, and the taste of the people has been elevated thereby. Men of high ability have been imported to do this kind of work. All of the terra cotta establishments have to do it. Who ever



hears of a stone contractor sending abroad and engaging a decorative sculptor to carry out the design of the architect? He does not do it except in the rare instance, which is by no means typical. The stone cutter may go on doing bad carving, but it will not be tolerated in terra cotta. It was fortunate that the pace was well set in the early history of terra cotta in this country. It so happened that the first great use made of terra cotta during recent years in America, was in the museum of fine arts in Boston. This work was furnished by an English terra cotta manufacturer. The work was well modeled and produced quite a sensation among artists, architects and the people at large. Since that time the artistic spirit and rendering have been associated with terra cotta as a material, much to the credit and commercial benefit of the terra cotta industry of this country.

Written for the CLAY-WORKER.

THE WORLD OF KERAMICS.

Originality of Design the Chief Essential
To Success in Art Work—Pertinent
Suggestions to Native Clay-
workers—Echoes of the
Great Fair.

FIRST PAPER.

ONE of the myths of the Ceramic Art World is that of the good and great German Prince Consort, wandering, as was his wont to do, among the craftsmen of the Old World. Passing one noon hour alone and unknown through a drain tile works in Surrey, his attention was caught in passing to a mere child drawing on the wet clay with a rusty nail. The child was assisted, and her talents, combined with that of other artists, and the business energy and broad views of her former employers, made a new product for national industry and England's artistic reputation.

On this new soil, we have neither fairy Prince Consorts nor technical schools worthy of the name—National Technical Schools, none.

The protection which by an All Wise Providence, was to take the place of both, to individual American children—talent and industry—bids fair in the hands of the All Wise in Washington, to be gradually withdrawn also. Our wealthy and kind hearted nouveaux riches, endow museums, picture galleries, curators and kindred charities.

The galleries are filled with foreign

pictures, and the charitable institutions with foreign men.

Technical schools are not thought of, the museum idea taking its place, with not unfrequently a cow-puncher or a saloon keeper with a political pull, being on the committee of selection of technical contents of a museum, or the literature of a Public Library.

The position of the clayworker—the individual in the American brickyard and its crude potteries, might not be envied by those who, like the Egyptians of old, are his task masters; but as that peculiar people retained their self respect then, so have the American workmen and women to-day, and to those of them who are growing old in the service, for their children, in this matter of a National Technical Ceramic School, they look for their Moses—"the Press," to help and lead them.

That among the Press to-day exists the man who can do it, need only be mentioned the World's Fair Organization. When they needed a man to organize and place before the world the enormous mineral and clay deposits of this and other nations, a newspaper man from Denver, was selected. No department of the great show was better arranged and conducted for the accommodation of exhibits and visitors. The principal feature of the American exhibit therein, in the eyes of the foreigners, being not the monstrous wealth, as shown in the Mines and Mining Building, but still more marvelous resources undeveloped, or only used and applied to the necessities of life, and those which pay the producer the least.

A CLAY HOLE—AN OBJECT LESSON.

I cannot better illustrate this than by an incident occurring at the place, where this is written. Many years ago a man came over here from Europe to erect a kiln. Among the things he asked for was a quantity of half baked bricks, some sun dried ones, and some of the clay in its natural state. He was greatly interested in the natural clay, the writer noticed, and when the kiln became through careful manipulation of fire, one brick, and the articles were brought him from the studio, made of the same clay to fire in it, his curiosity and astonishment overcame him, and he wanted to be taken to the clay bed. The next day he saw the immense hole, where the teams had ploughed out the material, and asked, "What had been done with the clay?" Informed that it had been made into bricks, and that

millions more would be made of it the coming summer, the awful waste horrified him, and in good South German he declared, in all sober earnestness, "That those who did it, would never get to Paradise!"

He may be right, but other things had been, and may yet be made, besides bricks, of that clay. The kiln has stood over twelve years and many a medal has it brought home, and not a crack in it yet.

UNDEVELOPED WEALTH.

Among the glories of the World's Fair was the Mineral Exhibit of Utah, and many happy hours I have passed with its ever courteous, gentlemanly superintendent, Don Maguire. If the superintendents had but all shown the intelligence and interest in the resources of their States that he did in the Territory of Utah. But here again clay, outside of bricks, seemed to be little considered, and yet all the raw materials, including coal, necessary for the successful manufacture of what is generally known in commerce as "French China," were shown in that exhibit, as existing in almost unlimited quantities in Utah, in locations accessible by railroads, near together, and utterly unused for any purpose to date. No syndicates need apply, the titles are in good Mormon hands. Allied to this fact was their location on an elevated plateau, midway between the headwaters of the Great Lakes and the Pacific Coast, a down grade east or west for the Utah manufacturers of the future, and an up grade all the way—both ways—for his competitor, producing wares by cheap labor, whether Chinese or European, and landing them from the water at San Francisco or Chicago.

Probably no exhibit was so closely examined by Europeans. The Japanese technical men visiting and taking notes. One German Doctor Professor remarking keenly, "You may change the Tariff Laws, but when the capital of your country develops the ceramic clays of Utah, that railroad grade will remain unchanged—they cannot alter that."

Mexico taxes ware by weight, which gives the foreigner a good chance on anything with which he mixes brains, but they have not quite reached that point in Washington yet—still they may. And this brings me to another brickyard story, which had its beginning over twelve years ago in Milwaukee, and ended in the World's Fair in Chicago, with International Honors.

One thing meets the tourist everywhere in Europe, whether it is in the far North—"P. Ipsens Widow"—or in that city to which all roads lead—Rome! In Devonshire watering places, or German Spas, the local terra cotta is always found in the dealers' windows, and each unlike that of any other locality or nationality.

No American Globetrotter counts for anything but a dude, if he has not in his collection Toros! Toros! Dos Toros arrogantes, and a bull fighter or two, hand modeled from life, in Spanish terra cotta, and if he sets claim to be a mountain climber, he is sure to have some of those marvelous "bits," that only Mexican potters' daughters make

Edgerton Ceramic Artists of that State, did not exhibit; having had an epidemic of "Revival" in their locality, and gone into iconoclastic ideas—otherwise some well modeled reproductions of the Venus of Milo, Eve and the apple, etc., destroyed in the passing craze, might have been shown in the beautiful clay of that section—if not objected to by Senator Vilas, who lives in that vicinity.

In the Ethnological Building, in the Mexican section, all remember, the deaf and dumb potter from Guadalahara, whose work at Paris in their last Exposition, received so much attention. The wonderful fingers modeling the delicate clay, telling the story of good and evil

never hope to enter, anymore than a New Englander raised on beans, can paint a Basque Peasant, if he bunks with him for a lifetime.

I remember seeing one of these Indian Artists in Mexico, model a duck, and that was about all he knew, but he did know a duck in every position—in the air or the water; his ducks just rising from the water, moved differently than a vulture rising, gorged with carrion. When the market for clay ducks was dull, my potter friend shot the real ones for a living, and took them to the market on his donkey. One day he met the Austrian.

Now, I am not going to say anything against imported art or artists. There



AMERICAN SALT GLAZED POTTERY.

for those who can climb where the Donkeys cannot,—and get there! The deft fingers of the far East know well the value of their terra cottas; this ornament without color other than its own.

NATURAL VS. ADOPTED ART.

In America we make it in a mold, like bricks, and to be certain its quite like the other fellow's, we color the clay and see who can sell it the cheapest, and give the biggest share of the profits to Pooh Bah, the architect.

There was some glorious terra cotta shown in the World's Fair of Wisconsin clay, namely, the two arches forming the entrances of their State Exhibit in the Mines and Mining Building. The

habits, in the native figures of his own country, or catching your likeness, if you would grant him a few moments. Those soft, deep, thoughtful eyes of his, hungry for sympathy and acquaintance, full of keen insight into character—an artist, a potter and a Mexican, clear to the marrow. Yet, nothing but a poor "Slave," as I heard a Spaniard call him, and there are hundreds like him in Mexico, making art objects, without the assistance of coloring matter, with nothing in the way of machinery but their fingers and a few bits of sticks. Natives every one of them—not Gringos, loving that which is their own, and not aping French or Japanese art, into whose most holy of holies they can

is good to be gotten out of every thing, even Monsieur Satan, if you don't preach at him; but his influence may be questioned.

Now, the Austrian was a great man in his own country, and he believed utterly in Meissen and Rosetten-Decor. There was an elegant exhibit of this sort of thing in the World's Fair—rosettes everywhere. A friend in the import trade said: "London has taken to it, and New York must swallow it this winter." It stuck in Chicago's throat last summer, would not go down the Western American throat at all, at all!

But to my Mexican—an *lieu de moutons*, he met the Vienna China Decorator, who had "decorated" on the Pope's

dinner service, and my Mexican being a good Catholic—that settled it! Oblong covered sugar boxes, which could have been made at half the price by machinery, took the place of all the pretty, shallow, quaint trinkets the native modeled by hand to hold dulces. These were made glorious and bristly with rosettes. Matadores had rosettes stuck on their elbows, and pumps alike. If rosettes were correct, stick them on.

I obtained one piece from him, and have it yet. It illustrates perfectly to my friends what the effect of foreign training on inherent native talent is. It is a duck as he saw and knew it in nature, but he has conventionalized the wings, until by no possibility could they lift the bird into the air or support it after it got there. Much resembling those on those little sugar Amoretten, on German wedding cakes you see in the pastry cook's windows, or the colored plates issued by a technical journal in New York for the lady China decorator, to still further distort and which sometimes so often, through a kindly Providence, gets "lost in the mail." But the crowning decoration of the object is a rosette on each wing and on the duck's tail.

It is not necessary to go outside this country for anything—material or design, but the eyes must be taught to see close at home. You may think your poor, lonely individual effort, if original, if American, will not be appreciated. You are mistaken—the public will accept it and buy it at sight—if you will sell it. But, it must not be made to sell; there is the secret—you must put your soul, your life into it. The buyers come afterwards in the long bazaar, and quickly enough, if you are honest, and in earnest. I speak to the workmen in the brickyards and their children in their little homes now, not the owners.

A BRICKYARD STORY.

You can all get a bit of clay, a rusty nail and a few bits of sticks. And now, let me tell you what others have done—brickmakers' daughters, with no more plant than you have at your disposal, and no more wealth to procure it with, with no machinery, pug mills, or tools, but the family rolling pin and coffee mill to grind the clay, and the impress of the dishrag in the tile yet—when it took the World's Fair medal in '93. You, too, can be refused admission for your product, as this was—in Fine Art, Liberal Art, Manufacturers and Mining Departments, American Clay, modeled

by an American woman, had no place in any of them. But, don't give it up. If your clay is good, and you know it—stick to it.

Neither does your product have a name, to door keeper or art teacher, until you make one for it. You, too, have not the open sesame of Sevres, or Royal Worcester, Meissen or Berlin; they, too, had to begin and neither copies the other, then or now remember. You have no kiln. Well, build over the arch of the brick kiln—the boss will let you, I know—break it open when the kiln is fired, take out your failure and be laughed at, for the yard's fool—then think why you failed—at night and noon hour, all alone—say nothing—but at it again!

We cannot all succeed, but we can all try, and are surely the better for trying, if nothing comes of it—and if it does? And you feel and know you have something no other has yet shown, or done in this World; something original—good or bad, you don't know yet which. Then, for you also, the fairy god-mother will be born, even in utilitarian America. For you, also, some Mrs. Potter Palmer will say: "Come into my house, there is room for you, and those who follow you, among those who have made their names celebrated and have accomplished their work throughout the world. To you, also, if you are worthy, shall the award be made, to the mind and man who creates the work. All honor to the employer, the banker and the colormaker, but the award to the discoverer, the artist and inventor!"

Your State with its influence and wealth will come to your aid and furnish you space to exhibit, "Als Gast," as the play bills put it, and their honored guest at that, in the place of honor, over the heads of doorkeepers.

The "Salt glaze" ware from Milwaukee, illustrated in this article, has been through this fire and stood the test. So can you if you will but try. But, remember, one of these illustrated pieces, "The Luck Jug" with the four-leaved clover, all covered over with the Romany texts, and a translation of "Lo, the first hero in a tribe of thieves! etc," cut in it, was not the work of a day or a passing craze; that was modeled in 1881 in the pottery of Louis Pierron, in Milwaukee, and remained as green ware ever since, forgotten or biding its time till '93, then scratched and fired twelve years afterwards. That is made of good

American stoneware, though nothing had been made of it before but butter crocks and demijohns, studenten beer mugs and insulators, until '93. Now it is in the Ceramic collections of a dozen Museums—Madrid, Copenhagen and Memorial Hall, Philadelphia, etc.

The Juries of Awards come later, and good old Uncle Sam, with his "Medailles Morales."

The center Punch Bowl was ordered by the Spaniards of the Spaniards, to present to the Spanish Admiral and his Caravels on their arrival in Chicago, at the World's Fair, in 1893, and the "Viking Cup" in centre, was made for the Sancto de Claro Society, to present to the Viking Ship on its arrival at the same function. This piece is, to a certain extent, a reproduction of the Rolla Cup of Normandy, and as far as modern rites and pagan ceremonies will permit in this respect, like "The Luck Jug" also. The old loving cup of the Viking's was made to be drank out of by all members of the order, before starting on a raid, or a successful return from one, and then broken. At the meeting in Chicago in '93, to fulfill the tradition of the old ones, this was partially carried out with the one illustrated.

With them in the old time it was in their pagan belief—the communion cup: "Drink this in remembrance of me." All drank of it. Skald to God Exile! Skald to the Pagan! Discoverer of America! Skald! The Slave, or the stranger who drank from it, became a brother, and became brave—one of the people—with the vow of poverty, and "All for one, one for all" upon him, as the Mystic Rhyme runs on it.

Slaves cannot drink from me—

If once their lips receive my wine
That moment, they are free!

They drink God's bounty—
And their shackles fall!

893—1893.

In my next, I will illustrate to you some of the earlier, cruder pieces of brickyard clay shown and hand modeled, which "Binns" of the Royal Worcester noticed publicly, as being "Original, American and good color, and clay of the soil." Also some of the purely American designs, used by American Ceramic artists, without foreign training, which were medalled at the Great Fair.

RICHARD G. FRACKELTON.

Tha' merchant to himself denies
The profits he might realize,
If in a policy unwise,
He fails to freely advertise.

—Niles (O.) Daily News

CONVENTION BRICK DUST.

Second Sifting.

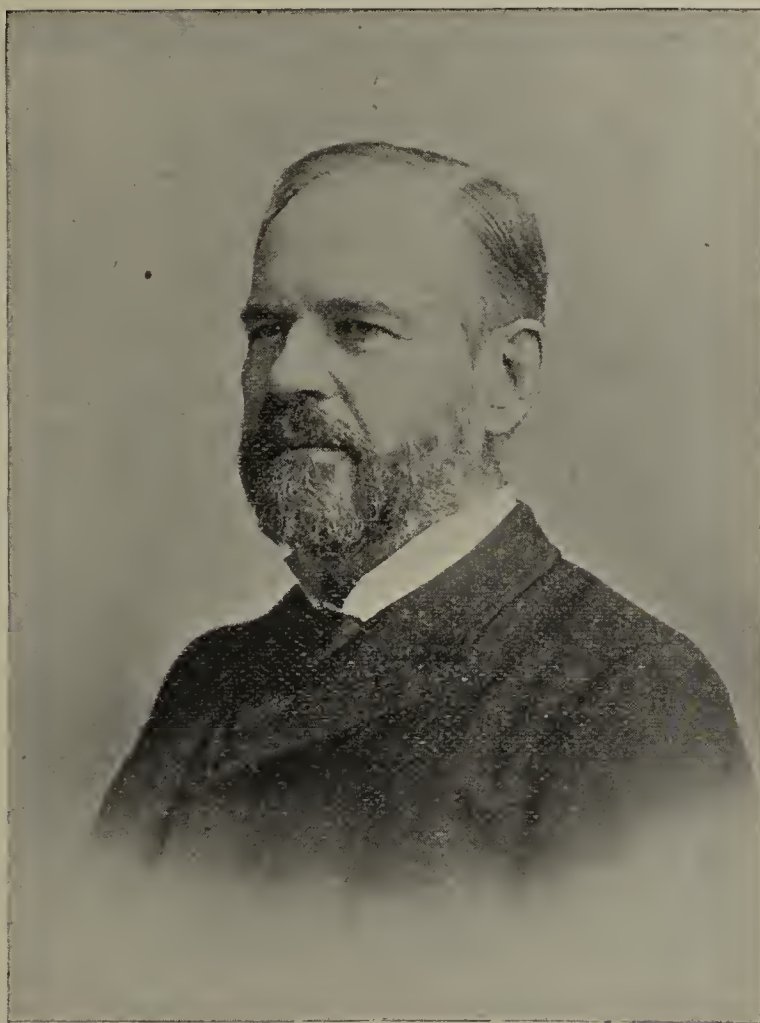
AS THE "dust" settles and the atmosphere clears, the Convention Number of the CLAY-WORKER looms up in the foreground, and deserves honorable mention. It covers the ground, so far as the proceedings of the Convention are concerned, and represents within its covers a vast amount of labor and energy expended to get out such a complete volume in a short space of time. There is no doubt, however, that this number is appreciated by the subscribers, especially those who do not attend the Convention. One of the latter remarked to the writer recently that the late Convention Number was the most interesting of the year to him, and one which he will carefully preserve for future reference. Hundreds like him, will do the same. This fact makes the Convention Number especially valuable as an advertising medium.

In addition to this, there is the picture gallery. It is almost equal to the family album, with its array of familiar faces, as the procession goes by, headed by Ex-President Ittner, and Pres-Alsip, who precede the manly countenance of Vice President McGraw—the largest and brainiest "six year old" on record. Courage sits securely enthroned his "unterrified brow." There is good presidential timber, and he is no wooden man either. Following him, we see the handsome face of our genial and gallant Vice President, Blaffer—a typical young Southerner, who illustrates the energy and vigor of the New South, and now holds the same office his honored father, whose absence was regretted by his many warm friends, held in our Association a few years ago.

Next appears the familiar face of Secretary Randall, dressed in faultless style. A badge of the Loyal (Brickmakers') Legion in his lapel, a programme and some cold facts bulging his breast pocket; in the foreground a four-in-hand, ornamented with two palm leaf fans in bass-relief, a break down collar, and a diamond pin, surmount these. A shapely head and classic features

completes the picture. Randall always gets the red ribbon for "general purposes." He is easily the busiest man of the lot, yet is never taken unawares, always alert, and during the sessions, like the detectives, "he never sleeps." The writer never retired until the next day, and always left the untiring Secretary deeply absorbed in a "button hole" contest. A Brickmakers' Convention without Randall! Just think of it! As well try to get on without my excellent friends Purington and Eudaly.

Here we turn another leaf and behold the serene countenance of our past and



D. G. HARRIMAN, SEC'Y AND TREAS. WYANDANCE BRICK AND TERRA COTTA CO., NEW YORK, N. Y.

present Treasurer, Sibley—a faithful officer, and courteous gentleman. No member is held in higher esteem by his acquaintances. Here comes Don. McDonald, of Louisville, a fine specimen of manhood physically and mentally; a well equipped and well balanced mind, combining and blending practical and scientific ideas. This, of course, means success in life. As to his "Brickyard Ethics," in theory he is severe and secretive; in practice, kindly and open hearted. If any poor, down-trodden brickmaker is in trouble and is within reach of friend McDonald, don't hesitate to ask him for light. He is able and

willing to give. The writer knows whereof he speaks. Donald is all right.

Another leaf and another fine specimen, who received honorable mention in a preceding shower of "dust." Frank, you are big enough to lookout for yourself, and when sandwiched between McDonald and McHose, you must keep up with the procession. Three of a kind, all "Micks." Friend McHose's paper—"The Brickmaker," was one of the best. It was sensible, full of practical facts, and if well considered by impractical brickmakers, they will avoid many costly mistakes. Friend McHose, we need many members like you, come next year.

Mr. Engle's article on "Glazed Bricks" was highly appreciated and will prove valuable to the Association. This is a subject that should receive more attention from American brickmakers, and Mr. Engle's paper will do much toward drawing attention to this subject.

Another leaf and the sober visage of friend Snell appears. If Bro. Gates is the "Mark Twain" of our Convention, then Bro. Snell is the "Bill. Nye." Now, it is not to be supposed for a moment that friend Snell resembles William in face and feature. His droll wit bubbles up in spite of himself, and masked behind his sedate countenance, gives it double force. He is not a green brick, neither is he a dry brick, except at times, perhaps. Yet he is "a brick."

It will require another barrow of dust to finish just the picture gallery, which I hope to have sifted for next number.

CHARTER MEMBER.

IN OTHER WORDS, DON'T BE AFRAID.

IN learning to swim, if you have confidence in yourself and your powers, and strike out strongly, you will succeed. If, on the other hand, you make a few wild movements and then stop, you will sink. So it is in advertising. It's the man who knows what he is going to do and does it that gets on in the advertising world.—*The National Advertiser*.

Written for the CLAY-WORKER.

PROPERTY RIGHTS.

No. 2.

JUDGMENTS OF DIFFERENT STATES.

BUT little disposition was shown, in the first instance, by the courts of the different states, to carry into effect either the first section of the fourth article of the Constitution, by which it is provided, that full faith and credit shall be given in each state to the public acts, records and judicial proceedings of every other state, or to the act of Congress of May 26, 1796, which was passed in pursuance of the power given by the final clause of that section. In cases where the question arose at a comparatively early period in New York and Massachusetts, judgments in other states were put substantially on the same footing as foreign judgments generally; and it was held, that although they were to be received as prima facie evidence on behalf of the party in whose favor they were rendered, they were notwithstanding, open to examination, and might be impeached collaterally, on any of the grounds which would have been available when the matter was first presented for judicial determination.

In support of this construction, it was argued, that the design of the Constitution was, the better authentication and proof of the records and judicial proceedings of other states, but not to bestow upon them, when proved, any greater or more binding efficacy, than they would have possessed under the general principles of jurisprudence, had no express provision been made on the subject. This court of decision, which was, no doubt, the results of the habit of thought and feeling before the formation of our national government, rendered the constitutional provision above cited a mere nullity, and gave to the judicial proceedings of the various states, which which had become, for all common purposes, one nation, no greater weight, or dignity, than is attached by the comity of nations, to those of foreign countries.

A sounder view of this topic of constitutional law, had been taken at an early period, in the Circuit Court of the United States for the District of Pennsylvania, that no defence was admissible to an action on a judgment of another state, which would not have been avail-

able, had the suit been brought in the state where the judgment was rendered. and the view thus taken, was established as the law of this country, although not until an interval of twenty years; which was subsequently confirmed, and has been followed throughout the whole subsequent course of decision. The general principle, that the judgments of each state are entitled to the same faith and credit in every other, which they have in that where they originate, is universally admitted; but it is generally held not to operate, unless the court, by which the judgment was rendered, had jurisdiction over the parties, as well as the cause of action.

This view was taken in a case in Massachusetts, and placed this great constitutional question on a foundation, which has served as the basis of subsequent judicial decision in most of the states of the Union. The question presented was, whether a judgment rendered in New Hampshire against a citizen of Massachusetts, who had entered an appearance and taken defence in the action, was conclusive in a suit brought on the judgment in the latter state. It was contended on behalf of the defendant, that if the constitution was construed as meaning that the judgments of the several states, should have the same conclusive operation elsewhere, as in the territory where they were rendered, the effect would necessarily be, that a judgment given against a defendant, who had not received notice of the suit, would be conclusive of his right, not only in the place in which the proceedings took place, but throughout the rest of the Union.

But the court obviated or escaped from this difficulty, by holding that every judgment depends, for force and vitality, on the competency and authority of the tribunal which pronounces it, and may consequently, be assailed, by showing a want or failure of jurisdiction over the cause or the parties, even when absolutely conclusive in all other particulars. And the manifest design of the Constitution was said to be, to give greater certainty and effect to valid judgments, and not to enable the courts of one state to exercise an usurped or illegal authority over the citizens of other parts of the Union, who have not been regularly served with process, or in any way made amenable to the jurisdiction of the tribunal which assumes to pass sentence against them. In order to entitle a judgment rendered

in any court of the United States, to the full faith and credit mentioned in the Constitution, the court must have had jurisdiction not only of the cause but of the parties.

To illustrate this position, a debtor living in Massachusetts may have goods, effects, or credits, in New Hampshire, where the creditor lives. The creditor may lawfully attach them, pursuant to the laws of that state, in the hands of the bailiff, factor, trustee, or garnishee of his debtor; and on recovering judgment, those goods, effects and credits, may lawfully be applied to satisfy the judgment; and the bailiff, factor, trustee, or garnishee, if sued in this state, for those goods, effects, or credits, shall, in our courts, be protected by that judgment, the court of New Hampshire having jurisdiction of the cause, for the purpose of rendering that judgment; and the bailiff, factor, trustee, or garnishee, producing it, not to obtain execution of it here, but for his own justification. If however, those goods, effects, and credits are insufficient to satisfy the judgment, and the creditor should sue an action on that judgment in this state, to obtain satisfaction, he must fail, because the defendant was not personally amenable to the jurisdiction of the court rendering the judgment. And if the defendant after the service of the process of the foreign attachment, should either in person have gone into the state of New Hampshire, or constituted an attorney to defend the suit, so as to protect his goods, effects, or credits, from the effect of the attachment, he would not thereby have given the court jurisdiction, since this jurisdiction must result from the service of the foreign attachment. It would be unreasonable to oblige any man living in one state, and having effects in another state, to make himself amenable to the courts of the last state, that he might defend his property there attached.

[To be Continued.]

How To Deal With Common Natures.

Tender-handed stroke a nettle,
And it stings you for your pains;
Grasp it like a man of mettle,
And it soft as silk remains.

'Tis the same with common natures:
Use them kindly, they rebel;
But be rough as nutmeg graters,
And the rogues obey you well.

—Aaron Hill.

FIFTY YEARS A BRICKMAKER.

HOW few there are engaged in the manufacture of brick at the present time who have not followed some other occupation during part of their life.

As the reader looks at the photo of Mr. Theodore Frederick, he will see the counter presentiment of one, who, as a boy, tended machine and edged brick, when patent edgers were unknown, but straddled the row and turned up each brick by hand. He has followed the trade from boyhood up to the present time, and life's milestones for him have marked off more than three score. When the whistle blows to go to work at 4:30 A. M., he is on the yard; when the sun drops behind the western hills and the foreman calls out, "Knock off," with but rare exception, he is still there.

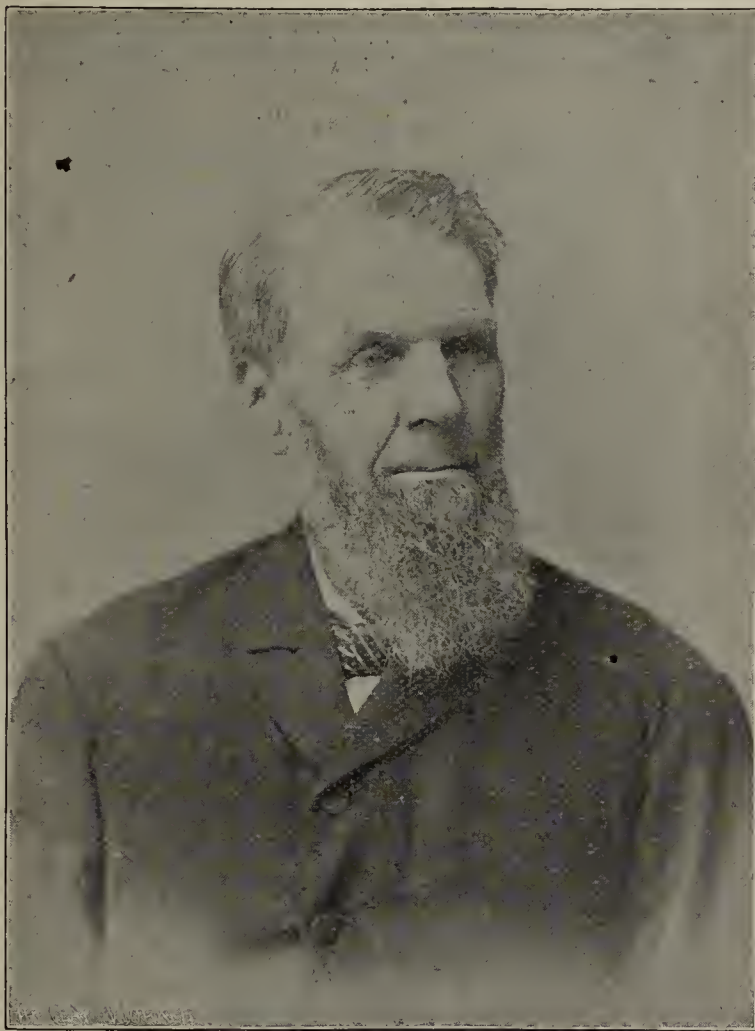
His pride has always been to make the "T. F." brand of brick as good as they could be made. In the early part of the fifties, he began to make brick on his own account, putting up a yard somewhat removed from Tide Water in the rear of the town of Haverstraw. The product was good for that period. By reason of the location of the yard, the masons named his brick "Meadow Larks." Mr. Fredericks was young then, and was much offended that his brick should receive such a name. Many times since then has he laughed at the foolishness of his youth. Having to draw his product almost half a mile to the river for shipment increased the cost, as compared with that of his competitors, so he gave up the yard and leased one on Tide Water.

He did not remain long on this yard, but moved to "Mud Hole," four miles above Newburgh, N. Y., remaining there some years, after which he returned to Haverstraw, leasing a yard. At the expiration of his lease he, with Mr. John W. Gillies, purchased the property near the town of Haverstraw, on which he now makes brick.

If some of the so-called, successful brickmakers in this country had been called upon to overcome the difficulties that Mr. Fredericks has during his business career, they would not now be heard of. Having a thorough and prac-

tical knowledge of the trade, and strong, willing hands to take hold as the occasion required, he has succeeded where many that started when he did, and since, have failed. He has passed through times when money was made in the business as well as times like the present. With a will to succeed, and honesty not to be doubted, he is now one of the most successful brickmakers in his section.

In the long years that he has been in the business, his vacations have been but few. The recreation he most enjoys is driving out behind a good team



THEODORE FREDERICKS, BRICK MFR., HAVERSTRAW, N. Y.

of horses, so that he takes nobody's dust. In the winter, when sleighing is good. "Dore" is always ready for a brush with all who come along.

WHAT IS REQUIRED TO RECOVER FOR FALSE REPRESENTATIONS.

IT is not every false representation or act of deceit which gives a right of action. In order for a person to recover damages for false representations, say in regard to goods or property sold to him, he must, as the Supreme Court of Nebraska says, prove (1) that the representation made was false; (2) that he believed it to be true; (3) that he relied and acted upon it, (4) and was thereby injured.

Written for the CLAY-WORKER

HINTS ON BRICKMAKING.

No. 86.

BY R. BRICK.

AN ERA IN CLAYWORKING.

FOR what purpose are we organized as a National Association of Brick Manufacturers? Let us discuss this question of a little while. The object of our Association is, first, to promote the interests of its members by interchange of thoughts, of theory and of practical knowledge, that we may not be compelled to toil over the long and weary path of the experimental "stage."

It is true that many have trodden this crooked and stony route, some have floundered hopelessly in the "soft mud," until the winds of adversity have gradually changed the road bed to "stiff clay." Here their tired feet sunk not so deep, but the wheels required double the force to drive them through it, and the poor, weary brickmaker looked forward to that happy time when the scorching sunlight of experience would plant his feet firmly on the "dry clay," when his troubles would be at an end, and with such smooth, firm roadway he would soon be able to use a Columbian (bicycle) that would carry him pleasantly along to the goal that all good brickmakers are destined to reach.

Others have blistered their feet on "hot floors," and in their way passed through "steaming" or "smoky" tunnels, where the wheels would leave the track, the vehicle break out into flames and the

brickmaker flee precipitately to an outside "sunshine yard" for safety, until one day he is carried out in a boat a wetter and wiser man.

Another misguided brother struggles heroically on the "up draft" road, concludes it is an up hill business, and sighs for the summit, that he may change and slide down the hill of prosperity on a "down draft." He picks himself up at the bottom and wonders "where he is at," and in his rage and disappointment, he jumps "up and down," but finds in spite of his gymnastics, his troubles are "continuous," as he struggles wearily onward.

His hopes are "crushed," his ambitions

"pulverized" and his theories "disintegrated." He is then eligible to membership in the National Brick Manufacturers' Association, and has at last struck the "Royal road to success."

From this point onward, he is not alone, but is accompanied by trusty friends who are familiar with the route and will direct his footsteps so as to avoid the pitfalls, the rocky steeps and the miry clay. This is one of the objects of our Association.

There are many others. It breaks down the Chinese walls that have for centuries hidden from view the practical facts of our calling. The light of practical experience now shines bright on the brickmaker's road to success. Instead of groping blindly, he can now walk with confidence, if he will but join the progressive band and travel in their smooth, well lighted roadway, which is paved with solid, practical "bricks." In addition to the practical benefits derived, there is the spice of pleasant association. Our several routes intersect once a year, and for a few short days we mingle. There are warm greetings, "feasts of reason and flow of soul." Our hearts are warmed and hope strengthened, and we part for another year, with "God Speed" from our friends, filled with fresh courage and rich stores of added knowledge gathered from the fertile fields of practical work.

These are some of the fruits of our annual gatherings. Should we be content with what we have accomplished—simply to help ourselves? No, we must do something still nobler than this. We have simply laid the foundation bricks upon which must arise a monument worthy of the representatives of the most ancient of industries, as well as the most important and beneficial to the human race.

To accomplish this, we must not confine our deliberations and actions wholly to benefit ourselves and the present generation, but must keep in view the welfare of our successors and the happiness and elevation of generations yet to come.

In our last meeting was beheld the dawn of a new era in brickmaking. We have opened the gates of the Chinese wall and bid science come in and shed her white light among the dingy wheels, the steaming dryers and smoking kilns, to drive away forever blind prejudice, and drive from their dark corners "trade secrets," that by their hiding have blocked the wheels of progress for thirty centuries.

This was done when our Association unanimously adopted resolutions endorsing the idea of a Training School for Clayworkers, and ordering that one or more of the colleges of this country be requested to establish a department of Ceramics, where clayworkers can be instructed in the scientific principles governing the formation and composition of clays and in a knowledge of glazes as well.

The writer has for several years past advocated this action through the columns of the CLAY-WORKER, and thereby drawn toward him some shafts of wit and ridicule, but happily no arguments have been hurled this way. This action of the National Brick Manufacturers' Association vindicates his position, and he is glad to turn it over to the bright young men who have made such an auspicious beginning.

The N. B. M. A. has done many good things, but none that will be more far reaching in its influence than the establishing of this School of Ceramics, or Training School for Clayworkers. This is a noble unselfish work. It is for the good of the next generation of clayworkers, and, in fact, all coming generations, rather than for our own immediate benefit.

The elevation of our calling and the placing of future clayworkers on a higher and more intelligent plane is worthy of our great Association.

Written for the CLAY-WORKER.

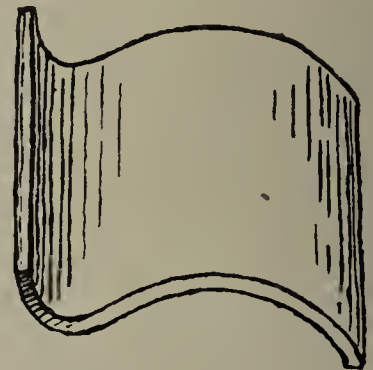
UTILITY OF BURNED CLAY.

Second Paper.

EARLY AMERICAN ROOFING TILES.

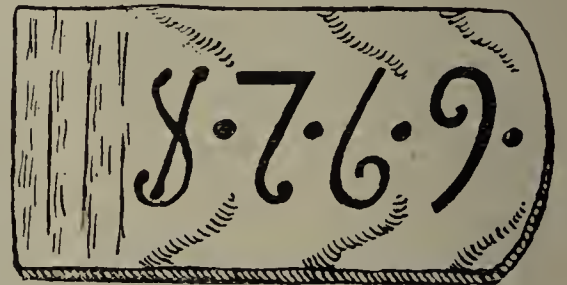
It has long been a disputed question whether roofing tiles were made in the United States previous to the opening of the present century. It was known that tiles were used in this country for building purposes, to some extent, a hundred years and more ago, but the origin of these productions has been a matter of conjecture. The general belief has been that they were made in England, and some, possibly, in Holland, and were imported into this country by the early settlers. There is no doubt that this supposition is, in a measure true, that terra cotta tiles were brought over with building bricks which were used in certain sections of the country by the more prosperous people. I have long suspected however that many of these which were claimed to be of foreign manufacture, were in

reality made in this country, because it has been ascertained that a large proportion of the bricks which tradition has assigned to English makers were produced in America. It is recorded that building bricks were made in Virginia as early as 1612, and some thirty-five years later roofing tiles are said to have been manufactured in that colony and in New England.



PAN TILE, XVII CENTURY—BURLINGTON ISLAND.

Prof. Edward S. Morse of Salem, Mass., has made a thorough study of the ancient roofing tiles of the world and the results of his extensive observations in many countries, were recently published as a series of papers in the *American Architect and Building News*. He divides these into three classes:



OLD ROOFING TILE—MADE IN PENNSYLVANIA.

1. The Normal or Asiatic (curled).
2. The Pan or Belgic (scrolled).
3. Flat or Germanic (shingle-shaped).

My own observations have led to the discovery that throughout the eastern counties of Pennsylvania flat tiles were



FLAT ROOFING TILE—XVIII CENTURY—PENNSYLVANIA.

utilized in considerable quantities from the early part of the last century, mainly for roofing out-houses and smith-shops, and in rare instances, for dwellings. It does not seem probable that the inhabitants of this section would have imported these tiles, at considerable expense, for such purposes,

and transported them into the interior, at long distances from any seaport. This portion of Pennsylvania was largely settled by Germans who used only one form of tile for roofing, the plain, flat variety, such as prevailed in Germany and central Europe. Further investigations have developed the fact that a number of German tile-makers were pursuing their calling in this section from about 1730, or earlier, until the middle of the present century, and it is reasonably certain that they produced the tiles which were utilized in the neighboring country districts. Hon. Samuel W. Pennypacker of Philadelphia states, in his "Pennypacker Reunion" (1877), that there is a tradition

with an average thickness of something over half an inch. Near the upper margin of the under side was a knob for attachment to the rafter. The upper surface was shallowly guttered to permit the water to flow off and these grooves, which were usually made by the finger of the workman while the clay was in a plastic state, varied slightly in examples made at different tile-yards. Some specimens which I have seen were evidently formed in grooved moulds which insured uniformity in size and marking. Dated examples are extremely rare and consequently the exact period of their manufacture is a matter of uncertainty. Their approximate age is only indicated by the fami-

remains left by the early Spaniards, but these may have been brought from Spain, where such tiles were in universal use. It is possible that the old Jesuits may have manufactured some of these on the spot, but of this we possess no evidence.

In New York and New Jersey the Dutch used, to some extent, the pan or scrolled tiles which were brought from Holland.

Dr. Charles C. Abbott of Trenton, N. J., has recently discovered the remains of an old Dutch house on an island in the Delaware river near Burlington, which was erected about 1668, and destroyed by the Indians some two years later. From the debris of the old building he has unearthed numerous roofing tiles of this form, together with red and yellow bricks of two sizes, which may have been made in that neighborhood. The fact that these examples are exceedingly crude and much inferior to those found on old buildings in Holland lends greater probability to this supposition. If tiles were brought from Holland in the seventeenth century it is likely that the better grades would have been ordered. That the old Dutchman of that period followed the potter's art in America seems to be indicated by the presence of rude tobacco-pipes of red clay, which have also been found on the same site, associated with finer white clay pipes from Gouda.

The Pennsylvania Germans continued the manufacture of the flat tiles until the middle of the present century. The later productions, however, were of a much better quality and somewhat smaller in size. The clay used was of a finer texture and of a buff color instead of red, and being perfectly plain and smooth on the upper surface, very much thinner and lighter in weight, they were better adapted for roof-coverings and presented a more ornamental appearance when laid.

Modern roofing tiles are manufactured extensively in the United States to-day and are coming into greater favor year by year. Being superior to shingles, slate or metal for roofing purposes, and more decorative in effect, they will continue to grow in popular esteem. Moreover they are non-conductors of heat and electricity, are fire-proof and impervious to moisture. The lighter and more practical forms of terra cotta tiles now in use in this country are infinitely superior to the clumsy and heavy varieties which have been so extensively used



PHOTO OF A TILE MADE IN BUCKS COUNTY, PA., ABOUT 1730.

among the different branches of the family that one of the early ancestors was a tilemaker "and from his occupation received the name which in Dutch is Pannenbakker," a baker of tiles. This Heinrich Pannebacker, who came to America prior to 1702, was the first who bore the name in Pennsylvania. He was born in 1674, coming from the Rhine, near the borders of Holland.

In Montgomery, Bucks, Lancaster, Northampton and Chester countries, Pennsylvania, the flat tile was common, and varied but slightly in details. In shape it was a parallelogram slightly rounded at the lower end, measuring thirteen to fourteen inches in length by six and a half to seven inches in width,

ly traditions of the descendants of the makers. A single specimen, however, has come to light bearing the date 1769; which was traced by the finger of the workman in large figures in the wet clay. This interesting tile was one of a large number taken from the roof of an old smithy in Lancaster county, Pennsylvania.

The method of manufacturing such tiles was precisely the same as that still employed at the present time in the country districts of Germany, as described by Prof. Morse, and the art was brought into this country by the first German settlers.

In California the normal or simple curled tile has been found among the

abroad, and the time seems not far distant when they will almost entirely supersede all other materials for roofing purposes. EDWIN ATLEE BARBER.

Written for the CLAY-WORKER.

PULVERIZED FUEL.

D. W. STOOKEY.

IT HAS been said by an eminent authority that, "It is quite a settled fact that the combustion of solid fuel in ordinary boiler furnaces will not generate as much steam as will the gas made from the same amount of fuel when it is mixed properly with air and fed to the same furnace."

This certainly shows that the furnaces and methods of firing are very imperfect and wasteful since the heat that might be produced from the combustion of the coke, tar and other waste parts of the coal is lost.

As shown in the analysis of the flame as given below, a great part of the loss is due to the improper supply of air or the improper mixing of the air with the combustible gases. A part of the volatile ingredients of the coal escape without being burned, and the solid carbon, which is only partially supplied with air, passes off as carbon monoxide.

FLAME ANALYZED.

It is a well known and oft' repeated fact that complete combustion is only possible when the supporter of combustion, which is usually air, is intimately mixed with the fuel. This condition is impossible with the use of large lumps of fuel in a hot fire. When the lumps become heated the volatile parts are given off as gas and pass rapidly, with the draft in the direction of the chimney. It is impossible to properly mix streams of gas and air moving at high velocities in the same direction. The gas is given off from the whole surface of the lumps of fuel and passes in the line of draft in a column, the base of which is as large as the lumps from which it emanates.

This principle is nicely illustrated in the flame of a candle. This flame consists of three distinct parts. (1), the dark central zone or supply of unburnt gas surrounding the wick. (2), the luminous zone or area of incomplete combustion, and (3), the non-luminous zone or area of complete combustion. The second zone (2) owes its luminosity to the fact that the incomplete combustion separates out solid particles of carbon which become incandescient.

If one end of a piece of small bent glass tubing be inserted into the central zone (1), the unburnt gas will pass through the tube and may be ignited at the other end, as shown in the illustration.

If the end of a cold wire be introduced into the central zone and held there for a short time and then quickly removed it will be blackened by the unburnt carbon. If it now be presented to the outer zone for a short time, it will be heated to redness, thus verifying the theoretical statements with reference to the conditions of the central and outer zones.

The smoking at the top of the flame from a candle is an indication of imperfect combustion, due to an insufficient supply of air. Improved gas burners give a thin, broad flame that receives air from both sides.

The complete combustion of the gas at the surface of the flame of a candle or large lump of fuel produces carbonic acid or carbon-dioxide, which passes along the column and tends to exclude the air from the unburnt gases nearer the centre. This state of affairs continues until the column passes beyond the combustion chamber and into regions of much lower temperatures where the heat is not sufficiently high to burn the gas.

With pulverized fuel the surfaces emitting gas are small and the streams of gas correspondingly small. By having the air supply properly arranged the small streams of gas will be intimately mingled with air and perfectly burned.

Another reason why pulverized fuel burns more effectively is because it becomes heated more quickly by presenting a greater surface to the influence of the fire. Any fuel must be heated to a high degree before it will burn readily. This finds a practical illustration in the use of kindling in starting a fire. The utility of kindling also is a familiar illustration of the superiority of pulverized fuel when properly manipulated.

The improved methods of burning

oil by spraying with jets of steam or compressed air owe their success to the fact that the oil is finely divided by the jet. The use of compressed air has the added advantage of intimately mixing the air with the fuel.

MILL DUST EXPLOSIONS.

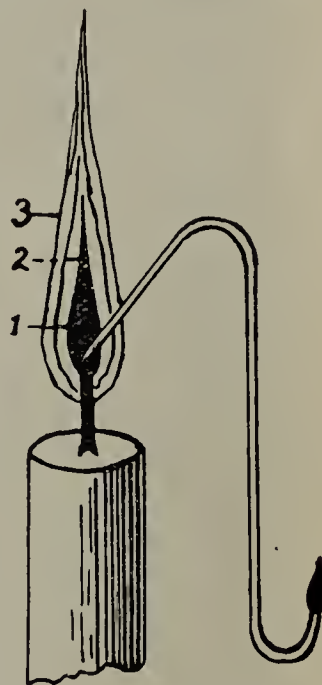
Mill dust explosions, that have been classed with the mysterious by the uninformed, may doubtless be explained by considering the dust as finely divided fuel that has become intimately mixed with air and exists in a condition ready for rapid combustion upon the introduction of a spark. Probably decomposition has generated an amount of gas similar to marsh gas or olefiant gas that is intimately mixed with the air and dust and adds greatly to the explosiveness of the mixture. All are familiar with the explosiveness of mixtures of air and combustible gases, either natural or manufactured. An explosion is simply a rapid combustion or chemical combustion.

Since rapid combustion is desired in furnaces, it becomes evident that this can be best obtained by as nearly as possible obtaining the conditions under which rapid combustion takes place, that is by finely dividing the fuel and intimately mixing it with air.

IN PRACTICE.

In practice the objections to pulverized fuel, such as coal slack, are practical rather than theoretical. Although it is generally believed that slack coal is not as good, that it does not contain as much potential energy or heat as an equal weight of lump coal, yet it is undoubtedly true that its value has been greatly underrated. Oxidation or combustion goes on slowly at low temperatures, and slack coal, because of its greater surface exposed to the air, loses its value much more rapidly than coarse coal. Having lost the more volatile elements it is much more difficult to induce rapid combustion with old or damaged slack than with coarser coal. This is partly due to the fact that the fine coal lies more closely and retards the passage of the air through the grates. This fact has given rise to the statement often heard that slack requires a better draft than coarser coal. This brings up the matter of methods in firing.

When a quantity of fresh coal is thrown into a furnace its first influence is to cool the fire by consuming an amount of heat in being raised to the temperature within the furnace. If the fresh coal is spread all over the grates,



as is often recommended, it cools the whole fire, and thus, for a time, reduces the amount of heat that is given to the object to be heated. This is an argument in favor of firing often and in small amounts.

The second result of a fresh supply of coal is the passing off of the gas from the coal as it becomes heated. If the whole surface of the fire has been treated to a coating of fresh fuel there is left no place sufficiently hot to burn the gases and they pass to the chimney unconsumed and are lost.

The third stage in the burning of a supply of fuel is the combustion of the coke or solid carbon. This takes place more slowly and appears upon the grates as a bed of coals of fire.

A careful study of these three stages in burning will disclose the proper course to pursue in burning solid fuel in order that the best results may be obtained.

In order that the objectionable results of cooling the fire may be avoided, the fresh fuel should be fed to the furnace in small quantities and often. To preserve a hot fire to burn the gases from the coal no fuel should be thrown upon the back part of the grates. The back part of the grate surface may be kept supplied with fuel by pushing the coals back before the fresh fuel is added.

Or stated in a few words: Push the coals back on the grates, put a small amount of fresh fuel on the front end of the grates and fire often. One objection that may be urged against this method is the necessity of opening the doors so often.

Theoretically these conditions are only realized by a constant and limited supply of fuel fed to the front end of the grates and a constant backward movement of the fire upon the grates.

MECHANICAL STOKERS.

Mechanical stokers, as all know, are machines for firing. The one great advantage that is to be obtained from a mechanical stoker is its uniformity. With hand work the tendency is to throw in a quantity of fresh fuel and then sit down and wait for it to burn out. This method is open to the objections pointed out above.

Without giving names or addresses, and without wishing to advertise any device, I will give a description of a mechanical stoker that I saw in operation and which nearly fulfills the theoretical conditions as given above.

The grates, which were of the rocker

pattern, were set slanting backwards at an angle of probably about forty-five degrees.

The slack coal was fed from a magazine above through a chute with a spreading base upon the upper end of the grates. A small engine geared directly to the grates rocked them continually. The rocking of the grates kept the fire loosened and caused it to move slowly downward towards the back end, where the cinders could be extracted.

To my mind, at least, it is evident that if solid fuel was treated with as expensive outfits for burning and with as much conformity to the laws of nature, as indicated by scientific research, that it would stand higher in the estimation of experts in matters of fuels and combustion.

The statement quoted at the beginning of this paper will not be heard when proper attention is given to the construction of furnaces and methods of firing.

Written for the CLAY-WORKER.

BRICKLAYING.

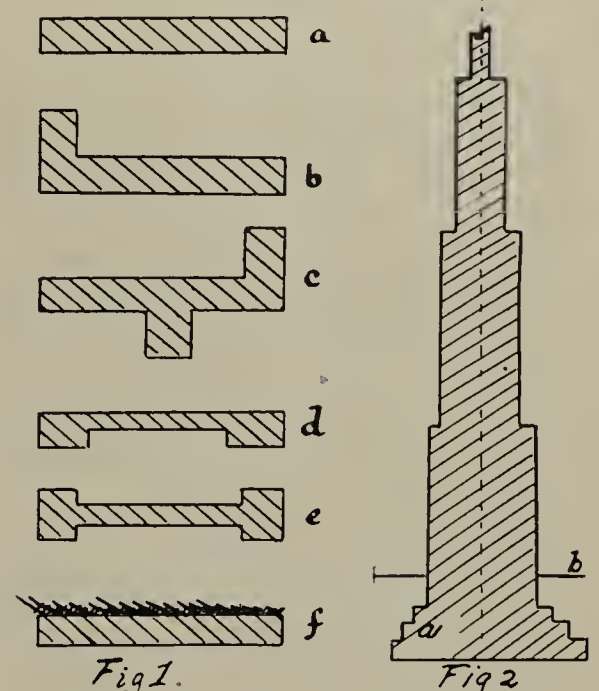
Fifth Paper.



THE classification of walls made of bricks may be as follows: First, straight running walls or open walls, with square or flush ends, as for example the plain garden walls, such as may be illustrated in Fig. 1 by *a*. The second class are walls having returns, that is, another wall running at right angles to the end, and which is shown at *b*. These returns may be placed at one end of the wall, or may be at both of them. The third class is composed of such walls, either straight or with one or two returns, but having another wall projecting from some part, and at right angles. Such a wall is shown in *c* of the same figure. The projecting wall may be of the same thickness as the main wall, or either smaller or larger. The fourth class of walls contain recesses either with square or arched heads, and made at some point within the wall. This is illustrated at *d*. The fifth class is composed of straight walls having at either ends or at both ends, terminations of square piers or columns. These are il-

lustrated by *e*. In all of these walls the construction is open; that is, free upon either side and not abutting another construction, or earth. The last class of walls, the sixth in number, consists of such walls as face an earth work or other construction upon one side, and are known as retaining walls. All of these walls may be made even or flush upon their surfaces, that is of equal thicknesses.

But when walls are built of any considerable height, and for that reason are of great thickness at their bottoms, offsets are made as the wall approaches the top. This is very well illustrated in Fig. 2, where *a* represents the footings, and *b* the ground line or level of the earth. It is usual for these offsets to occur at regular intervals of the stories into which the buildings are divided, whenever the walls are made for



building purposes. Thus, the wall for the first floor is thinner than the wall for the ground floor, and that of the second floor thinner than for the first, and so on. However, it is to be observed that such offsets are produced upon one side of the wall alone, the other side or outer side preserving the unbroken surface.

It is proper to mention that in connection with the decreasing of the thickness of building walls, in almost all communities, there are municipal regulations controlling the thickness of walls for buildings of certain heights and which are constructed for certain purposes. While these regulations vary somewhat in the several localities, their purpose is the same; that is, to restrict the construction of unsafe buildings. In a small construction, there is little temptation to save in the material and

labor of producing an adequate wall, but in the great buildings of cities, and more especially where the row-house is in great use, it is quite necessary that law should restrain the cupidity of man for the safety of the general public.

And in spite of these regulations and their severe administration, there is yet enough bad work and thin walls in brick construction, to cast a stain upon the contract system by which the bulk of the building operations are now carried out. It is to the interest of the builder to change all of this, and very much to the interest of the makers of brick.

NIMBUS.

Written for the CLAY-WORKER.

THE CLAYWORKING INDUSTRIES OF OHIO.

Fourth Paper.

BY EDWARD ORTON, JR., E. M.

It not infrequently happens to every clayworker that it is desirable to test the qualities of a new and unfamiliar clay. Every one has his way of doing this for himself, some means of judging what these qualities are, but the tests used are often inconclusive or perhaps delusive; materials are sometimes approved which cannot be profitably used, and still oftener condemned for reasons which are trivial.

Of course, the qualities which are needed in a new clay under test depend wholly on the kind of work which is expected of it. The tests which a fire brickmaker would apply, would, first of all, note the refractoriness, while the paving brickmaker would note the vitrifying qualities, and a potter would examine the color and smoothness when burned; and so on through the list. In the nature of the case, each industry has its own requirements and no very general or systematic rules can be laid down.

The facts which a complete test of a clay would bring out can be classified however; as, 1st, Qualities of clay before burning, plasticity, fineness of grain, density, etc. 2nd, Qualities developed after burning; refractoriness, vitrification, color, strength, etc. 3rd, Chemical qualities.

The investigation of the first class of facts requires no discussion—mere inspection, or wetting and kneading piece of the clay in the fingers usually develops the information desired.

TESTING KILNS.

The chief interest of the test centers around the fire trial. The means adopted to perform this test in laboratories and in some of the highest grade potteries and ornamental clayworking establishments, usually consists of either a wind furnace fired by coke or else a small regenerative gas or oil kiln which can be heated up to a high point in a few hours.

The operation of a wind furnace is probably better for obtaining high temperatures easily, but the work is much more laborious and probably more expensive than the use of a regenerative furnace. In the latter, the high temperatures are obtained by heating the air used to burn the fuel, by exposing it to the heat of the escaping products of combustion.

The advantage of this arrangement, besides its economy of fuel, lies in the quietness, ease, and regularity with which the temperatures can be brought up; no power is required in its operation, except sufficient draft to cause the air currents to flow where desired. The air currents are made in some furnaces to flow alternately through two chambers filled with open brick work, which are alternately heated by the waste gases, hot from the combustion chambers; in this case when one chamber is being heated up by the waste gases, the other is imparting its heat to the incoming air. After a few minutes the process is reversed, and the cool chamber is heated up and the hot one used to pre-heat the air.

A somewhat simpler form of the same idea is used in another furnace where the air is made to travel through long flues heated by radiation from the escaping gases. The cold air is introduced at the farthest point of the flue and as it travels towards the fire it meets brick work constantly hotter, and is itself heated by contact with it. By either of these kilns any ordinary test can be performed with great advantage. The testing of fire clays of high grade to find out their refractory qualities can be accomplished best in either the first described regenerative furnace or the wind furnace.

But the usual resort of clayworkers in making a test is to put the sample into the more exposed positions in their own regular kilns; and after all, this means is probably to them the most satisfactory, for it tells what the clay will do under the heats and same conditions in

which they expect to use it. This kind of a test does not answer any exact questions about the character of the clay and is only valuable to the man who makes it.

PYROMETERS.

Among the many aids which have been proposed for the clayworkers assistance pyrometers have been most largely and generally demanded. The dream of many a worried burner has been to possess an instrument which would give him an actual and infallible record of the heats which he uses.

There are a number of such instruments on the market, none of which can yet be said to have demonstrated their usefulness to the clayworker. Those depending on the expansion of a metallic bar by heat are the commonest type. They are not very conveniently portable, and they are not designed to stand the high heats required in burning clay. A new device on the market depends on the expansion of a quantity of air inclosed in a thin, strong metallic tube. This instrument is claimed to be very accurate but is very expensive.

The pyrometric telescope or lunette pyrometrique, invented by M. M. Mesure & Nouel of Paris, and manufactured by E. Ducretet is one of the most recent efforts to produce a portable, simple and accurate pyrometer. The principle involved in this device is an optical one and depends on the use of two nicol prisms, one fixed and the other capable of revolution on its axis. In looking at a radiant heated object with this instrument, the light is colorless when the two prisms are in a zero position to each other; but as one is slowly rotated the light is decomposed and the colors go through the usual cycle shown by the polariscope. By fixing always on one particular tint and always revolving the two prisms till it is obtained, it is found that the degree of revolution is a measure of the brilliancy of the light and therefore of the heat.

And an extended tour of clayworking establishments was made and the opportunity to measure the maximum temperatures of kilns was carefully sought and obtained. The results are incorporated into the following table:

The purpose of this careful and extended examination of the instrument was to determine its fitness to be used as an instrument of control or daily reference in clay works. This trial was subsequently extended by the use of the instrument in the practical work of

TEMPERATURES, MEASURED BY LUNETTE PYROMETRIQUE ON CLAYWORKING AND IRONWORKING INDUSTRIES.

Clayworking Temperatures.

| Test No. | Name of Factory where Test was Made. | Kind of Clays under Fire. | Kind of Product. | Condition of Kiln at time of Measurement. | Temperature in degrees Fahrenheit. |
|----------|--|---------------------------|--------------------|---|------------------------------------|
| 1 | Delaware Clay Co..... | Shales..... | Drain tile..... | Bottom of kiln, nearly finished..... | 1,600 |
| 2 | S. A. Weller's Pottery..... | Mixture..... | Earthenware..... | Hottest part of kiln at best heat..... | 1,860 |
| 3 | Bagley and Roberts..... | Fire-clay..... | Stoneware..... | Heat measured after kiln had begun to cool..... | 1,922 |
| 4 | Muskingum Stoneware Co..... | "..... | "..... | "..... | 1,900 |
| 5 | Zanesville "..... | "..... | "..... | Hottest part of kiln, at best heat..... | 1,922 |
| 6 | Pittsburg Clay Co., New Brighton, Pa. | "..... | "..... | "..... | 2,010 |
| 7 | "..... | "..... | "..... | Bottom "..... | 1,950 |
| 8 | Gelhart & Goodman..... | "..... | "..... | Hottest "..... | 1,892 |
| 9 | United States Stoneware Co..... | "..... | "..... | "..... just after best heat..... | 2,045 |
| 10 | A. J. Weeks, Akron..... | "..... | "..... | "..... | 2,045 |
| 11 | S. & W. Baggott..... | "..... | Yellow ware..... | "..... at..... | 1,710 |
| 12 | Cartwright Bros..... | Composition..... | C. C. ware..... | "..... | 1,950 |
| 13 | Toronto Pottery Co..... | "..... | White granite..... | "..... | 2,160 |
| 14 | Forest City Sewer Pipe Co..... | Fire-clay..... | Sewer pipe..... | "..... | 1,920 |
| 15 | Crown "..... | Fire-clay and shales..... | "..... | "..... after..... | 1,840 |
| 16 | Ohio "..... | Fire-clay..... | "..... | Kiln not up to highest heat..... | 1,800 |
| 17 | Hill "..... | Shales..... | "..... | "..... at best heat..... | 1,920 |
| 18 | Akron "..... | "..... | "..... | "..... | 1,900 |
| 19 | Buckeye "..... | "..... | "..... | "..... past best heat..... | 1,875 |
| 20 | A. O. Jones Co..... | Fire-clay..... | Paving brick..... | "..... at best heat..... | 1,862 |
| 21 | W. B. Harris & Bros..... | Shales..... | "..... | "..... | 1,800 |
| 22 | Logan Fire Clay Co..... | Fire-clay mixture..... | "..... | "..... past best heat..... | 1,702 |
| 23 | Nelsonville Sewer Pipe Co..... | Fire-clay..... | "..... | "..... at highest heat..... | 1,920 |
| 24 | Canton Brick Co..... | Shales..... | "..... | "..... | 1,800 |
| 25 | "..... | "..... | "..... | Another kiln at highest heat..... | 1,840 |
| 26 | Canton & Malvern Co..... | Fire-clay..... | "..... | Kiln at best heat..... | 1,920 |
| 27 | Massillon Stone and F. B. Co..... | "..... | "..... | "..... about best heat..... | 1,890 |

Ironworking Temperatures.

| | | |
|----|---|-------|
| 28 | Otis Steel Works—Inside of boiler firebox, fired by Brightman, stoker..... | 2,175 |
| 29 | " " " " Inside of another boiler firebox, fired by Murphy, stoker..... | 2,295 |
| 30 | " " " " Ingot on plate mill table, being rolled into steel plate..... | 1,950 |
| 31 | " " " " Ingot in heating furnace, ready for rolling..... | 2,120 |
| 32 | " " " " Bessemer steel, being poured into ingot moulds..... | 2,560 |
| 33 | " " " " Open hearth steel, being poured into ingot moulds..... | 2,620 |
| 34 | " " " " Same steel in furnace, before being tapped out for pouring..... | 2,660 |
| 35 | Central Blast Furnace—Mill iron, as it ran from furnace to casting bed..... | 2,225 |
| 36 | " " " " Bessemer iron, as it ran from furnace to casting bed..... | 2,295 |

burning paving bricks for a period of several months.

The general conclusions arrived at are as follows:

1st. It is the lightest, most portable and simplest pyrometer of moderate price in use in this country.

2nd. Its use is recommended as an instrument of control for superintendents, managers and foremen of clay works who are not directly responsible for the burning.

By its use, carelessness or laziness in tending the fires, any serious fluctuation of temperature either up or down, can be promptly fixed and adjusted.

3rd. The same temperature reads the same in daylight or darkness and on this account is a great aid to the unassisted eye.

4th. This instrument, or any other pyrometer, is *not recommended* as a means of finishing the burning of a kiln of any kind of clay ware, and it is not recommended as a substitute for the use of trial pieces for the guidance of burners in finishing a kiln.

FINISHING TESTS OF A BURN.

The finishing heat of a kiln of any clay ware is a matter of such delicacy and importance that personal skill, experience and sober judgment will always

remain, as now, the only proper guide.

In no clayworking process is it now possible to command such accuracy and regularity of composition of the materials that the burning processes can be brought to a successful termination by the attainment of any special temperature. Each lot of material must be burned for itself and the use of trial pieces, made of the same materials, at the same time and treated throughout in like manner with the material to be burned, forms not only the most convenient but the safest and surest guide which the nature of the case admits.

Dr. Seger, a German chemist and technologist, has perfected a system of tests for temperatures, which while they are ingenious, are in reality but little more than a refinement of the trial piece plan. The idea of this process is to make two silicate mixtures of well known fusing points, say one at 1800° and the other at 2200°. Then, by making a series of mixtures of the two, a series of melting points can be obtained between these two extremes which will give a regular scale of temperatures. The same idea can be carried out in any establishment by taking a fusible clay or body and adding to it in a constantly ascending ratio, small additions

of alumina. The temperatures need not be known, for if the heat of the base be known, an ascending scale is thus formed which can easily be located in its practical heats, if not by its degrees Fahrenheit. The test pieces are best molded into small pyramids, $\frac{3}{8}$ by $\frac{3}{8}$ base by $1\frac{1}{2}$ inches high. When the heat gets high enough to cause fusing, the little column will be observed to slowly sway over to one side, and finally to melt into a little pool. Ingenious as this plan is, and easy to apply, it is not likely to find any extended field of usefulness among clayworkers. In short, the variations of the clays used in almost all industries, are liable to be so great, that it seems doubtful if the use of pyrometers of any kind will ever find any very important place. As an instrument for control in the hands of the manager it is useful now, but in the hands of the burner it is not likely to supplant the trained eye and skillful hand.

VALUE OF FIRE TRIAL.

The heat test of clays, whether applied in special furnaces or kilns in a laboratory or carried on in the ordinary course of manufacture in the kilns of a clay plant, is the only important and convincing test which we can apply.

By it, each man learns what he need to know, and only by it can the ultimate facts be known, for no matter what the source of our opinions or expectations may be, there is no assurance of the quality of a clay, but actual trial.

Even the predictions of a chemical analysis are secondarily useful, for while they are founded on the results of well known laws, there are still too many unknown and unexplained contingencies in the compositions of clays to make a chemical prediction more than a reasonable probability.

By an analysis certain things are indicated; we expect a fire trial will develop a result in accordance; it probably will, wholly or in part; but it is usually only in part, for such is the infinite variety of composition and combination in clays, that their products are somewhat like the human face, no two alike.

Of course an analysis enables the positive prediction of some things which can or cannot be done. For instance, the use of an impure shale clay could be definitely discountenanced if expecting to do the work of a flint fire clay. But such broad predictions as this can be made with recourse to analytical skill.

THE FUNCTION OF CHEMISTRY.

The usefulness of chemical science to the clayworker is often sincerely questioned by those who hold prominent places in the clayworking industries, and is very generally decried among those not so competent to judge of its merits.

Clayworking is essentially a chemical or metallurgical industry. It is based on the use of mineral materials and must be conducted in harmony with chemical laws to be successful. Especially is this true of the manufacture of the higher grades of pottery, for they deal directly with chemical materials reagents, colors and glazes.

But it is astonishing to see how far behind, these industries are, in using the modern aids, which scientific training can give. Whatever progress has been made in American ceramics has been made by the crudest kind of experiment and by personal transfer of knowledge from man to man.

This state of things comes largely from a misconception of the proper sphere of chemical analysis in metallurgical processes.

Take the parallel industry of iron

and steel manufacture, chemistry is now used to control the quality of the material made, but it begun by a slow and careful study of what the materials were after they were already made; and to-day, the control of the finished product is mainly attained by rigid selection of the materials used.

So in clayworking—we ought not to expect to *predict* valuable results from one analysis or a dozen; but we ought to seek to *explain* and perhaps to alter and correct, *after* the trial has been made and the result obtained. No one owning a pottery would be foolish enough to select his clay by an analysis but if he would regularly inspect and compare analyses after having found by

It is not analyses that are wanted; it is scientific men who are willing to learn the simplest practical details; it is young fellows fresh from the pottery and shop who are willing to burn the midnight oil in search of what science can tell them for the benefit of their craft.

[TO BE CONTINUED.]

BRICKYARD SKETCHES.

A MISSISSIPPI RIVER PLANT.

“BOOK Brickmakers” are wont to lay much stress upon the importance of an accessible location when advising “new beginners” about the various matters to be consid-



BRICKYARD SKETCHES—THE THOMAS PRESSED BRICK CO'S WORKS.

practical trials what the clays can be made to do, he would find new power and grasp of his business week by week.

It is doubtful if there are many clayworking establishments now in the country that are really able to utilize the entire service of a competent chemist. What is much more needed and more directly beneficial is that the young men, growing up in the business should be sent to the best technical schools available, for special courses in the chemistry and technology of clays. Almost any clay works, not now able to afford or utilize a chemist for that work alone, would be greatly benefitted if they had for foreman, burner and manager, young men who have added to their factory experience the scientific training of such a course.

ered when one goes into the brick business. Their sage advice is not always followed, else this narrative would never have been told, for the subject of our sketch is “far removed from the busy haunts of men.” Fifty miles up the great Mississippi river from St. Louis (25 miles as the crow flies) and some 'steen miles from nowhere, making it very hard to find, but a most charming spot when you do get there, is the extensive works of

THE THOMAS PRESSED BRICK CO.

Having heard much of this notable plant, we fortified ourselves with a letter of introduction from the Illinois Supply and Construction Co., the company's St. Louis agents, to Mr. J. Fowler the general superintendent of the works, and at four o'clock one Saturday after-

noon last autumn took passage from St. Louis on a little stern wheel river steamer which plies between that city and Grafton.

To one accustomed to travel on fast trains that go screeching over their iron path at the rate of a mile a minute the idea of taking 12 to 14 hours to make a journey of fifty miles is not very inviting. We found the trip both novel and pleasing however, for it afforded an opportunity of getting a glimpse of river

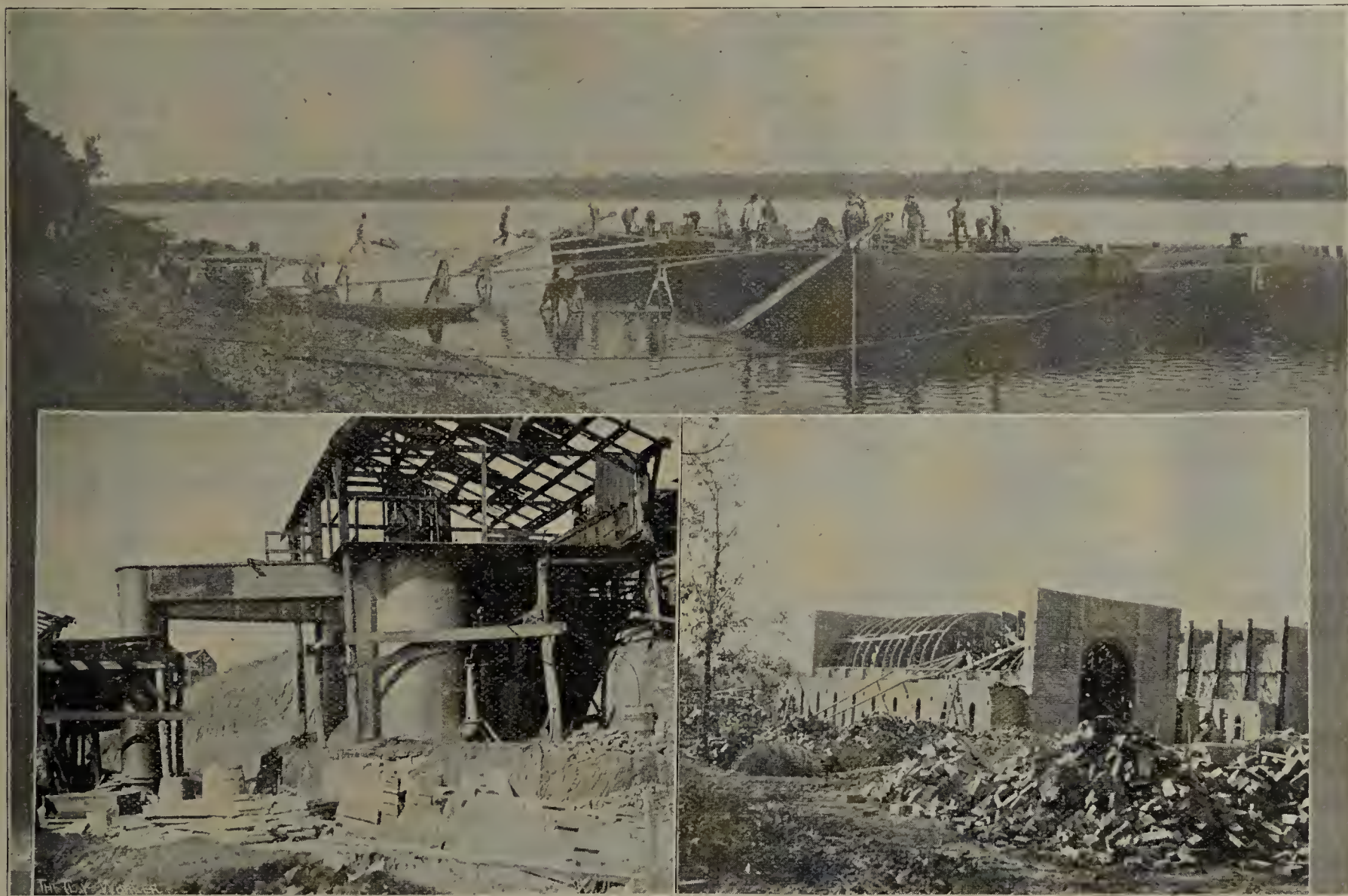
brick yard, and these were being toted off in double quick time by the tawny half clothed specimens of the *genus homo* that (we hope) are only seen on and about these river boats.

We had reached our destination, Thomas Landing, and found it one of the most charmingly picturesque spots we have ever seen. The river winds about in a very erratic manner at this point, almost surrounding a high wooded bluff nestling well up on the

from the time it is put into the dump cars till it reaches the barges, a finished product, it is moved by force of gravity.

MAKING THE BRICK.

The clay is first run through heavy dry pan crushers, then carried up by cup elevators and dropped into and sifted through 14 mesh screens and slid into the machine through a chute. They had one old Kennedy, and two Whittaker (a one and a two-mold) dry press machines, and were arranging to



BRICKYARD SKETCHES—LOADING BRICK ON BARGE—THE OLD GAS GENERATOR—BUILDING A KILN.

life that we hear much of, but seldom see. The Father of Waters at that season is low, and while it spreads out over a wide expanse it is very shallow, making navigation slow and uncertain. Even with a skilled pilot at the wheel there is a liability of being stranded on a sand bar almost any moment. No such misfortune befell us though, and as we emerged from a cubby-like state room at 6 o'clock in the morning, our ears were greeted with the strong, impressive language of the captain, common to his kind, ordering the roustabouts to get a move on them, and they got. The main portion of the cargo consisted of kiln fixtures, etc., for the

side of which is the brick works, its tall stacks and grim kilns contrasting strangely with the surrounding foliage.

The plant was established in 1887 by the Thomases, who had previously acquired about 1,700 acres of land on which they found valuable coal deposits. In '82 they erected a coke making plant running some 50 ovens. About the time they got fully under way the coke market became thoroughly demoralized and they abandoned that and turned their attention to brickmaking, having found a variety of valuable clays in mining the coal.

The clay is taken from a shaft that extends some 1,800 feet into the hill and

put in a four-mold Andrus press for stock brick.

DRYING DRY PRESS BRICK.

From the machine the brick are placed on board pallets and these piled on iron cars and run into a tempering room, where they remain three days in a mildly heated temperature (65° to 75°) the clay being very strong, requiring careful treatment. From this preliminary dry room the brick are taken to an Iron-Clad Dryer, and in 72 hours are ready for the kiln. They burn now entirely in down draft kilns, having five square and two round Eudaly patent, and had in course of erection, three Grath square down-draft kilns, that will

connect with a 120 foot stack, formerly used with a Guthrie continuous kiln. The latter was erected in 1888 and was used with coal as fuel unsuccessfully; they then built a gas generator and for several years burned the continuous and two round kilns with artificial gas but finally abandoned both the continuous kiln and the gas process for coal; owing to the fact that they can get a more uniform color with it—an important factor, for they make front and ornamental brick exclusively. The past season the run was mainly on buff, gray and mottled brick.

From the kilns they go to barges and are floated down the river to St. Louis and other points.

On the summit of the hill is a little village of cottages belonging to the Company, and occupied by the employes and their families. A Company store deals out goods as required so that pay day does not signify as much here, as at many places. The hands are always ready for work Monday morning, the only bar within reach being that on the boat which ties up for an hour or two only, and that but two or three times a week. Isolation has its joys as well as sorrows. The plant has been managed for several years by Mr. J. Fowler to whom we are indebted for many kindly favors. Thanks to him, our visit to Thomas Landing was very pleasant and will long be remembered.

Written for the CLAY-WORKER.

CHEMISTRY FOR CLAYWORKERS.

No. 21.

INTERESTING as specific heat is to the student, what is known as *Latent heat* is equally interesting, and equally as important to the arts and manufactures.

Dr. Black discovered latent heat, and an account of his experiments was read to the literary society of the College of Glasgow, March 28, 1760.

It had long been known that ice has the property of remaining always at the same temperature (32°), till it is melted, no matter what the temperature may be of the medium by which it is melted. Of course, the hotter the medium, the quicker it melts, but its temperature *during melting*, remains the same. Nevertheless it is all the time of melting, absorbing heat from surrounding bodies and making them colder, without acquiring any *sensible* heat itself.

You may easily verify this by taking some pounded ice, containing, say 12° of frost, or at a temperature of 20° F., now place a thermometer in the midst of this ice and presently it registers 20°; take it into a warm room uniformly heated by registers or other means, and watch the thermometer, timing it with your watch, it presently begins to rise and rises uniformly up to 32°; note the time required, for this rise of 12°, for here it will halt for awhile; note the time of this halting in the rise of the mercury also, and note that it will remain stationary until the ice is all melted, then it will move up steadily until the water acquires the temperature of the room. From timing the rise of the 12° in the ice and the time the mercury was stationary, we can deduce the quantity of heat the ice absorbed during melting, and which is apparently lost; this is known as "latent heat." By computation on the basis of the times taken above we find this latent heat to be 143° F. This is a slight modification of the experiment of Dr. Black. But a much easier way of demonstrating latent heat is, to take a pint of water at 175° and a pound of snow at 32° and dissolve the snow in the water, we now have two pints of water at 32°!

Without any previous knowledge of latent heat, we should naturally expect the mixture of snow and water to resolve itself into two pints of water at 103½°, for the temperature of the snow (32°) added to the temperature of the water (175°) and this sum divided by 2 = 103½, or, briefly expressed, $\frac{32+175}{2} = 103\frac{1}{2}$, which is the arithmetical meaning of the two temperatures.

If we now take a pint of water at 32° and another at 175° and mix them in one vessel, we shall have two pints at 103½°; in this there is no surprise, for all the heat is accounted for, but, in the mixture of snow and water we have 143° to account for and the question arises. What has become of it?

Similar experiments were made, and similar questions arose in the mind of Dr. Black 134 years ago, but before we give his decision let us carry the experiments a little further; and to this end we will take the quart of water made by mixing a pound of snow and a pint of water at 175°, and which gave us a quart of water at 32°.

Putting this water into a suitable vessel to allow it to be converted into steam, we apply heat by means of a spirit lamp, or Bunsen burner, note the

time, and watch the mercury in the thermometer, which, of course, must be placed in the water so that readings may be taken. It will be observed that the mercury rises uniformly until it reaches 212° then it stops and will remain stationary until all the water is converted into steam, *providing no pressure is allowed to accumulate in the vessel*. Make a note of the time it took to rise from 32° to 212°, which we will assume was 18 minutes. Now note the time from the mercury becoming stationary, to the complete vaporizing of the water, or its conversion into steam. If the heat is applied steadily at the same rate as it was in raising the water from 32° to 212°, the complete evaporation of the water will be accomplished in about 96½ minutes, and we may rationally conclude that 966° of heat have been absorbed in some way or other, for you will easily perceive that the water received 10° of heat in each minute, when rising from 32° to 212°, because from 32° to 212° is just 180°, and if 180° were raised in 18 minutes the rate per minute must be 10°. Continuing this train of reasoning during the period when the mercury remained stationary, we arrive at the conclusion stated above, viz: that something has absorbed 966° of heat, and there seems no other way of accounting for it than by charging it up to the steam.

Dr. Black had a vague notion that the heat received by ice during its conversion into water was not lost but was contained in the water, and there is such an analogy between the phenomena of thermometric registration during the liquifaction of ice and during the conversion of water into steam, that as Dr. Thomson says, "there could be no hesitation about explaining both in the same way. Dr. Black immediately concluded that as water is ice united to a certain quantity of *latent heat*, so steam is water united to a still greater quantity. The slow conversion of water into steam, notwithstanding the great quantity of heat constantly flowing into it, left no reasonable doubt about the accuracy of this conclusion. In short all the phenomena are precisely similar to those of the conversion of ice into water; and so of course must the explanation be.

From the experiments of Dr. Black he concluded that the latent heat of steam was not less than 810°.

Mr. James Watt afterwards experimented with better apparatus and very

great care and placed the latent heat of steam at not under 950° . Lavoisier and Laplace afterwards by a different method got 1000° . Count Rumford also at a latter date got very nearly the same results as Lavoisier and Laplace, later still came the experiments of Mr. Sharpe, Mr. Southern, and Dr. Ure; all came very near to the same result as Mr. Watt. Mr. Southern got 945° . Mr. Watt in an average of nine experiments got 949.9° , say 950° , and Dr. Ure got 967° ; and this latter was the accepted latent heat of steam when the late Prof. Tyndall delivered his course of lectures at the Royal Institution of Great Britain in 1862 and published in this country in 1865 by D. Appleton & Co., entitled "Heat Considered as a Mode of Motion."

In later treatises on Chemistry and Physics, 966° is the accepted number, however, any of them from Watt's 950° to Ure's 967° are sufficiently accurate for all practical purposes. Dr. Black, who only got 810° by his own experiments, uses Watt's number (950°) afterwards in his lectures, and in his letter to Dr. Brewster on the subject. Therefore if with crude apparatus you arrive at results as near as Dr. Black did, it will be quite sufficient to convince you that when water has been heated up to its boiling point, it still requires about $5\frac{1}{2}$ times as much heat to convert it into steam, as it required to raise the same water from freezing to boiling point.

If you are desirous to repeat Dr. Black's first experiment on latent heat, put a small quantity of water into a tin pie dish and place it on a hot stove, have your water at 50° and see how long it is before boiling, and then see how long it takes to boil all the water away. In his case the water commenced boiling in four minutes and in twenty minutes more the whole was boiled away. Now from 50° to 212° is 162° , this, then, divided by $4 = 40\frac{1}{2}^{\circ}$ the number of degrees the water received in one minute, so that if it received heat at this uniform rate for 20 minutes more, we have only say $40\frac{1}{2}^{\circ} \times 20 = 810^{\circ}$. Such was the experiment and its results 130 years ago.

I invited attention to this subject in the pages of the CLAY-WORKER about three years ago in my articles on "The Combustion of Fuel," etc., and some of those who have a taste for this class of reading will perhaps perceive that I am occasionally walking over the same path again, while those who are familiar with this subject will find that the same

principles and examples are sometimes reproduced with a few variations; this is intentional on my part, knowing that in my own case, any scientific law or principle fully elucidated, was sooner understood and took deeper root in my mind than when presented by a simple concise or terse statement.

As heat is such a prominent factor in clay products, especially in modern brick manufacture, there ought to be more attention paid to its scientific side and so prevent the recurrence of daily blunders in the attempts to economize fuel.

WM. WAPLINGTON.

SOMETHING NEW.

J. R. Witzel Patent Screw Thread Tensile and Vacuum Brick Machine.

THE accompanying cut represents the of a model brick machine, which is the same in principle and construction as the regular size brick machine, which weighs 23,000 pounds, and has an average working pressure of 300 tons to each brick. This machine is built on new and scientific principles and has many advantages over the present style of dry and semi-dry clay machines. The pressure of this

machine is on the screw thread principle and is increased over 100 per cent. at the point of pressure, giving machine made bricks on this machine the same advantages as a hand made press brick.

All the strain of machine is on the tensile principle, giving additional strength and making the machine unbreakable at any pressure.

There is a vacuum produced for every brick made. This makes a solid compression free from granulation or air holes and gives machine made bricks the same appearance and qualities as hand made pressed bricks.

There are many other advantages of this machine and experts say it will be the "future machine of the world."

For particulars regarding price, capa-

city, purchase of state rights, etc., address, The American Vacuum Brick & Brick Machine Co., P. O. Box 738, Philadelphia, Pa.

IN THE HANDS OF THE JURY.

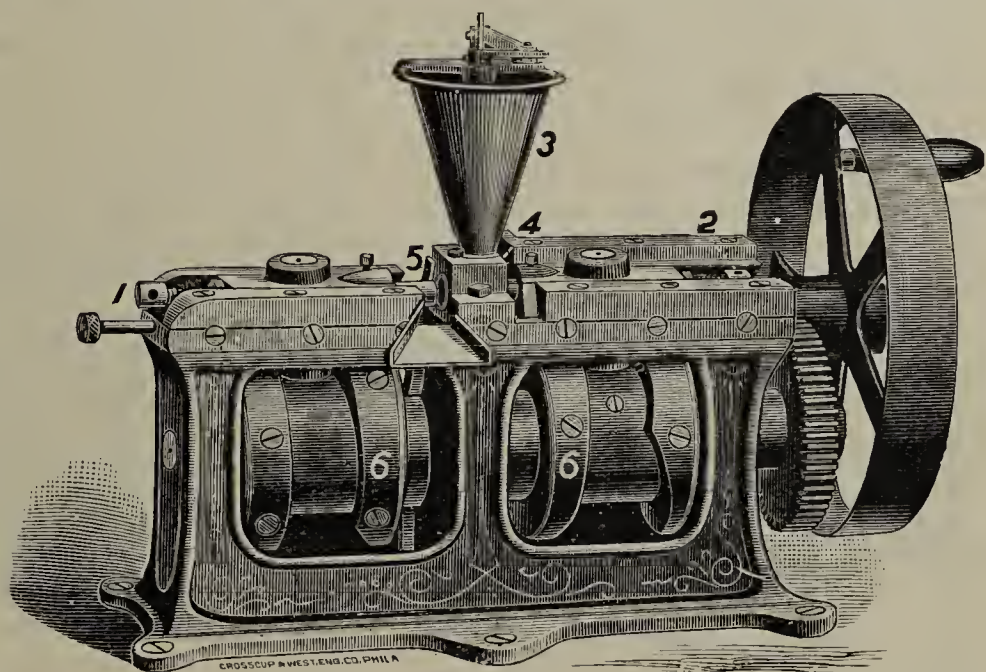
To Brickmakers:

FOR the benefit of the craft in general we will make this last reply to Chisholm, Boyd & White's scurrilous attempts to defraud the Simpson Press of the World's Fair honors. In their letter in March issue of CLAY-WORKER, we notice they fail to controvert in any particular the clear and positive statements of facts as given by us in the February issue. In this letter we proved the following facts:

First:—That in the report of the only authorized judge on brick machinery, an award was recommended to the "Simpson" Press.

Second:—That in this report, *no award was recommended to the Boyd Press.*

Third:—That this report was approved of by the Committee of the Whole, same



being signed by John P. Roche, Chairman, and attested to by E. J. McMahon, Secretary, a fac-simile of whose signature was given.

Fourth:—That Chisholm, Boyd & White very adroitly fail to explain to the public that the "Great Bronze Medal, Blue Ribbon and Diploma," they boast so much about, were given to them on a small model exhibited in the Mining Building, where there was absolutely no competition. An empty honor, indeed.

We do not believe it profitable or interesting to anybody that this controversy should degenerate into a mere war of words; we have already given absolute proof sustaining our position in this controversy.

This letter will end the matter so far

as we are concerned, and to use a lawyer's phrase, "We rest our case with the jury," who are the unprejudiced brick-making public.

THE SIMPSON BRICK PRESS Co.,
Chicago, Ills., April 6th, '94.

SELECTION AND ARRANGEMENT OF MACHINES FOR COMMON BRICKMAKING.

* BY GEO. S. TIFFANY.

Mr. President and Gentlemen:

The subject assigned to me, "The Manufacture of Common Brick," is too large for an essay, and has furnished material for many books. I will endeavor to confine my remarks to the "Selection and Arrangement of Machinery for Brickmaking."

Considering the vast improvement in machinery in the different processes, this subject for an essay is too replete. I will therefore only treat of such parts of the subject as I think will be most profitable, and hoping that if I err in any of my statements, that a full and free discussion will reveal the truth.

While the subject of machinery has been almost excluded from state and national conventions, permit me to say that there is no subject for discussion more profitable, and with the simple restriction that no speaker advertise his own wares before the convention, is more suitable for discussion. In what I wish to say I certainly shall not find it difficult to respect the views and interests of others.

The consumption of your market will govern you in regard to the capacity of your plant. There has been of late a demand for machines of larger capacity, say from 50 to 75 M per day. Without venturing to give my views, I will offer for your discussion the following:

Required, a capacity of 60 M per day. Would two machines of 30 M capacity or one of 60 M capacity be the most profitable?

The quality or nature of your clay will probably govern you in regard to the system you may adopt—soft mud with mould machines, stiff mud with die machines, or the dry press. An enthusiastic salesman will tell you that he can work any clay that any machine can work, but there is no doubt that in some cases, say where the clay is too wet to make a brick that can be lifted

by hand, a soft mud machine is the right one, and in fact the only one that can be used profitably. Again, where stone and shale are so frequent as to make it difficult to use a wire cutting machine, a soft mud machine may be most profitable. Where lime pebbles exist in the clay, no attempt should be made to work it. I have invariably advised parties who contemplated going into the business, and wanted to know if my machinery would crush the lime pebbles, not to go into the business unless they could get clay free from limestone. No form of crusher or roller disintegrator will satisfactorily do the work. The dry pan is the most efficient crusher, but the necessity of storing or drying the clay, the increased cost of the plant, etc., almost excludes it from use in the manufacture of common brick. At least I think it is impossible for a manufacturer with such a plant to compete successfully with one who can work the clay from the bank, or with the ordinary tempering in an auger machine. The power required would be about as five to two, and the cost of machinery of the plant four to one.

Where the clay is tough and is excavated in large pieces, where it goes through a soft mud mill without being thoroughly ground, the stiff mud or auger machine is the most suitable. This machine has also the advantage that it will make a great variety of ware. An auger machine, properly made, and a set of stone rollers, ought to work any clay into brick that is in fit condition to make brick. The cone rollers are as yet the most effective device for taking out the large stones. The only objection is that they will throw out the large lumps also. Very many devices are employed, also, to break the lumps so that they will pass through the rollers. I have not time to mention them. An efficient device is to set an open-top horizontal pug mill, or clay mixer on the platform. The clay is dumped from a wheel-scraper into the mill, where it is tempered and pressed through it into the brick machine; or if there are many stones in the clay, into some cone rolls and from there into the brick machine.

I have known wheel-scrapers to be substitutes for cars and winding drums, with great satisfaction and profit to the manufacturer. The roller disintegrator is a valuable device for preparing the clay; it is what its name indicates, and besides, it throws out the

large stones and crushes the small ones about the same as cone rollers. It will work clay in any condition. The clay-mixer and rollers have this advantage, that the clay may be dumped into the mixer by the cart-load, where it may be tempered if required. You are very fortunate, if your clay is moist and fit to work as it is taken from the bank, for you will only require in machinery, an engine and a brick machine.

In an essay before this Association, many years ago, I ventured to say that the making of dry press brick could only be successful in a bank of clay that was homogeneous—that had already been pugged by some process of nature—so that every particle of sand in the clay was coated with clay. I have the same opinion still. Very beautiful work has been done by this process in clays of this character. But I leave the discussion of this branch of my subject to those who have had practical experience, and have only mentioned it to establish my proposition, that the nature and the condition of your clay as it is in the bank, should govern you in selecting suitable machinery.

The location of your plant should be considered in estimating how much you could profitably invest. If it is probable that the land will become more valuable for other purposes, bear in mind that whatever you invest in permanent improvements is lost if you should sell soon for other purposes. The prevailing practice through New England, New York and Michigan, is open yards. Through Pennsylvania, Ohio and Indiana, hot floors and drying tunnels prevail. The latter seems like much the better way, and yet those who follow the former methods are quite successful. But my object is not to advocate either, but to impress you with the idea that you had better go slow at first. "Be sure you're right, then go ahead." It is painful to see a man put all his available means into machinery and expensive apparatus, and then not have capital to make profitable use of his plant. I would rather discourage a man from going into the business than to have him make a kiln of brick, and then have to wait until he has sold it before he can make another, or be the very slave of the money lender.

You will, of course, determine whether your clay will make good brick before you buy any machinery. I would not depend upon an analysis. I would

* Read before the Ohio Brick and Tile Association, at Columbus, Feb. 14, 1894.

not be satisfied with the burning of miniature brick. There are thousands of clay banks from which a perfect small brick can be made, that will not make a common size brick. What more simple and inexpensive process, than to make a few by hand and have them burned in some brick kiln? Having determined this, and the kind of machines you wish to purchase, you should have complete drawings made of your plant.

There is much complaint that manufacturers of machines under-estimate the power required to drive their machines. Do not depend upon their statement. Ascertain the size of and motion required for their driving pulley, from which estimate the number of square feet of belt surface per minute, and buy an engine that will carry, at least, an equal amount. If you have a number of machines to be driven by the same engine, ascertain the amount of belt surface each will require, add them together, and buy an engine, the band wheel of which will give an equal number of square feet. That is a short and safe rule; because it gives a good margin in favor of the engine. The belt is the measure of power required by the machine and the belt is the measure of power the engine will give. You have often been advised to buy a belt for a machine much larger than the size recommended by the manufacturer. Do not do this. The belt is the safety valve of the machine, and should slip before any of the principal parts are broken. Do not under any circumstances use an idler. They are a poor apology for bad designing. So far as possible have the under section of the belt give the power and the upper section be apparently slack when at work. There should be a friction clutch pulley to every machine. If you buy a good one you will find that you have not overestimated its value.

Many, when a cutting wire breaks, allow the clay to run out of the machine, put in a wire, and then commence filling the mill. Time is lost in allowing the mill to run empty and in filling again, as the first clay thrown into the machine passes to the die without much tempering of the knives, many imperfect brick are formed. Bear in mind whatever loss of time you have is so much taken from your profits or added to your losses. Have your friction clutch pulleys on

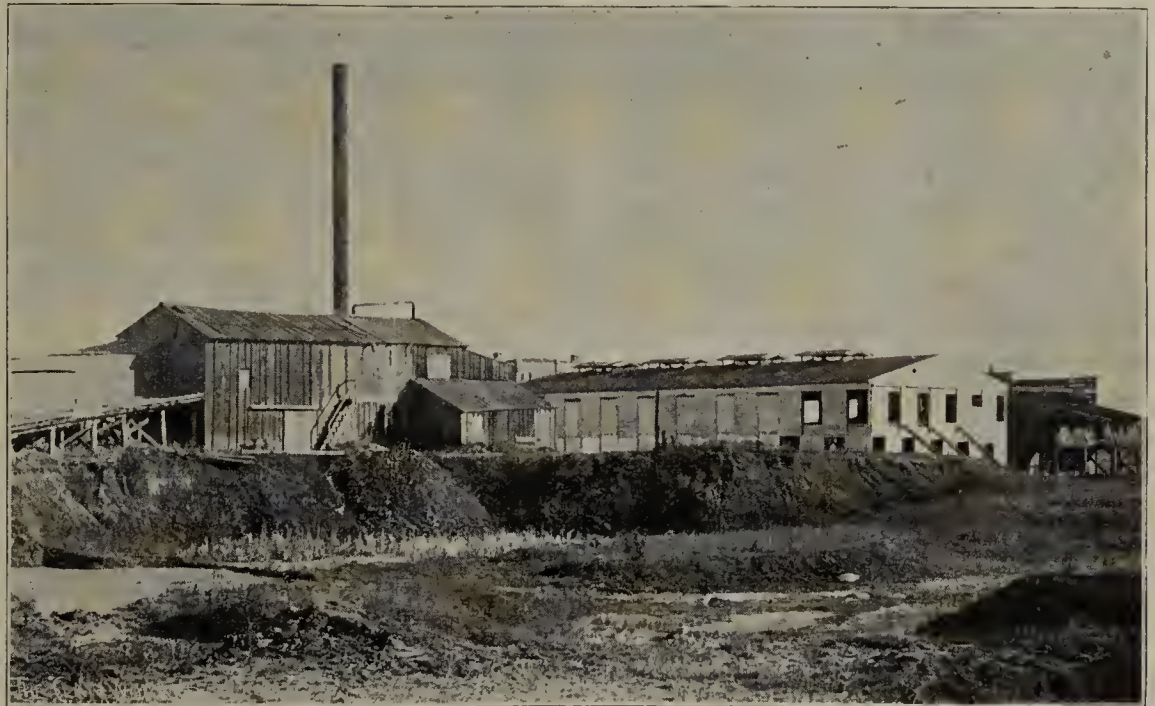
your machines, and not on your line shafts. As some manufacturers differ from me in regard to this, I present it as a proper subject for your discussion, and offer the following reasons for my position. The lever that operates the clutch should be close to the operator of the machine, and its connection with the clutch should be as direct and simple as possible. The friction clutch pulley should always be the driven pulley. If not it will wear out of round.

By all means make your brick free from seams or laminations, or the masons will condemn them for they cannot cut them with a trowel, and if exposed to rain and frost they will shatter. A friendly workman once said to me, "I like them brick for they haint got no lamentations in them." That is good metonymy. He called them by the name of the effect they produced.

PHILADELPHIA BRICK MANUFACTURERS' AND THEIR PLANTS.

Number 1.

IN the CLAY-WORKER for August 1893 was published a photo of "An old time brick machine," with a history and description of same. Incidentally was mentioned a contrivance for supplying hot water to temper the clay in the machine. This is one of those simple contrivances that every one can see as soon as it is described. By referring to the accompanying photo, you will see the whole affair except the tank, into which the condensed steam drops. It is a crude affair, but fills the bill completely. The exhaust pipe appears to rise out of the machine shed roof at the right, or east end, but it really rises farther back, and is foreshortened by angle of its direction. You will see



EUGENE CARROLL'S BRICK WORKS, PHILADELPHIA. ♥

I have suggested enough topics for discussion to fully occupy the time allotted.

I shall now sit as an interested listener, and hope that you will all consider, "There is that scattereth and increaseth, there is that withholdeth and tendeth to poverty."

A PAIRING.

"Were you allowed to vote," said he,
As through the sheltered lane they strayed,
"What would you vote for—answer me—
Protection or free trade?"

The gentle maiden hung her head,
While to her cheek the color flew;
"I would not care to vote," she said;
"I'd rather pair with you."

that Mr. Carroll has only attached to his exhaust, two bends, or elbows, and 18 or 20 feet of straight pipe to condense the exhaust steam.

Another novel feature of this plant is a double-deck dryer; 100 x 50 feet. This is a substantially built shed a few feet to the east of the machine shed, shown in the photo, at right angles with the same and having a white gable end, with ten large openings, five in each story. There are the same number of opening in the other end, while each side has twenty openings; the whole supplied with sliding doors, which are manipulated much after the fashion of dampers, fully opened, partially opened, or closed as circumstances require. No steam, or other heat is supplied, the

drying is entirely dependent on the natural draughts of air passing in at one opening and out at another, carrying its quota of moisture out with it. This dryer supplies the kiln which may be seen to the east of it. Eventually the machinery, etc., will be moved to the worked out ground by this dryer and by a system of belt conveyors the brick will be transferred from the machine shed to the dryer without handling. The dryer will also be lengthened to double, or triple its present capacity which is at present 500 M. The kiln will be moved and built as closely along side of this dryer as is convenient, and the clay worked from the site of the present plant.

Mr. Eugene Carroll, the proprietor is a whole souled, genial fellow, with hosts of original ideas, and while he by no means "hides them under a bushel" he refrains from thrusting them indiscreetly in the face of the fraternity. A visit to his yard, and a chat with him, is anything but mis-spent time.

MICHAEL CARROLL'S YARD

Just north from the above yard across the Haverford Road is the canny little yard of Michael Carroll, Eugene's brother, with a capacity of 35 M. per day, common machine, and hand pressed, stretchers, etc. This plant consists of a Chambers C. machine, etc. The drying is accomplished in the old fashioned way under rough sheds and the burning in four 10-arch Dutch kilns.

The Carrolls are born brickmakers, hard working, painstaking and practical. Popular with their men and the community, they mind their own business and keep their yards in a neat state to receive visitors at short notice.

WHAT SHOULD BE EXPLAINED TO NEW EMPLOYEES.

IF the work in which a person engages is new to him, the Supreme Court of Pennsylvania holds that he should be instructed in it; and, if he is not acquainted with the latent dangers incident to it, they should be explained to him, that he may, so far as is consistent with a proper performance of it, avoid them. In such case, he is not presumed to know whether his employer has furnished appliances which are reasonably safe and in ordinary use, and he is not chargeable with an assumption of the risks involved in the failure to provide them.

Written for the CLAY-WORKER.

THE MANUFACTURE, SETTING AND BURNING OF DRY PRESSED BRICK.

BY J. W. CRARY, SR.

IN the whole range of brickmaking and building there is nothing more important to all concerned than the proper consideration of the quality of the brick. For over 4,000 years past, it is not probable that any person even ever dreamed of dry press brick; much less did any one ever attempt to make brick of dry clay by pressure. Attempts were made in Staffordshire, England, to make floor tile by pressure, and at length the well known "Minton" floor tile was produced. But it was some considerable time afterwards that the effort to make dry press brick was made. I find no account of dry press brick machines in any part of Europe before they started in this country, and I am quite sure that our Patent Office can show the first invention for a dry press brick machine. There is an excellent thinker and writer on this subject by the title of "Dry Press Hints," in the CLAY-WORKER, but I have not noticed that he has stated by whom or where the first dry press brick were made.

In my last article in CLAY-WORKER I give a general statement of the beginning and progress of brick machines in this country, and I find no data to change what I said.

The dry press system of brickmaking is new and yet to be perfected. I have, in several of my articles in the CLAY-WORKER tried, in a plain, short way, to give the true theory and philosophy of making brick by pressing clay dry. I have not noticed that any one has called in question what I have said on this point, nor have I seen that any of the dry press friends or advocates have tried to elucidate and explain the theory of pressing dry clay into brick, or the right way to set and burn them.

TWO NEW PROCESSES HAVE BEEN ADDED TO OLD BRICKMAKING.

The dry press and semi-dry press or stiff mud. The friends of each process claim that his way is best, and both claim that their way is better than the old soft mud process. Now, it is in order for them by satisfactory explanation and practical test to prove the truth of their assertions. To do this, it seems to me that certain conditions and kinds of raw material and a certain maximum and manipulation for the working of

the material into brick, then for the drying, setting and burning, should all be clearly and distinctly set forth, so that those who wish to make or use brick can intelligently decide what is best for them to do, in order to get the best results.

THE THIRD CHAPTER IN "BRICKMAKING AND BURNING,"

Advertised on page 467, gives a concise and true theory on the dry press process of making brick. But I will say here, that all the requisite conditions must be present in order to make a first-class brick of dry clay. First, the clay must be good and homogeneous. It will not do to have some sandy and some tough, go separately into the dies. If it be necessary to use clay stratified with sand, it must be first thrown out in a heap, then hauled under a shed and there lay at least one month before going to the machine, then after it goes through a disintegrator. It must be carried to the brick machine by a proper mixing process, so that the clay and sand are thoroughly incorporated, then a certain, exactly even measure or weight of clay must be put in the dies. If there be a difference in weight the strain on the machine will be damaging, and the brick will be unequal in strength and density. Some of the dry press men claim that this difficulty is obviated by means of a spring, to relieve excessive pressure. This may be so, but I cannot understand how a uniform thickness and density of the brick can be had by the use of a spring.

In order to make a perfect uniform brick in size and density, a certain maximum weight of clay must be pressed to a certain size. A spring would act in proportion to the pressure on it, and the pressure would act in proportion to the weight of clay in a die. To make my meaning plain, let us suppose that we are running a three dies machine. Now we will say that the maximum amount of clay for a perfect brick is six pounds. Now if we get six pounds in the middle brick and six and one-half in one on one side of it and five and one-half in the one at the other side and the plungers come to the maximum pressure for the middle brick, they are stopped by the spring and an unequal pressure and thickness of brick must be the result. If there be no spring and the plungers are forced to the point of uniform thickness of the brick, then the five and one-half pounds of clay is not sufficiently

pressed, and six and one-half pounds are over pressed, the six pounds clay are just right, but the machine has been strained, and if often repeated, must break.

Then, there is another difficulty in charging the dies. If when a die is filled, there is any inequality of clay in different parts of the die; if, for instance, the clay be a little more packed in one end than in the other, it will be over pressed at one end and under-pressed at the other, and the brick will be imperfect and easily broken or crushed.

I AM NOT FINDING FAULT OR CRITICISING LATE MACHINES.

I have not seen any of the late so-called improved machines. They claim to have overcome all the old faults in by-gone machines, and some claim perfection. It is to be hoped that their claims are good and based on true theory and practice. In all the old-time plunger brick machines the imperfections I have pointed out, were well known and damaging to dry press brick machinery.

DRYING, SETTING AND BURNING DRY PRESSED BRICK.

Though I have written a good deal in CLAY-WORKER on this subject, yet it is one of great importance, and is not likely to be exhausted. I have said that dry pressed brick requires special and skillful treatment in the setting and burning. The slightest fault in this part of the manufacture is much more serious than if the brick were made of soft tempered clay. If the brick are set directly from the machine, there is naturally ten or twelve per cent. in weight of water in the brick, and this must be expelled by a heat less than 212 F., in order to preserve the cohesive attraction made by the pressure on the clay. The moment the water is up to steam heat, to a certain extent, the co-hesive condition of the clay particles are loosened, and though there may be no "water settle," and the kiln be burned hard, still the brick will be inferior.

If we take brick made of soft clay and brick made by dry pressing, and set both in the same kiln, we find that the brick made of soft mud will "water-smoke" and "dry off" much quicker than the dry pressed brick; provided, of course, that the dry pressed was as wet as the mud brick when fire was put in the kiln. Loose setting and slow firing are the two first great essentials in the burning of dry pressed brick.

I will, in my next article, give special

reasons and directions for the successful setting and burning of dry pressed brick. Afterward I will treat of what I know by experience of the best way to handle and burn stiff and soft mud brick.

STATISTICAL INFORMATION.

Hon. Carroll D. Wright, in charge of the completion of the Eleventh Census, has transmitted to the Secretary of the Interior a report which presents preliminary totals for all classes of mechanical and manufacturing industries in the United States as prepared by the Division of Manufactures. The following are the statistics relating to the clay and brickmaking industry, and kindred lines:

BRICK AND TILE.

| | |
|---|---------------|
| Number of establishments reporting | 5,828 |
| Aggregate capital represented..... | \$ 82,578,566 |
| Total value of plants..... | \$ 53,629,375 |
| Value of land..... | \$ 21,031,133 |
| Value of buildings..... | \$ 14,601,046 |
| Value of machinery, tools and implements | \$ 17,997,196 |
| Live assets..... | \$ 28,949,191 |
| Miscellaneous expenses..... | \$ 5,108,769 |
| Average number of employees..... | 109,151 |
| Total wages..... | \$ 32,695,189 |
| Officers, firm members and clerks above 16 years (males)..... | 4,921 |
| Wages for same..... | \$ 2,966,263 |
| Officers, firm members and clerks above 15 years (female)..... | 54 |
| Wages for same..... | \$ 19,569 |
| Operatives, skilled and unskilled, above 16 years (males)..... | 93,614 |
| Wages for same..... | \$ 27,471,360 |
| Operatives, skilled and unskilled, above 15 years (females) | 152 |
| Wages for same..... | \$ 21,616 |
| Children operatives..... | 4,369 |
| Wages for same..... | \$ 474,926 |
| Pieceworkers above 16 years (males)..... | 5,584 |
| Wages for same..... | \$ 1,675,949 |
| Pieceworkers above 15 y'rs (females) .. | 60 |
| Wages for same..... | \$ 15,811 |
| Children pieceworkers..... | 397 |
| Wages for same..... | \$ 49,695 |
| Cost of materials used..... | \$ 12,639,597 |
| Value of products, including receipts from custom work and repairing... | \$ 67,770,695 |

CLAY AND POTTERY PRODUCTS.

| | |
|--|---------------|
| Number of establishments reporting | 707 |
| Aggregate capital represented..... | \$ 26,127,104 |
| Total value of plants..... | \$ 15,606,955 |
| Value of land..... | \$ 3,976,737 |
| Value of buildings..... | \$ 6,709,949 |
| Value of machinery, tools and implements | \$ 4,920,269 |
| Live assets..... | \$ 10,520,149 |
| Miscellaneous expenses..... | \$ 2,003,007 |
| Average number of employees..... | 20,296 |
| Total wages..... | \$ 10,138,143 |
| Officers, firm members and clerks above 16 years (males)..... | 1,268 |
| Wages for same..... | \$ 1,247,513 |
| Officers, firm members and clerks above 15 years (females)..... | 48 |
| Wages for same..... | \$ 21,598 |
| Operatives, skilled and unskilled, above 16 years (males)..... | 13,950 |
| Wages for same..... | \$ 6,808,408 |
| Operatives, skilled and unskilled, above 15 years (females)..... | 1,532 |
| Wages for same..... | \$ 346,288 |
| Children operatives..... | 405 |

| | |
|---|---------------|
| Wages for same..... | \$ 59,982 |
| Pieceworkers above 16 years (males) | 2,452 |
| Wages for same..... | \$ 1,471,156 |
| Pieceworkers above 15 y'rs (females) | 491 |
| Wages for same..... | \$ 152,554 |
| Children pieceworkers..... | 150 |
| Wages for same..... | \$ 30,644 |
| Cost of materials used..... | \$ 5,618,401 |
| Value of products, including receipts from custom work and repairing... | \$ 22,057,090 |

KAOLIN AND OTHER EARTH GRINDING.

| | |
|---|--------------|
| Number of establishments reporting | 95 |
| Aggregate capital represented..... | \$ 3,334,575 |
| Total value of plants..... | \$ 2,114,931 |
| Value of land..... | \$ 683,422 |
| Value of buildings..... | \$ 532,950 |
| Value of machinery, tools and implements | \$ 898,559 |
| Live assets..... | \$ 1,219,644 |
| Miscellaneous expenses..... | \$ 222,527 |
| Average number of employees..... | 1,461 |
| Total wages..... | \$ 744,129 |
| Officers, firm members and clerks above 16 years (males)..... | 185 |
| Wages for same..... | \$ 193,413 |
| Officers, firm members and clerks above 15 years (females)..... | 5 |
| Wages for same..... | \$ 1,837 |
| Operatives, skilled and unskilled, above 16 years (males)..... | 1,215 |
| Wages for same..... | \$ 520,971 |
| Children operatives..... | 5 |
| Wages for same..... | \$ 628 |
| Pieceworkers above 16 years (males)..... | 51 |
| Wages for same..... | \$ 27,280 |
| Cost of materials used..... | \$ 1,330,290 |
| Value of products, including receipts from custom work and repairing... | \$ 2,846,862 |

PAVING AND PAVING MATERIALS.

| | |
|---|---------------|
| Number of establishments reporting | 704 |
| Aggregate capital represented..... | \$ 12,648,093 |
| Total value of plants..... | \$ 4,689,540 |
| Value of land..... | \$ 1,307,336 |
| Value of buildings..... | \$ 552,284 |
| Value of machinery, tools and implements | \$ 2,829,920 |
| Live assets..... | \$ 7,958,553 |
| Miscellaneous expenses..... | \$ 147,235 |
| Average number of employees..... | 22,730 |
| Total wages..... | \$ 10,450,970 |
| Officers, firm members and clerks above 16 years (males)..... | 1,001 |
| Wages for same..... | \$ 1,021,570 |
| Officers, firm members and clerks above 15 years (females)..... | 9 |
| Wages for same..... | \$ 4,102 |
| Operatives, skilled and unskilled, above 16 years (males)..... | 21,156 |
| Wages for same..... | \$ 9,182,112 |
| Operatives, skilled and unskilled, above 15 years (females)..... | 1 |
| Wages for same..... | \$ 312 |
| Children operatives..... | 16 |
| Wages for same..... | \$ 2,023 |
| Pieceworkers above 16 years (males)..... | 547 |
| Wages for same..... | \$ 240,851 |
| Cost of material used..... | \$ 13,891,005 |
| Value of products, including receipts from custom work and repairing... | \$ 30,644,072 |

SPECIAL NOTICE.

HEREAFTER all correspondence regarding the Diurnal Kiln should be sent to R. W. Stewart, Mt. Victory, Ohio, patentee and now sole owner. If not too distant from Mt. Victory, mason work, and burner for first kiln furnished on the "no cure, no pay plan."

R. W. STEWART,

Successor to Stewart Brothers.

April 12, 1894.

Written for the CLAY-WORKER.

PROVING AN ALIBI.

A Chicago Brickmaker Travels Three Thousand Miles to Refute a Story That had Circulated About Him.



IT is publicly given out that Mr. D. V. Purington hastily returned to Chicago sooner than he expected, because he couldn't get the Californians

whom he met while on his Pacific slope trip, to refrain from living in adobe houses, I have private advices to the effect that the handsome, if somewhat bald-headed brick manufacturer returned for the more serious purpose of downing a rumor that he is the hero of a newspaper story that has been floating through the press.

The story is to the effect that immediately after the recent, unexpected snow storm in Chicago, a young man of dignified mien, attired in the latest fashion, even to his silk hat, yellow corded gloves and upturned trousers' ends might have been seen at a busy street corner.

He was sweeping the snow from the pavement with a long handled broom much to the amusement of the passers by.

But the young man with the dice answered not with even so much as a look.

Finally, a well dressed old man with white hair and benevolent looking side whiskers addressed him in a fatherly way, saying: "Young man, I was broke once myself, here is a quarter, go get yourself three beers and a plate of red-hots and you will feel rich again."



The swell crossing sweeper.

Tears of gratitude were in the young man's eyes as he ceased his labors and gave this explanation:

"Kind sir, I am not broke—even though I did lunch at the Athletic Club—I am merely sweeping up this beau—I mean snow in order to prove to those two aldermen there on the corner that our brick pavement can be cleaned more rapidly, and to better advantage, than stone or macadam paving. I am the head of the firm that manufactures this pavement. We put some of it here on this corner merely as

an experiment. Those aldermen are interested in paving and I wish to show them how easy it is to remove the snow. That's all there is to it. Savory?"

And calmly he swept on, while the kind-hearted old gentlemen went his way. He glanced at the aldermen and

it might have been noticed that the expression of sympathy for the crossing sweeper, had been transferred to the unsophisticated city fathers.

I didn't intend to say a word about this thing, but Mr. Purington insists so strongly that he is not the sweeper in the story and maintains so earnestly



The impertinent newsboys.

that he can prove a barrelful of alibis, that I think space should be accorded him in the CLAY-WORKER, even if it crowds out until next month, something that I wish to say about dress suits; for Will Gates (whose non de plume is Wm. D. Gates) has struck a sympathetic chord in my bosom by his letter in the March number of the CLAY-WORKER.



The nap is beginning to come off of the second suit.



They would live in adobe houses.

"Git onto his dudelets, and his dice," admiringly cried a boy with a bundle of evening papers and wet nose.

"Why don't yer put yer pants up in curl papers," added the newsboy's side partner, while an expression of delight fought for right of way with the grime on his face.

This dress-suit question must be ventilated and I am just the bellows to do the ventilating. I may justly claim to be an authority on dress suits, having worn one of 'em to a finish and rapidly getting the tap off my second suit. I have worn a dress suit ninety-seven and one-half times and getting ready to is-

sue cards for the hundredth performance—souvenirs for the ladies, mind.

CHARLES LEDERER.

their rose in the shape of the combination formed last winter had never been born. The trust is like Mahomet's coffin — between heaven and earth—with great likelihood of it remaining there.

Other propositions are in an embryo state, and something definite may result from them. One would say that it was altogether wrong to wait until the beginning of the season before endeavoring to see if something could not be done, to remedy the condition of affairs. Combination and trust have had so many by the ear, that they thought it would be all

right, that things would come out all right in the end and so they just drifted along. But they now see something must be done, and it is to be hoped that all of the manufacturers will realize the necessity of a united action.

THE TRUST

Seems to have been choked out of existence. The owners of property seemed to think that it had been formed, and that they could put any price on their land that they saw fit. A value of \$500,000 each was placed on a plant in Hackensack and another above Newburgh. After the appraisers had been around and inspected the different plants, they held a meeting in New York, and one of the men who was expected to furnish the money, remarked, "As far as we have gone—and we have just started—it will require some \$4,000,000. Where is the capital to come from with which to run the yards, as well as for the purchase of other property.

One of the earnest advocates of the trust who expected to be superintendent of one of the sections, had taken time by the forelock and engaged his private secretary at a salary of \$1,500 a year, and the secretary was to employ a typewriter; whose salary the company was expected to pay, to do his work for him. If all the officers were to be paid and fitted out in a like manner, they would be a well paid set of officers.

THE HAVERSTRAW COMBINE

Formed last December, to advance the price to \$6 and hold it there, has entirely collapsed. Orders were sent to the

agents about the middle of March to sell, which was easier said than done. They were ready to sell if they could find a customer, but buyers were scarce. The supply was full, as there were about 50 barges of the combine brick on the market from the December shipment yet unsold, as well as arrivals from along the Hudson every day. The result being, that it chipped of about \$1 per M, with a resolve on the buyers' part not to touch those combine brick.

SALES DURING WINTER.

From the first of January to the first of March did not average a barge load a day, or say, less than 250 M. per day, which goes to show that the demand for the past three months was very slow.

The Haverstraw brickmakers were somewhat surprised a few days ago by the appearance of one of the landlords at their meeting, with a proposition that he thought would lead to an improvement of the trade, and would if followed out. Heretofore this landlord has had his property leased out to the best advantage, and I presume that the leases have about all run 'out. In fact, he let one of his yards lay idle for two seasons rather than drop in the rent. Possibly he has awakened to the fact that there must be a change. I will give his plan in full.

A NEW SCHEME.

"Organize a corporation 'Limited' to buy, sell and hire and lease brickyard property, and to buy and sell brick, etc. Let this brick company lease from the owners all brick property worth having, giving a valuable consideration thereof. The company jointly with the owner, or alone, to sublet to whoever the owner suggests, using company's blank form of lease, owner receiving his rental as usual. (The usual way with this landlord is quarterly in advance, and this is the only case of the kind I know of.) If the owner runs his own property, he is to rent from the company just the same, and is as fully bound as any of the subtenants. Any lessee wilfully breaking any of the covenants in the lease, surrenders his lease at the option of the company.

Any loss occurring because of adherence to the company's lease, the company pays an equitable portion of. What conditions the lease cannot contain, are to be carried out by proper committees of the association, to be named by you.

This blank form of the company's lease can contain literally, or in effect, a reformation of all of the abuses of the business, of whatever nature, desirable to handle. You may sell brick on commission and on thirty days time.

It grades the quality equally. It raises the price reasonably, as well as lower, at proper time. It gives builders to know just what can be depended upon.

Lease will allow just so many brick to be made, with additional percentages as business requires an increased output. This and everything else to be done in a legal manner, and in such a way that it does not constitute a trust. The stock to be equally portioned between owner and lessee, according to their impor-



Kind old man—and the alderman.

P. S.—Upon due reflection and after sizing up the gentleman's physique, his general muscular development, I am constrained to say that Mr. D. V. Purington is not baldheaded—I was thinking of another man—an Indiana man.

C. L.

NEW YORK NEWS.

APRIL 1st is here, and our brick-makers are all at sea as regards any concerted arrangement for the coming season. Never in the history of the trade in this part of the country, have just such conditions prevailed and it is to be hoped that it may lead to a more satisfactory way of doing business. It may be the means of causing those who contemplate engaging in the business, to consider well the question of royalty or rent they will be compelled to pay. The rents are all very high, and the leases are drawn for not less than five years. Before the expiration of such a lease, the price of brick may be so low that all the profit that has been made, and more too, may be swept away. The landlord will expect his dollar per thousand, even though it wipes out all the tenant has made. Instances where landlords have made a voluntary reduction are few and far between. They always know that some one will want the yards, and, Shylock like, they are after their pound of flesh in the shape of rent.

Many a rose is born to bloom unseen, and it would have been better for the Haverstraw brick manufacturers, if

tance. The quality of the brick to be graded as frequently as desirable.

Thus every manufacturer will strive to make a brand that pays the best, and the lessee who makes them the cheapest, if merchantable, will realize the most profit. Each manufacturer will vie with the other for profit, so that quality and economy have a premium put on them, and the best results are produced, and we will compete with anything that offers to take the place of brick."

This proposition was given to a committee to consider. It has some good points, and would no doubt work well, if all would join. It is in nature similar to the organization of New Haven brickmakers of which Capt. Craft made mention at the Chicago Convention, only theirs controlled price, alone. This is under one head, but controls leases and output, as well as price.

This scheme had hardly been launched, when the fraternity was aroused by a vigorous

Ahoy!

What ship is that? N. Y. and N. J. Association? We thought you were lost, for you have not reported for a long time. Here are orders bearing on the present condition of the market, which we wish you to consider.

HAVERSTRAW, N. Y., March 23, 1894.

You are requested to attend a meeting of the New York and New Jersey Brick Manufacturers to be held at the Hotel Metropoles, Broadway and 42nd St., New York City, on Thursday, March 25th, 1894, at 12 M.

You cannot fail to recognize the importance of attending this meeting, as the present condition of the business necessitates the adoption of prompt and decisive measures for the conduct of business for the ensuing year.

By order of the Haverstraw Division, Hudson River Brick Manufacturers' Association.

JOHN F. SHANKEY, Sec.

Prompt to time and date, some forty or more met to discuss the ways and means to the end, with the result that they thought the best way was to start molding on the 15th of May, and only run one-half capacity. A committee of two from each town was appointed to wait upon the manufacturers of their section and obtain their acquiescence to such an agreement, and then report. One member of the committee named for Hackensack, has had his pits tempered since the 23rd of March, with the expectation of molding the next day, but has not been able to do so on account of the weather being so cold; in fact, it has been freezing every night—not much show for him waiting until the middle of May.

One gentleman speaking about the outlook for the coming season, said, "I am a manufacturer, as well as a commission merchant, consequently I am con-

versant with supply and prospective demand, and from present standpoint, can say that there is brick enough on barges and at points of shipment to last until the 1st of August."

Another from the Upper Hudson, said, that he came as a representative from his vicinity, and that on his property there were twelve machines, five of which he controlled, and that he was satisfied to let them stand still, and he was also satisfied to let his tenants do the same, not holding them to their lease.

The proposition was made, that if 70 per cent. would sign, they would consider it binding. This manufacturer said, "No," and then said, "A few years ago, Mr. Martin, of the firm of Rose & Martin, told us at a meeting of this kind, that the large firms were sure to run the smaller firms out of the business. My experience is that the little fellows will pull through some way, and Mr. Martin is a case in point. He, as a member of the firm of Peck & Martin, failed, and as a result, failed to be of the firm of Rose & Martin. I am for all to join. If not, I do not believe in letting the larger firms go on, for if we make, we ship."

So it is all along the line. As some of the large firms are now ready to start, there is likely to be some music in the air, before the Fourth of July.

FLOTSAM AND JETSAM.

The first Vice-President of the N. B. M. A., seemed to be troubled about his teamster loafing on the way. Why not adopt the same plan as in vogue here? So many loads for a day's work, and then if there is any loafing, it is on the man's own time.

In regard to Mr. McAvoy's trouble with the size of moulds. If there ever existed a brickmaker who did not change his mould in size, thinking he would be benefitted thereby, but in nine cases out of ten it results in injury. I would like to see him.

About three years ago the younger members of a certain firm, thought if the brick were a little thinner, they would burn better. The head of the firm, who was a man of experience, told them they were making good brick, and that they were well burned, but in some way, I know not how, he was persuaded to change them. He ordered a new set of moulds, with the result that the next year, they made a large number of light

brick, as the brick set loose and the fires run through.

MARKET.

For out door work, March has been very good, and the usual spring work should be moving along, and show in a demand for brick.

The prices are within the reach of the \$5 limit. Where they will go later no man can tell. If they sold for \$2 per M, it would not stimulate sales.

Pale, \$1.75 and \$2; New Jersey ordinary, \$4 and \$4.25; New Jersey, good, \$4.50 and \$4.75; Hudson River, ordinary, \$4.50; Hudson River, good, \$4.75; Hudson River, fine, \$4.87½ and \$5; Hudson River, choice, \$5.25 and \$5.50. The last price quoted being only for a certain make.

A. N. OLDTIMER.

Hackensack, N. J.

Written for the CLAY-WORKER.

THE VILLAGE BRICKYARD.

IN the cities where the production of brick has taken on the advance form of the steadily running factory men and machines meet each other in daily contact the year around; the proprietors time is likewise much confined to the one rut; turning the grindstone every day.

The village yard is something very different; in the early spring we hustle around, dig our clay over, for the frosts action, hire our men, and lay our plans for the season's work. During the summer our time is fully occupied, in looking after the minutiae of making, setting and burning brick; rarely being able to get more than an arms length away from the daily toil. When autumn comes, we continue specially busy with our teams, in closing up the brick work, before winter sets in; but with the advent of winter we all begin in various degrees to "lay on our oars."

This is the time of year that we build our air castles or at least lay the foundations thereof as well as do a lot of brain work in regard to business points.

To begin with we have had a good season's work, and as a result we find the following accounts outstanding:

| | |
|---|--------|
| John Plummer, owes us..... | \$ 700 |
| Eli Jefferis..... | 900 |
| Frank Lewis..... | 1,000 |
| Henry Thorne..... | 400 |
| Thomas Ingram..... | 2,000 |
| And sundry persons in various sums..... | 3,000 |

Thus we have a total on books of..... 8,000

This is the work that we must do, before next season opens or we will not be

able to pay our hands; these bills must all be collected, or failing in this we had better close our yards.

John Plummer being a grocer, we start in and live right out of his stock of goods, sugar, coffee, tea and meats are cash to every brickmaker; then we go to James Campbell, shoemaker; Jesse Jones, dry goods and William Smith, blacksmith and give each of them an order on Plummer payable in groceries for say \$100 apiece, and thus our grocery bill we will get; groceries, shoes for the kids, dry goods for the head of the house and shoeing for the horse flesh without the outlay of a dollar in cash.

Eli Jefferis, being a painter we arrange with him by contract to paint our real estate, both new and old as it may be needed and we possibly give some of our friends an order on him for similar work.

Frank Lewis, a bricklayer, we employ to rebuild our kilns and more than likely give us a bid on some building operation with which we have an interest.

Henry Thorne, plasterer we treat the same way; contract with him to give three coat work to the new row of houses and lay a cement floor in the cellars.

Thomas Ingram, being a carpenter; is our most valued customer, he it is, who takes contracts from the public for the erection of dwellings, stores and public buildings; and we make it a point to join in all legitimate work; we bid with him as a sub-contractor, on every job of work; we divide between him and his fellow carpenters all the work that comes through our hands with the utmost regard for the equity of the transactions; that we may keep the custom of all contractors, sometimes we go his security and in this we need to know our man clear through, or we may in the end hold an empty bag.

Then we take our sundry debtors and apply these same rules right through and the result will be if we are industrious and understand our business that by February 1st in each year our \$8,000 will be turned over about as below:

| | |
|--|----------|
| We will own in fee a three story house worth..... | \$ 2,000 |
| We will own two mortgages on similar houses amounting to | 3,000 |
| We have collected in house keeping trade | 500 |
| We have collected in cash..... | 1,500 |
| And have outstanding say the balance of | 1,000 |

Our house we now proceed to sell; and our mortgages always go off like hot cakes, and this gives us our money in lump sums by about April first in

each year. Of course as fast as this money is in hand, we pay up our debts, satisfy the mortgages against us and if we are in luck by the time brickmaking begins again, we have paid the National Bank the last note and judgment and get about a weeks calm and peaceful sleep at night, before getting our shoulder under the financial wheel for another lift on the road way to be a millionaire.

THE VILLAGE BRICKMAKER.

Written for the CLAY-WORKER.

ENAMELING BRICK.

No. 2.

CRAZING.

THIS trouble is undoubtedly caused by the strain produced upon the outer coating—be it slip, enamel or glaze—by the unequal expansion and contraction of the body and coating when exposed to changes of temperature.

The scientists tells us that burned bodies, glazes, enamels, etc., all expand an equal amount between the normal temperature and their respective melting points. Consequently a glaze melting at 2,000° will expand when heated, or contract when cooled just twice as much per degrees as a slip which melts at 4,000°.

If this be true, or even only partially true, the only way to stop these strains is to bring the melting points of the enamel or glaze as near to that of the body on which it is placed as possible. In the genuine French or Chinese Porcelain this is accomplished. The ware being burned very lightly in the first or biscuit kiln, and heavily in the second or glass kiln, the point of fusion of glaze being identical with the point of complete vitrification of the body upon which it is placed. This ware never crazes in use, even when, as in the case of crucibles or chemical ware, one portion of the piece may be heated red hot and another portion remain cool.

Slips will craze, but only when the melting point of the slip is considerably below the melting point of the body upon which it is placed.

In the majority of manufactories it is utterly impossible to use a glaze whose melting point is anywhere near that of the body, on account of warping. Iron specks are numerous other difficulties that would develop. Consequently, these strains exist. The problem then becomes one of making them of no effect. This can be accomplished in

one of two ways—either to make the glaze so elastic as to stand the strain, or make the body so weak that the glaze can hold it.

The first way upon strong, close bodies is very uncertain. I have found in glazes that fuse thoroughly at a low heat, lime or tin seem to increase their elasticity, or at least reduce their tendency to craze. If the theory advanced is correct, any material that will raise the melting point of the glaze would cause an improvement. This would probably be the case where the glaze burned at this higher heat, but when burned at its regular heat the addition of high heat materials, except lime or tin, seem to reduce the strength or elasticity of the glaze, due to incomplete fusion, more rapidly than they raise the melting point, and we have a condition existing where the strain on the glaze is probably reduced, but its capabilities of standing strain are still further reduced.

In cases where the second method can be used; that is, the body altered and reduced in strength, so that it is not capable of breaking the glaze, I have never found any trouble in completely stopping crazing. Silica added to body will usually be found all that is necessary. Care must be exercised, and one must not go too far in this direction or shivering will be the result. Shivering is undoubtedly the direct opposite of crazing—it is produced by the same strains that produce the former—but it is the result of the body giving away instead of the glaze.

I am aware that many who use two firings for glazed goods, will smile at the theory and ideas advanced, and will say that crazing is not so simple a thing. All I can say in reply is, that the two firings, with their hard biscuit and easy gloss, easy biscuit and hard gloss, easy biscuit and gloss or hard biscuit and gloss, make so many variations, and thereby hide the true reason for crazing behind so many contradictory phenomena, that it is almost impossible to understand its true cause. The one burning does not so conceal the cause, the body and glaze always being burned at the same heat—be it high or low.

Crazing is a fault in glazes as much as in enamels, and in enamels as much as in glazes—either one of them properly adapted to a proper body will not craze, and either one not adapted to its body will craze. I have never found fritting or non-fritting to have any effect upon crazing. Fritting is apt to lead to the

use of considerable soft flux, and in that way might affect crazing, but the soft flux would do the same if used raw.

Peeling and cracking in slips applied to green brick are, in the majority of cases, so far as my investigations go, the reverse of each other. Peeling is due to the body contracting too much for the slip, and cracking, to slip contracting too much for body. There are some clays of such a nature that it seems utterly impossible to make a slip stick to them; this occurs usually in silicious clays, but sometimes it seems to be idiosyncrasy. If chemical analysis were more fully resorted to, a law might be discovered governing this apparent peculiarity.

Peeling of glazes after being burned seems to be an aggravated form of shivering, and is, I believe, due to large excess of silica in body.

Blistering of green brick when slip is applied, is due to the body not being properly worked, and containing cavities filled with air, or clay being laminated. Blistering in glazes, when burned, seems to be due to excess of alumina or lime, or rather deficiency in silica. Silicious glazes usually fuse without blistering.

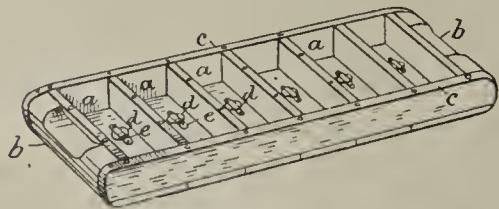
When the clayworker—especially the slip and glaze or enamel clayworker—resorts more to the exact knowledge which chemistry will give him, and when the secrecy, now surrounding the industry is abandoned, much that seems contradictory and mysterious, will be found to be controlled by fixed laws and most of the mysteries will be solved.

ARTEMUS.

KAUL'S PATENT BRICK MOLD.

SOMETHING NEW, PRACTICAL AND PROFITABLE.

IN the bottom of each chamber of this mold is a valve by which air is admitted when emptying the mold. Thus the brick leave the mold freely, insuring better edges and truer brick. It not only admits of more rapid and bet-



ter work, but saves a great deal of sand which can not run through the bottom as in the old way. It keeps the slats or rollers of machine clean as it also does the table when molding by hand. By the use of this mold brickmakers

can improve their product and save time and money. For full particulars, etc., etc., address C. F. KAUL, See ad. on page 486. Madison, Neb.

ST. LOUIS NEWS NOTES.

Business here is looking up, although no advance in prices seem contemplated, and they are still very low. Merchantable brick \$5.00 to \$5.50, ordinary, hard and red, \$5.50 to \$6.00, strictly, hard and red \$6.50 to \$7.00; stock, (which is the local term for front or pressed brick), \$14.00 to \$17.00. Out of town demand is growing strong, and there is considerable activity manifested in the growth of the home trade, principally in the line of dwellings. Several large warehouses, hotels and office buildings are contemplated, but plans not perfected.

The Builders' Exchange have just made arrangements to furnish members at a nominal cost (\$2.00) abstracts of title to property upon which buildings are to be erected. According to our laws, if a deed of trust ante dates contract of builder or material man, it takes precedence of lien.

Brick men here have had, like the balance of trades, a hard time since the panic of last year, but like our banks, not one of them have been compelled to suspend, but all seem to be as staunch and strong as the banks themselves.

Anthony Ittner, whom "all men delight to honor," has booked several fine orders for the South.

One of the plants of the Hydraulic Press Brick Co.; that is, the "Original" Hydraulic Brick Co., which was destroyed by fire, is again in operation, and another is on the road to speedy completion. This Company secured the contract for the new City Hall at Milwaukee, for one of the various kinds of buff brick made by them, and the Winkle Terra Cotta of this city has the contract for the terra cotta. The building will take 500,000 face brick and 100,000 ornamental. The Hydraulic Company have also a large order for buff and enamel brick for New Orleans for the Tulane University, and an order of 80,000 enamel brick for the new Government Building at Omaha, Neb. Their shipments to Chicago are now averaging three cars per day.

The enameling plant of this Company has a capacity of 80,000 brick per month and they have been running it full force all winter. 200,000 white enamel brick were recently shipped by them to Chicago in one order. This would indicate that St. Louis bids fair to become

noted for enamel, as well as pressed brick.

Two new brickyards have been added to the list recently—"The Enterprise" and "The Lindenwood," adding 20,000,000 annually to the already sufficient capacity, which is now, from prevailing prices, more than enough. St. Louis however, is making rapid strides, and a year of good times will give all the yards plenty of work.

The superiority of the St. Louis clay for pressed brick has gone abroad, which, added to the success of a few of the brickmakers here, is like a spider's web in the path of the unwary fly.

The Convention Number of CLAY-WORKER was duly appreciated by subscribers generally. The report of the Powwow was full—interesting.

MORTAR BOARD.

AN AMERICAN DRYER IN ENGLAND.

The F. D. Cummer & Son Co., Cleveland, Ohio, write that they have received word from Mr. W. W. Cummer, a member of their firm who is now in England, to the effect that the clay dryer which they shipped on trial several weeks ago has been accepted, having done all and more than they had promised. The trial was made at the extensive pottery of Messrs. Collier & Co., of London. At the time the order for the trial dryer was given, Messrs. Collier & Co., expressed grave doubts about the venture, fearing that the dryer would not handle their clay in a way that would be satisfactory to them, yet their anxiety to have it dried in some straightforward, satisfactory way, if it could be done, was sufficient to induce them to give the drier a trial, though they felt almost sure that the work could not be done, and their willingness to take the risk against their opinion grew out of the fact that the benefit to them would be so very great, if it could be done. They stated that if this machine would do their work satisfactorily they were prepared to give orders for several more.

It is a much more delicate matter to dry clay for the making of high grades of pottery than it is to simply dry it for the making of brick and sewer tile, etc., because for the making of high grades of pottery, it is absolutely necessary that the quality and character of the clay shall not be disturbed, and particularly that the cohesion should not be injured in the slightest degree. When it is remembered that the Englishman is a little slow and careful in his way of doing business, the fact that the dryer

was accepted within 24 hours after it was first started, must indicate that it did the work for the Messrs. Collier in a way that was entirely satisfactory to them from the very start.

We congratulate the Cummer & Son Co., on their success.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Setting and Burning Brick.

Editor Clay-Worker:

I did not think the Captain would take it so hard. Had he informed us in his paper that he had changed again to what he terms a properly proportioned brick, it would have left no room for criticism, but like myself he forget that. Speaking of properly proportioned brick reminds me that what constitutes a properly proportioned brick is somewhat problematical. It is a good bit like what Bob Ingersoll says about tariff and religion, "purely local." A New Yorker thinks his brick is properly proportioned, so do we of Philadelphia, and so on down the list, yet we all make different sized brick, and differently proportioned brick.

The Captain says it is better to make a properly proportioned brick, and set them in the kiln regularly, than it is to make a brick out of proportion and trust to a setter to space them right. My experience in this matter leads me to say that of the two ways "spacing the improperly proportioned brick" gives the best results. We do it entirely, and would continue to do it even if our brick were made $2\frac{1}{4} \times 9$ inches. I claim that you can get better results, no matter how close your brick set on each nine inch, or pier, by spacing, than you can by having the same amount of space equally and evenly divided between each and every brick. In other words, if I had to choose between a properly proportioned brick and setting them in the regulation way, and making an improperly proportioned brick, and spacing each nine inch, or pier to get the draft I would choose the latter every time. I claim that I would save time, coal and get harder, darker tops, and freer, harder, stronger arches. Our experience in spacing our brick extends over a period of two years, and in that

time we have not seen upon either of our yards an overburned arch. We are burning our brick now in four days. This is a clear gain of 24 hours in time, and of course a proportionate saving in fuel, and we get far better results than heretofore.

FRANK B. McAVOY.

Button-hole Talks---Third Round.

Editor Clay-Worker:

One great big honest brother came to me at the Convention and went on in this wise:

"That's a pretty good way of bluffing you have in talking all the time about that fellow that writes your speeches, and they really seem to take it in, and it seems to work as a joke, but I know it's true, for I saw the man—met him out around the corner and he told me all about it. Yes, and I think its darned mean of you to cut his pay down, just now too when he's havin' to work overtime to keep you goin' and load you up so you won't get caught. Oh he's havin' a hard time all right takin' his pay in old clothes and stuff when he ought to have the cash for them eleven children. Why I was so shamed myself, I loaned him two dollars and I want you to pay right up too, or I'll expose you right out and out.

"How do I know it's so? Well, I guess I know what's what and can tell a long sufferin' victim when I see him; besides that, I was always satisfied there was such a man doin' that writin' for you. This feller, though, when I got talkin' with him 'bout one thing and another told me right out that he wrote everything you said. Told me how you had a lame man at it before you got him but he wan't quick enough and so he got the job.

"Said he wrote all that stuff about the romance of Schneider, and speakin' of that he told me about another he was goin' to write up for you, and said all I had to do was to wait and see if you didn't out with it sometime, said he got it from one of the boys at the Convention. Said he overheard this feller tellin' another that when you began on that yarn he would have bet dollars to doughnuts that you was goin' to land on a neighbor of his who disappointed the old folks in the old country and eloped and settled down near him. Said this feller was the most consistent feller he ever seen and wouldn't have any lost motion 'round him, just whaled

his cow 'cause she chewed her cud nights—said she had plenty of time days to chew and he wanted her to rest nights—wouldn't let his children chew gum cause it kept their palates reachin' out to hook onto the gum and never gettin' it.

"Said the feller was just bound to work in clay but couldn't find any sale down where he was for brick or tile nor even work a company on a new kind of roofing, and, really the only thing he could find sale for was whiskey jugs, so he went at it and made them like all possessed and defended his cause—said it was all right; he made something to hold whiskey, said it was the tumbler and tin dipper men who were in a disgustin' traffic for they made things to drink out of, while he made somethin' to hold the stuff and keep it away from their insides.

"Told how this feller just had an old shed and kick wheels and when the jugs had set on the racks a little he just carried them out and laid them out on the grass and covered the whole front lot and they dried in the sun and didn't crack. Said he had an old box and sweep pug mill right near by and an old plug hoss runnin' it and the feller was so darned secretive about his business matters that he took an old bag and blindfolded the hoss so he couldn't tally up the jugs in the front yard and get onto the profits of the business."

Then he sassed me some more for the two dollars and I—well, that's enough, I went home.

GATES.

Brickmaking in Scotland.

Editor Clay-Worker:

I beg to thank you for a copy of the Special Convention Number of the CLAY-WORKER. It is an exceedingly attractive issue and I have read the instructive papers and discussions with much pleasure. You deserve great credit for giving the entire proceedings of the Convention in such good shape. The Convention is a great thing for all who can attend it and the report as you give it is a great thing for brickmakers the world over.

You have asked me to tell something of how brick are made here in Scotland. Well, they are made by hand in much the same way that I imagine they are made in America, and also by machinery. The use of machinery is increasing, owing in part to the fact that the semi-plastic machines are capable of

making rough material into bricks. Large companies have been organized for the purpose of making brick from the large heaps of refuse found near the iron mines. The refuse has been left to accumulate for years and the changes of the weather upon it causes it to slack almost the same as lime would.

After a brick machine is put down at one of these heaps of refuse the material is filled into wagons and brought up an incline by means of a continuous chain, empty wagons going down one road, full ones coming up the other. The material is then thrown into a perforated or dry pan and ground into a very fine state. It is then taken up to the top of the building by elevators, then put through a screen (the coarse going back into the pan, the fine into a mixer) where it is mixed with water and put into the machine.

The material is pugged very stiff, then put into a revolving cylinder (with four spaces in it the size of bricks required) and then repressed by the aid of a very strong press. The bricks are then taken to the kilns (Hoffmann) to be burnt, and considering the rough material that the bricks are made of, they will compare favorably with a clay brick. They are of such a good quality that the engineers of the underground railway in Glasgow, are using them for the construction of their tunnels in preference to an ordinary clay brick. Great care has been taken in burning, however, owing to the iron in the material.

Machines are also being put down at coal pits to work their refuse up. This refuse is dealt with exactly the same as the other, but does not take as much fuel for the burning. W. T. COE.

GATES AJAR

Let Us Have—Swallow-Tails.

Editor Clay-Worker:

Brother Wm. D. Gates, of Chicago, is a man of mark, any place you find him. I need not say that he is good looking, for those who have not been lucky enough to meet him need but look at the life-like picture which appears in the Special Convention Number of the CLAY-WORKER, to be impressed with his manly beauty. Besides, though sadly overburdened with modesty, never having wasted any of his original stock of the article by needlessly displaying it in public, he can speak for himself

whenever occasion demands. But to see him at his best you must meet him at a banquet in full dress, not that he is a slouch by any means when rigged out in only common Sunday clothes.

On ordinary occasions his luxurious mustacio is fairly well cared for and reasonably impressive, but when it has been elaborately pomaded by a bon ton barber and the tailor has done his best on a swallow-tail and its accompaniments, then he is simply stunning, and such he was at the stag banquet at Chicago, equalling if not surpassing Brother Purington. Now as Chicago women are not proverbial for beauty, they were not on exhibition; hence the intent of that powwow is obvious. It was solely for the purpose of impressing the rustic clayworkers with the greatness of the City by the Lake and the beauty of her great men in full dress. These country brickmakers had most of them been to the Columbian Fair, but lest there might be a lingering thought that that represented Chicago in her holiday dress only, it became necessary to get up a display which would convince the country brickmakers that the city could do wonders on less important occasions.

Who can ever forget that wonderful display of dishes? Of course I do not refer to the glassware, the silverware and the earthenware which looked so splendid. I am not so rustic as to call them dishes in such a connection. I know as well as if I had lived in Chicago all my life that when speaking of banquets, the word dishes has nothing to do with what country people call dishes, but refers only to what is on or in them. But the dishes were soon disposed of. There was a limit to the capacity of that part of our means of enjoyment. But what preceded and what followed was the inexhaustible and unsatisfying element. The more we gazed, the more the wonder grew that a swallow-tail and a pomaded mustache could add so greatly to the impressive appearance of such a man as Brother Gates, and is it not surprising that the impressible ones then and there resolved to emulate the Gateses and the Puringtons, who made that banquet the success it was, and to appear at our next powwow in full dress, mustache and all. To be fully prepared, I began at once to cultivate my upper lip, and you would be surprised to see what a luxuriant growth has already been developed. It is slightly off in color, being a shade of terra cotta or rather about what

Brother Gates' would be, well covered with brick dust.

As to the swallow-tail I find I can rent one, as the fellows did at Chicago, and save money, but my swallow-tail and its accompaniment will be on hand, you may be sure. Or, at least this was my intention until I received the March number of the CLAY-WORKER, in which I find Brother Gates takes water, something not expected of any Chicago brickmaker. It seems that some back number, from whose soul all ambition to be somebody has departed, plucked Brother Gates by his buttonhole and remonstrated against swallow-tails and the like, and he weakened, and now proposes to compromise by leaving his court toggerly at home. That suggestion must have come from Brother Adams or Brother Pike, the men of enameled pates and capacious bread-baskets who know without having to be told, it would be next to impossible to rent a coat of sufficient capacity for their well-developed forms, not to think how men of their heft would look in a swallow-tail any how. Never, while my new-born mustache gives such promise as it does to-day, will I consent to the leaving off of the swallow-tail at future powwows, or at least not until I shall have the satisfaction of humiliating Brother Gates by outdoing him in the mustache and swallow-tail business.

And the editor too! Who would have thought it? More than half endorsing Brother Gates' back-down. Now, I am a young man, and decidedly countryfied in my raising, but I have been to Chicago more than once and to other seaport towns, besides having been at several Brickmakers' Conventions, and I have learned that it is not safe to tackle an editor in his own paper. One always gets the worst of it. But, Mr. Editor, I want to ask you, Why should you show the white feather? Your swallow-tail was as long as Gates' and your mustache as ornamental, though possibly not quite as artistically barbered. At all events you had no occasion to be ashamed of your *tout ensemble*. I am sure your wife would not have been if it had been safe for women to have been at the powwow.

Now let us have peace, and that is what we never can have if you back up Brother Gates' back down. My voice is for swallow-tails and mustaches. After our next meeting I may consent to have the question of wearing swallow-tails referred to a committee, but at

present I am in favor of allowing every one to show off who feels so inclined to, and I may come to the next Convention with a resolution demanding that no one shall banquet with us who is not attired in full dress. If some are too poor to buy or rent a swallow-tail or cannot raise a luxuriant mustache, then let them stay out. But if you, Brother Editor, have weakened after the creditable display you made, and if Brother Gates gives it up, there is great danger that the man who wears such a toggery at the next session will be regarded with—but I will not say what, seeing the editor is in it. However, I will say, and say it most emphatically, that nothing but a swallow-tail will do at the next powwow for

AN AMBITIOUS BRICKMAKER.

Choose Your Method According to Your Clay.

Editor Clay-Worker:

Nearly every phase of the business of manufacturing brick was considered at the late meeting of the National Brick Manufacturers' Association in Chicago. If any one fact was not brought forward as prominently as its importance demanded, it was the supreme importance of having good material to commence with, and good burning.

Without these, a first-class brick cannot be made by either the "soft mud," the "wire cut" or the "dry clay" process, though it is true that by the soft mud process some sort of a brick can be made out of almost any kind of clay.

Good material having been attained, there is no trouble in getting a machine that will prove suitable to the clay and one which will prove satisfactory beyond a doubt. As the days of hand making are fast disappearing, so the days of soft mud brickmaking are disappearing, except in cases where a certain kind of material must be used. There are many cases where it is folly to use any other than a soft mud machine.

Next to good material stands "good burning," and here is where the greatest leak in the profits of brickmaking comes in. In many parts of our country the cost of burning our brick is equal to the cost of making, drying and setting combined. Now, if the burn is a failure, or a partial failure, the making, drying and setting, as well as the burning itself, is largely a failure.

This being true, the necessity of good burning becomes of paramount impor-

tance, and the means of producing good burns, becomes THE question of questions. As before stated, owing to the perfection attained in the manufacture of suitable brickmaking machinery, there is no trouble in getting a machine adapted to the manufacture of brick from the special kind of clay you may have. But this cannot be said so readily in regard to kilns.

"Where can I get a good kiln? is much harder to answer than "where can I get a good brick machine?" Let the kiln men answer, and each one will say, "Here, here I have it." But, let the anxious seeker turn out to find a good kiln, and if he does not find it more than "child's play," I am mistaken. Our good Brother Crary, Sr., has written much and eloquently on kilns, setting and burning, and the fraternity owes him a debt of gratitude for the light he has thrown on the matter of setting, especially.

He seems to have a controversy with the down-draft men, which appears to have arisen from the want of a clear statement of the case as to the kind of work to be done. Mr. C's kilns and method of setting and burning are, no doubt, the very best in many localities and for a certain kind of work. Down-draft kiln men do not, as I understand it, recommend their kilns for use in large manufactories of common brick. This would be folly, and we think it equally foolish to assert that up-draft open tops kilns are as good for burning fine pressed brick, or vitrified street paving brick. Much as I respect Brother Crary's views, I must say that probably he will answer any objection to up-draft kilns with the statement that they (the objectors) do not know how to set or burn an up-draft kiln. And I confess that I do not, if it is true that pressed and paving brick can be burned as well in up-draft kilns as in down-draft kilns.

There are plants located on account of the superior clay, away from any market. All brick must be shipped, and low priced brick will not bear shipping. There is no profit in it. In such cases, it is desirable to make nothing but high priced goods that will bear shipment. How can this be done with up-draft kilns? It may be asked, how can it be done with any kiln? We answer, it absolutely cannot be done, practically it can be done. When a kiln will turn out 95 to 97 per cent. of brick that are worth, say double what they would be worth if only

burned suitable for common brick, we are justified in saying "Practically, it can be done."

Recently, the claims of the continuous kilns have been urged with much zeal, worthy of a good cause. The continuous kilns have some merits, and give good results in some kinds of work. Years ago we were struck on the theoretical beauties and excellencies of the Hoffman Kiln. We went out of our way to Plattsow, N. H., to see one, and a daisy it was, said to have cost \$25,000. It was beautiful in theory—beautiful when constructed, but unprofitable to its owners. I saw another Hoffman in New York City and another in Philadelphia, both of which were used for burning fire brick, and were giving satisfaction.

For a practical man to look into a kiln of brick that is being burned, and see the brick almost at a white heat, without the use of fuel in that compartment, all of the heat being obtained from an adjoining compartment, is something to command admiration. I was told another Hoffman was built in New Orleans, and I saw a small one myself in Baltimore. All continuous kilns I have seen since, combine the principles and are a modification of the Hoffman.

The mistake most promoters of continuous kilns make, is recommending them for work for which they are not suitable. They frequently claim they are par excellence for burning fine front brick. This claim is absurd, as the fuel has to be fed through the crown into small vertical openings made by setting and must come in contact with the brick and discolor them. It is now claimed by some that continuous kilns are suitable for burning paving brick. I think at the present state of the art, this claim is not well founded.

The chief merit of continuous kilns is the saving of fuel. This is its chief recommendation, and where fuel is very expensive and labor very cheap, its claims to public favor are more pertinent. The chief objections especially to the compartment kiln arises from the fact that the compartments are small, holding but few brick, and whether a compartment kiln, or not, the setting, owing to the large number of small vertical openings which must be made, becomes extra expensive. This increases the cost of setting, and the cost of emptying is greater than the open kilns, by reason of the brick having to

be wheeled out of a small opening.

I think a number of these points were not brought out at the recent convention. I may safely say, the man is bold and reckless who will claim that for burning front brick, or vitrified or annealed brick, there is anything in the market better than the down-draft principle. The chief objection to the down-draft is first cost; this also, applies largely to the continuous kiln. But it is hard to find any really good thing the production of man, that is not expensive. The matter of economy in fuel is of great importance in brickmaking. The down-draft kiln, as usually constructed, lays no claim to saving of fuel. The feature has been somewhat improved by taking the heat out of the top of a cooling kiln, and passing it into the top of a kiln of green brick to water smoke and heat up the same.

This is an improvement, but objectionable, from the fact that the draft in drying off is downward, the heat acting first on the top brick and carrying the watersmoke, or vapor, down through the brick, so that the vapor from the top and intermediate brick acts on the bottom brick, rendering them soft and unable to bear the weight that rests on them. This objection has been overcome by introducing the heat from a burning or cooling kiln at the bottom of the kiln to be dried off and heated, and the exit of watersmoke through the openings in the crown.

But a recent invention goes a step farther, and not only takes the heat out of the cooling kiln, but also out of a burning kiln and (without interfering with the burning of the latter) introduces it at the bottom of the green kiln, and dries off and heats up by the up-draft principle. In this case, there are two kilns under fire at the same time, and yet fire only in the furnace of one of the kilns. Practical men know how much fuel it takes to dry off and heat up a kiln of brick, so as to bring the brick to a cherry red heat. If this can be done by the heat from a burning kiln, without interfering in any way with the burning of the latter, we have the cheap benefit of a continuous kiln, and preserve the valuable down-draft principles indispensable in burning paving and pressed brick.

I congratulate you on the achievement of the Convention Number of the CLAY-WORKER. It was a splendid production.

J. K. CALDWELL.

Minneapolis, Minn.

Expert Brickmakers Vs. Common Sense.

Editor Clay-Worker:

I have read with interest the able articles written by Bro. Crary and agree with him in a great many particulars, but in his article published in the March number of the CLAY-WORKER, I beg to take issue. I have no objection with his history of the progress of brick machinery, but when he gives advice to brick machinery manufacturers, I am reminded of P. T. Barnum's philosophy, "Listen, but do not always follow the advice of others."

Every brick machinery manufacturer is no doubt conscientious in believing that "I have just the very machine you need." If he did not, who would think so for him? The machinery manufacturer takes the same view of his goods and tries to sell them by the same methods that the brick manufacturer tries to sell his brick, and where is the brick manufacturer that does not believe that he has the best brick in his locality?

I agree with Bro. Crary about "Getting full particulars regarding the prospective purchasers of clay bank," and in many cases the purchaser of machinery will send the best clay he can find, which will change its nature en transit by atmospheric action, and with the majority of clays to the advantage of the machinery manufacturer.

What is the necessity of sending an expert brickmaker to examine the clay bank when you have samples of the clay at hand? No doubt, Bro. Crary thinks the expert brickmaker could tell more about how the clay would work on a particular machine by looking at the clay bank than the machinery manufacturer can by examining the samples. This is a delusion, for there is no man who can tell what the machine will do with the clay until it is tried by a practical test.

What I mean by a practical test is, not to make a test of the clay at the works of the machinery manufacturer, but by putting the machine in practical operation at the clay bank where the machinery is to be used, for the reason that in making a test at the machinery builder's works it will be made to obtain the best results with the clay at hand. Time is not taken into consideration during this test. The clay is new to the man making the test, who uses his best judgment how much moisture is necessary to obtain the best results, and if he "hits it," all

well and good. If he misses it, then it is not a fair or practical test, because he will let the clay stand until it dries out or adds more water and passes the clay through the machine the second or third time, which is unfair, for the reason that this would be impractical to do at the clay bank, because it is unprofitable and it would not be done this way in every day practice. The machinery manufacturer knows that if the brick that comes from the machine when it passes through the first time are not perfect, there is no sale for him. Therefore, the second or third operation.

It is more practical for the machinery manufacturer to make this test than to send an "expert brickmaker" to examine the clay bank, for the reason that I do not believe that the man is living who can examine a clay bank and tell what effect the machinery will have on it, or whether the machine will work or not. It is true that from traveling over the country and examining a great many clays and seeing them work, a man can form some idea what can be done with them, but owing to the particular mechanical construction of the greater variety of clays, he is just as liable to miss it as to "hit it."

Further, a machinery manufacturer may have the poorest machine extant, but plenty of money behind it, and can afford to employ an expert brickmaker, and he at the same time would expect the expert to work to his interest, and the expert brickmaker desires to make a good showing by selling as much machinery as possible. Where is the expert brickmaker who is capable of doing what Bro. Crary recommends? He is in business for himself or in the employ of others to whom his services are just as valuable as they would be to the brick machinery manufacturer, and who can and will pay as much for such services.

Bro. Crary advises the machinery manufacturer to run the yard for a time sufficient to demonstrate that the clay is of that character to make brick of a merchantable quality. Why should the machinery manufacturer be asked to do all this? Where is the Dryer, Kila and Engine man? Is it not just as essential to them to make a success of the plant, and are they not as interested in its success as the brick machinery man.

I might ask Bro. Crary if it would not be necessary for the machinery man to sell the brick, down the reports circula-

(Continued on Page 470.)

THE CLAY-WORKER.OFFICIAL ORGAN OF THE NATIONAL BRICK
MANUFACTURERS' ASSOCIATION OF THE
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T. A. RANDALL & CO.,
5 Monument Place. INDIANAPOLIS, IND.

A SERIOUS MATTER.

Shall we, or shall we not wear full dress at the Powwows, seems likely to become an issue. Our youthful friend, "An Ambitious Brickmaker," from his letter on a preceding page, seems to be all torn up over the question. As is very common with young men of an envious turn of mind just going into society, he seems to have been captivated with the fine appearance of the Master of Ceremonies and others at the Auditorium Banquet, while, according to Brother Gates, in our March issue, some of the older members who took a different view, were quite disgusted, feeling that they appeared at a disadvantage on that occasion.

It speaks well for Brother Gates that he is willing to forego the swallow-tail hereafter if it is seriously offensive to even a few. But, as to his mustache, we venture to predict he will die for his rights, before he will surrender to one who has never had such an ornament, and who takes a year to cultivate one, which he, himself, admits to be sandy complexioned. If there is anything a man will fight for, it is his whiskers, especially his mustache, and Brother Gates is not the man to allow so important a part of himself to be lightly spoken of, or insinuated against.

As to the merits of the "full dress" question, we do not care to further discuss it now. Perhaps it would be no

more than fair to follow the custom inaugurated at the Auditorium for another year, till our ambitious young friend has made an exhibition of himself. If we do not, he will forever feel sour about it, and charge those who have strutted till they are tired of it, with jealousy, or something meaner.

It is not wise to prophesy ordinarily, but we think in this connection we can safely promise our ambitious brickmaker friend and his followers, if he has any, that wherever the next Powwow may be held, the swallow-tail will not be interdicted. He can come prepared to strut to his heart's content, and none will say him nay.

LABOR'S RIGHTS AND WRONGS.

To a man up a tree, this looks like a bad time for laborers to indulge in strikes. Only a few days ago the cry was for bread: Now we have the demand of the walking delegate. A Chicago manufacturer speaking of the brickmakers' strike says: "We have agreed to give the men their wages, only we insist on the right to employ or discharge, as we see fit, giving them the same privilege of being employed or quitting. They insist on the right to run the place with the aid of walking delegates and committees. To this we certainly object. Whether we shall ever make brick again in Chicago depends on the settlement of this question. We will never surrender our rights. It may be that the grass will grow more luxuriantly because of this conditions of affairs than it did a year ago."

There is a carpenters' strike now on in this city, and the strange thing is, that there is little work for carpenters to do. A large number of men out of employment and yet a strike. A national union is supplying these strikers with six dollars a week. This is really supplying the mass of carpenters with more funds than the natural amount of carpenters work to be done would supply without the strike. Work had only started when the walking delegate appeared on the scene, and instead of the anxiously looked for resumption of building, we have a strike.

The union demands that every man who can carry a card is entitled to thirty cents an hour. The contractors are disposed to pay thirty cents an hour to men who are worth it, or more where the capacity is exhibited, but not

thirty cents an hour to a man merely because he has a card. This should be the advantage of the good mechanic; but the good mechanic is in the minority, and the demand is for the uniform scale, than which nothing could be more unjust. The right which there is in all things will eventually control these matters.

A MAN OF MARK.

We present on page 439 of this issue a very excellent portrait of Mr. D. G. Harriman, secretary and treasurer of the Wyandance Brick and Terra Cotta Co., of New York City. Mr. Harriman is well known to the brickmakers of this country, having achieved renown by his masterly address on "Labor Troubles and How to Avoid Them" at the Washington Convention. His stirring letter on "The Present Condition of Business, its Causes and Remedies" is still fresh in the minds of the members of N. B. M. A., who participated in the Powwow at the Auditorium.

It is a pleasant thing to know some little of the history of a man of Mr. Harriman's strong personality. He was born in New Sharon, Maine; grew up on a farm; graduated at the Wesleyan University at Middleton, Conn.; was a teacher for some years, a lawyer for 27 years, in the brick business for six years; incidentally a successful writer on the Tariff, one pamphlet reaching a circulation of 1,250,000, in 1888-90; and another much larger reaching 750,000 copies in 1892-3.

It is not necessary to agree with everything a man says in order to fully recognize his great strength and general usefulness to the world at large. Mr. Harriman belongs to the new school of brickmakers to whom the craft must look for advanced methods that will place it where it belongs—in the front rank of industrial arts.

A TECHNICAL SCHOOL FOR CLAY-WORKERS.

We have from Mr. Edward Orton notice of the fact that the House of Representatives of the Ohio Legislature at Columbus, has just passed a bill for the purpose of establishing a Technical School for Clayworkers. It is now to go before the Senate, and it is expected that it will receive the favorable consideration of that body. This hopeful view is taken in the light of the fact that it passed the House by

a vote of 63 to 7. Thus we have a great step in advance. A Technical School for Clayworkers, which we may know will soon put the clayworker's art on an academic basis, and remove from the clay world the necessity for many useless experiments in the individual development of knowledge on this subject. The result of universal experience in the handling of clay will be brought together; it will be taught intelligently and systematically to the young men interested in this art, and will be given to the world as practical, definite knowledge, having a definite relation to the commercial value of our country's products. It is just like adding that much definite wealth to the individual connected with this art, and hence to the national wealth. The outlook is hopeful.

TRADE LITERATURE.

THE EAGLE IRON WORKS, Des Moines, Ia., are sending out a four-page circular illustrating and describing their new iron frame dry pan clay crushers, which embody several distinctive features. They will be pleased to mail one free to any reader who will send them his address.

THE BUCYRUS DRYER, is the title of a new and very handsome catalogue now being mailed by the Frey-Sheckler Co., Bucyrus, O. It is printed in two colors, on fine coated paper and illustrated by beautiful half-tone engravings. The subject of drying brick is treated in a comprehensive manner, several pages being devoted to dry cars, turn-tables, etc., of which they have a large variety. Though an expensive catalogue, we presume any of our readers can obtain a copy of it free on application.

THE LATEST ACHIEVEMENT in the art of Continuous Brick Burning, is the theme of a new pamphlet issued by P. L. Youngren, Oakland, Cal. The merits of the Youngren Continuous Compartment Kiln and Continuous Tunnel Kiln are fully set forth, and the method of building the kiln carefully illustrated. Those wanting to know more about it will kindly address Mr. Youngren.

THE TIFFANY PRESSED BRICK CO., 403 Chamber of Commerce Bldg. Chicago, announce that they have made a new departure, and are now making enameled brick, which are guaranteed to be equal in quality to the best English

product. They recently secured the contract for these brick to go into the "Marquette" Office Building, to be erected in that city, in the face of sharp competition. They have out a very pretty pamphlet which fully describes these brick. If you want one, drop them a line.

THE WALLACE MFG. Co., Frankfort, Ind., are mailing their catalogue No. 14, which is devoted to their Wonder Brick Machinery, of which they make a complete line, and all of which is carefully described and illustrated in an admirable manner. Every brickmaker using stiff clay machinery should obtain a copy of this catalogue, which they can do at the expense of a postal card.

THE JEFFREY MFG. Co., Columbus, O., has issued a neat pamphlet, telling all about the Jeffrey Stell Cable Conveyors, which combine many points of vantage. They have made a study of the subject of carrying ores, clays, coal, etc., etc., for many years and have perfected many little devices that enable them to do that character of work very expeditiously and economically. If you are interested, write them direct.

WE ARE INDEBTED to the Galesburg (Ill.) Brick and Terra Cotta Co., for an interesting pamphlet, telling of a test of paving brick recently made at Rock Island, Ill., in which their brick figured very conspicuously, proving superiority in nearly every particular. The pamphlet sets forth the fact that annealed brick is the best and cheapest material for paving streets, and cites several severe practical tests that prove the claim. We presume any of our readers can secure copies of the pamphlet by addressing the above Company.

In renewing his subscription to the CLAY-WORKER, Geo. C. Davison, Tyrone, Pa., writes: "Could not dispense with the CLAY-WORKER and the many good practical suggestions for the benefit of brickmakers it contains, for the paltry sum of \$2.00. Had I possessed and read, ten years ago, the many good things contained in your issues of the past year, it would have saved me in cash, a sufficient sum to have presented a few subscriptions to every brickmaker within a radius of one hundred miles, and then have money left."

Mention the CLAY-WORKER,

When writing to Advertisers,
Always mention the CLAY-WORKER.

NOTICE TO BRICKMAKERS.

SUPREME COURT—ALBANY COUNTY —
James W. Tubbs against Albert H. Newton, Andrew C. Newton and Sylvester J. Newton.

Notice is hereby given that by virtue of an order of the Supreme Court of this state, granted January 4, 1892, at Special Term, at Troy, New York, Justice E. L. Fursman presiding, the subscriber, as receiver in the above entitled action, will sell at public auction at the Harmony Hotel, in the City of Cohoes, Albany county, state of New York, on the 21st day of January 1892, at eleven (11) o'clock in the forenoon of that day, for cash, all the right, title and interest which such receiver, and which said Albert H. Newton and the firm of A. H. Newton & Brothers (composed of the above named defendants) and said defendants, Albert H. Newton, Andrew C. Newton and Sylvester J. Newton had on June 25th, 1891, or at any time thereafter, of, in and to the following United States letters patent, and the inventions thereof:

No. 284115 dated August 28, 1883.

No. 290347 dated December 25, 1883.

No. 385790 dated July 10, 1888.

No. 322455, July 21, 1885, re-issue No. 10796 dated December 25, 1888.

No. 372698 dated November 8, 1887.

No. 327711 dated October 6, 1885.

No. 407030 dated July 16, 1889.

And of, in and to certain patterns for making machinery according to said patents. Such sale is to be entirely for cash, and the purchaser or assignee of said right, title and interest, as aforesaid of, in and to said letters patents and patterns will be authorized, at their option, to sue for, maintain and enforce any and all actions deemed by them necessary to protect their rights and purchase in the name of the subscriber as such receiver, on his receiving a sufficient indemnity against all costs and expenses to which he may be subjected in consequence of any suit.

Dated Cohoes, January 6, 1892.

JOHN E. MACLEAN, Receiver.

I am the owner of all the patents herein stated, and covering the New Champion Sanding Machines and sold by an order of the Supreme Court of the State of New York, and mine by the assignments of Mrs. H. Tubbs, and the Manufacturers Bank of Cohoes, N. Y., and I will protect all my customers in the use of said machine from all loss by use of them and prosecute all infringements by others. JAMES A. BUCK,
Dated April 4, 1894. Cohoes, N. Y.

JAP MILLER.

BY JAMES WHITCOMB RILEY.

JAP MILLER down at Martinsville's the blamedest feller yit!
 When *he* starts in a-talkin' other folks is apt to quit!—
 'Pears like that mouth o' his'n wuz n't made fer nothin' else
 But jes' to argify 'em down and gather in their pelts:
 He'll talk you down on tariff; er he'll talk you down on tax,
 And prove the pore man pays 'em all—and them's about the fac's!—
 Religen, law, er politics, prize-fightin', er base-ball—
 Jes' tetch Jap up a little and he'll post you 'bout 'em all.

And the comicalist feller ever tilted back a cheer
 And tuck a chaw tobacker kind o' like he didn't keer,—
 There's where the feller's stren'th lays,—he's so common-like and plain,
 They haint no dude about old Jap, you bet you—nary grain!
 They 'lected him to Council and it never turned his head,
 And didn't make no difference what anybody said,—
 He dldn't dress no finer, ner rag out in fancy clothes;
 But his voice in Council-meetin's is a turrer to his foes.

He's fer the pore man ever' time! And in the last campaign
 He stumped old Morgan County, through the sunshine and the rain,
 And helt the banner up'ards from a-trailin' in the dust,
 And cut loose on monopolies and cuss'd and cuss'd and cuss'd!
 He'd tell some funny story ever' now and then, you know,
 Tel, blame it! it wuz better'n a jack-o-lantern show!
 And I'd go funder, yit, to-day, to hear old Jap norate
 Than any hgh-toned orator 'at ever stumped the State!

W'y that-air blame Jap Miller, with his keen sircastic fun,
 Has got more friends than any candidate 'at ever run!
 Don't matter what *his* views is, when he states the same to you,
 They allus coincide with your's, the same as two and two:
 You *can't* take issue with him—er, 'at least, they haint no sense
 In startin' in to down him, so you better not commence,—
 The best way's jes' to listen, like your humble servant,
 And jes concede Jap Miller is the best men ever wuz!

RUNNING THE UNIVERSE.

IS FARMERS in the country, as the seasons go and come,
 Is purty much like other folks,—we're apt to grumble some!
 The Spring's too back'ard fer us, er too for'ard—ary one—
 We'll jaw about it anyhow, and have our way er none!
 The thaw's set in too suddent; er the frost's stayed in the soil
 Too long to give the wheat a chance, and the crops is bound to spoil!
 The weather's most too mild, er too outrageous rough,
 And altogether too much rain, er not half rain enough!

Now what I'd like and what you'd like is plane enough to see:
 Its jest to have old Providence drop round on you and me
 And ast us what our views is first, regardin' shine er rain'
 And post 'em when to shet her off, er let her on again!
 And yit I'd ruther, after all—considerin' other chores
 I got on hands, a'-tendin' both to my affairs and yours—
 I'd ruther miss the blame I'd git, a-rulin' things up thare.
 And spend my extry time in praise and gratitude and prayer.

—In "Neighborly Poems"

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 Prof. I. O. Baker, \$.25

Mailed, postage free, on receipt of price. All of
 them to one address for \$5.50. Address T. A. Randall
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ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and Belleville, Ill.

ESTABLISHED 1859.

RED Pressed and Ornamental Brick of unsurpassed quality
 a specialty and can be furnished in any desired quantity.
 Builders who desire the finest pressed brick at reason-
 able prices, are requested to write for illustrated catalogue and
 price list.

Rock-faced and Roman brick, red and brown, granite,
 mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

ANTHONY ITTNER, Telephone Building, ST. LOUIS, MO.

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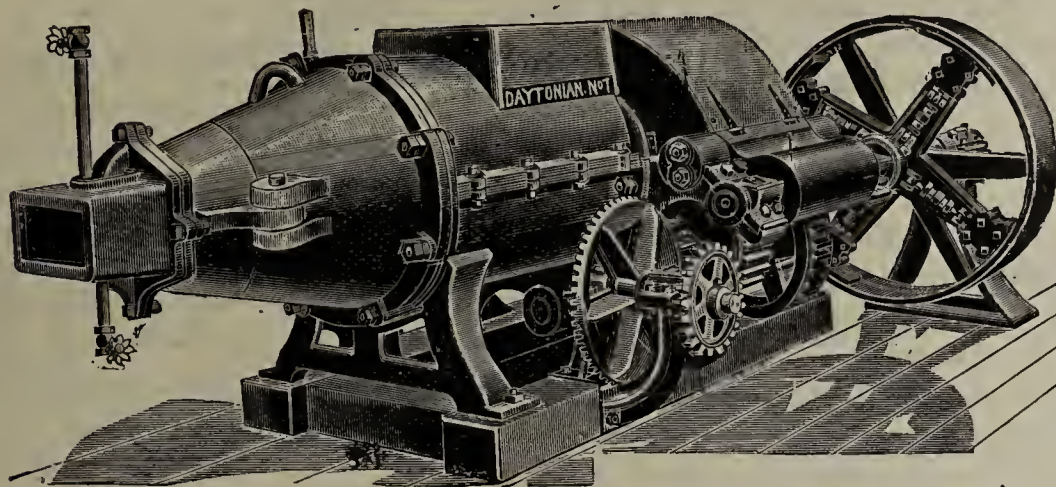


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WELLSVILLE, O. U.S.A.

MANUFACTURERS OF COMPLETE MACHINERY.

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES, STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES, DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS, FOR BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS & ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFTING, BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS MANUFACTURED & CARRIED IN STOCK WITH ALL MILL & FACTORY SUPPLIES.

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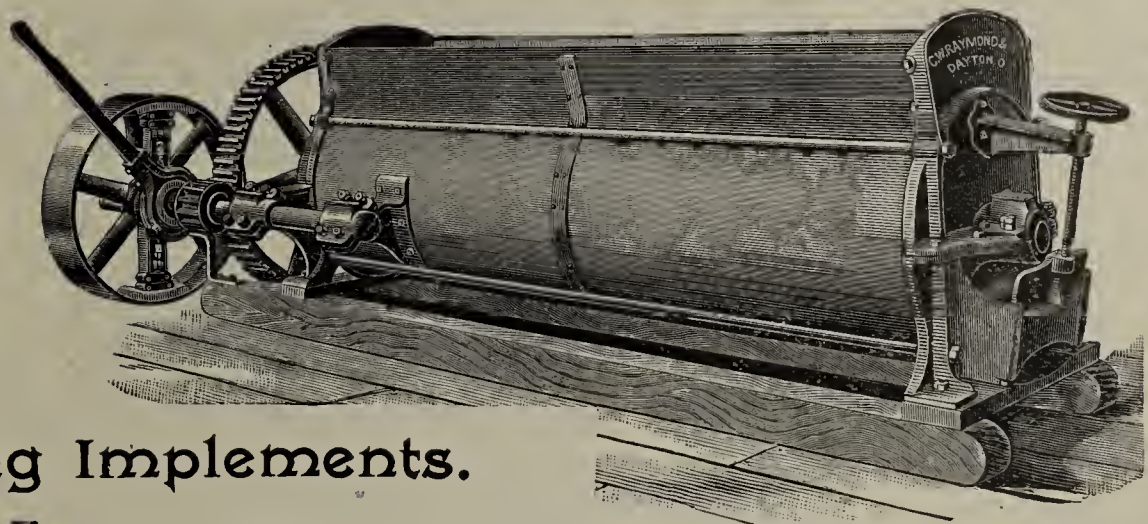


BRICK

Brick Machines:

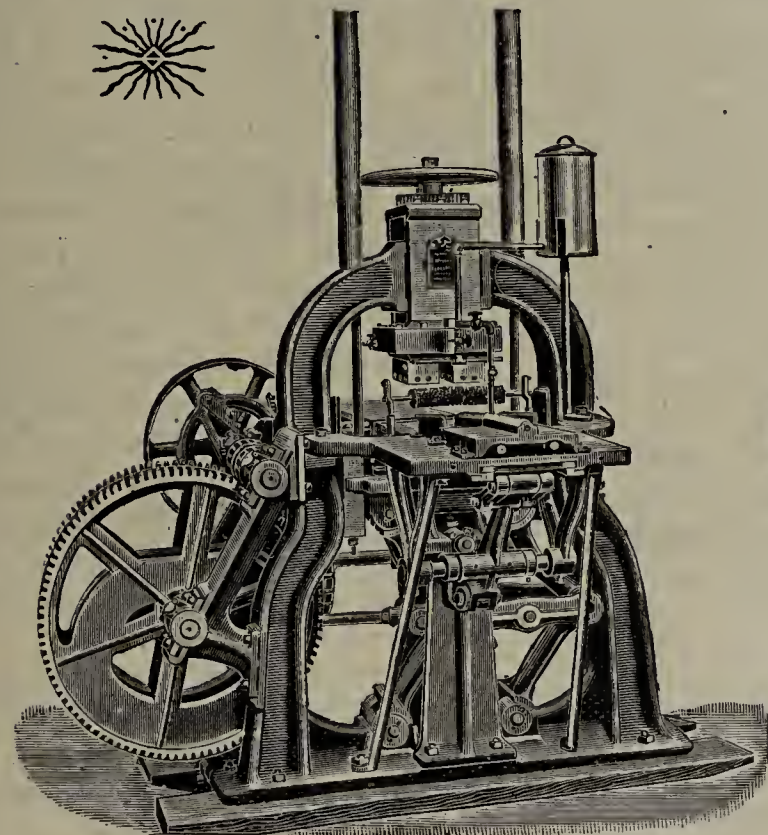
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A COMPLETE LINE OF

Clay Working Implements.



The Columbian Special Re-Press.

*Re-Presses for Red Brick,
Re-Presses for Fire Brick,
Re-Presses for Paving Brick,
Re-Presses for Ornamental Brick,
Re-Presses for Roofing Tile,
Re-Presses for Sidewalk Tile.*

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THE LARGEST LINE OF
RE-PRESSES
IN THE WORLD.

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C. W. Raymond & Co
DAYTON, OHIO.

... SEND FOR CATALOGUE ...

"EXPERT BRICKMAKERS VS. COMMON SENSE."
(Continued from page 464.)

ted by the brickmakers' competitors, allay prejudice and maintain prices so that the brick manufacturer will be assured a good bank account at the end of the season, as to ask all he has of the manufacturer of machinery? It is practical for a man to build machinery, but not always practical to furnish brains with which to run it.

I will ask Bro. Crary who is willing to pay for the expense of this expert and for operating the plant, and who will pay the expense of the experiment if it should prove a failure? For, under the conditions Bro. Crary mentions, the trouble would not be with the machinery nor the man who operates it, but it would undoubtedly be chargeable to the peculiarity of the clay bank, and would not the proposed brick manufacturer have more at stake in the success or failure of the experiment? Does not his future in the manufacture of brick depend upon the trial or test? Therefore, to us it seems that the prospective manufacturer should take chances that are in all business ventures, and should not expect one or a number of men to stand the expense of an experimental business venture, when one or all the others have proven their ability to make machinery and manufacture it profitably. If it were not a success, the machinery man would soon be looking for business in other lines or go back to his trade, if he has one. He has not called upon the brickmaker to lay awake nights, inventing machinery, nor furnish money to carry on his experiments; for, as a rule, that man who tries the experimental machinery does so because the inventor makes him inducements to do so, and also to better his condition.

Did it ever occur to Bro. Crary what an army of expert brickmakers it would require? Where are they to get this number of experts, and will the brick manufacturer guarantee not to offer these experts more salary than the machinery manufacturer can afford to pay? And if the machinery manufacturer assumes all the responsibility asked, will the brick manufacturer pay the expense of the experiment if it proves a failure?

Does Bro. Crary realize that few men will acknowledge that there is any trouble with their clay bank, and but who will contend that they have the best clay bank in the country, and that they will become as much offended at

telling them of the inferiority of their clay, as an inventor will by having reflections cast on his machinery or inventions?

Bro. Crary says, "It don't do to say, we guarantee our machinery and refer you to parties using them." If the machinery manufacturer did not say (in writing) that he guarantees his machinery, he would never sell it, and when he refers the prospective buyer to those who are using his machinery, he is giving the prospective buyer an opportunity of investigation as to whether his machinery is a success and whether he has any grounds to make a guarantee or not. Will the prospective buyer guarantee that he is and has been a practical brickmaker and will operate the machinery and handle the clay according to their nature? If he will, the chances of success will be increased one hundred per cent. The fact of the machinery manufacturer having machinery in successful operation to refer to is proof that it is a success.

Bro. Crary's conclusion is very good—"The brickmaking craft needs more thoroughly well skilled, practical brickmakers," and the novice should not look to the brick machinery manufacturer to furnish such men, for he is busy looking after practical men to make his machinery, and Mr. "Novice" must look to his prospective competitors for his expert brickmaker.

Bro. Crary voices the sentiment of a great many impractical men who want to go into the brick business, but have not the nerve to battle with the difficulties that confront them, and want some one to lay their want of knowledge on by requiring the machinery manufacturer to carry the load for them. At the same time those brickmakers who are practical and established in business complain of the high prices the machinery manufacturer is asking for his machinery, which high prices are caused by risks the manufacturer is required to take in order to sell it. In order to lower the price of machinery the brick manufacturer must take the risk instead of compelling the machinery man to take more. TIM. TINKER.

GLAD TIDINGS.

We have received a dainty little communication from Birmingham, Ala., telling of the safe arrival in the home of Jno. W. Sibley, Treasurer of the N. B. M. A., of Miss Hettie Camille Sibley. The happy event occurred March 20th,

at which time the little stranger weighed eight pounds. We congratulate Mr. and Mrs. Sibley on the happy event and wish Miss Hettie long life, fraught with peace and joy.

A VERY STRANGE CASE.

How true it is that fiction is less strange than truth. We are frequently startled by the wonderful events in real life. One of the most remarkable coincidences that has come to our knowledge of recent times is a piece of—shall we say, unconscious plagiarism, which we find in the March 28th issue of the *Clay Record*.

Under the heading "Hints on Brickmaking" (which we presume was unconsciously borrowed) is almost a verbatim copy of "Hints on Brickmaking, No. 55," which appeared in the August, 1891, *CLAY-WORKER*. It is indeed a remarkable coincident.

We congratulate our cotemporary on the acquisition of so able a contributor. We shall look expectantly for further matter from his able pen. If subsequent articles are as instructive and practical as the one referred to, he will soon achieve an enviable reputation.

Our own "Hints on Brickmaking" which the gentleman so closely imitates (?), are prized highly by our readers because of the rare good common sense displayed in the treatment of all question pertaining to brickmaking. From the first number of the series to No. 86 which appears on a preceding page of this issue, every paper has contained some practical thought or suggestion of benefit to our vast army of readers. It is gratifying to think that "Hints" are so highly appreciated, that some even go to the trouble of committing them to memory, for we suppose that's how it happened with J. Kratzer, who after a lapse of time forgot all about it, and in writing on the same theme unconsciously used the very same language—a truly remarkable thing. One so studious and painstaking will make his mark.

We wish to congratulate our cotemporary and at the same time adjure it to use more care in reading proof. One or two paragraphs of the article referred to were seriously marred by improper punctuation and the omission of several lines—a blunder of the compo's no doubt. It's a great pity to have such good matter marred in that manner. We sincerely hope that those in authority will not let it happen again.



DRAWN FOR
THE WALLACE MANUFACTURING CO.,
FRANKFORT, IND.

EDITORIAL NOTES and CLIPPINGS.

Parker, Kans. is to have a new brick-yard.

Chas. Meyers, Richmond, Ind., wants to purchase a clay crusher.

W. Benjamin Davis will establish a brick plant at Manchester, Va.

A. W. Osborne will erect a brick and fire proofing plant at Blacksburg, S. C.

The brickyard of Jno. Preetzman, Muncie, Ind., was damaged by fire recently.

Kennewick, Wash., is in need of a tile plant. C. J. Beach, of that city, is interested.

The Cambridge (Ohio) Paving Brick Co., will erect a paving brick plant in that city.

The tile factory of D. H. Haeger, Elgin, Ill., was completely destroyed by fire 26th ult.

Wood, Harmon & Co., Washington, D. C., are in the market for brickmaking machinery.

A pressed brick company has been incorporated at Hannibal, Mo., with a capital of \$40,000.

Marcy & Gardner have purchased a tract of land at Amherst, Mass., and will erect a brick plant.

The McMillan Brick Co., has been incorporated at Minneapolis, Minn. Capital stock \$15,000.

M. W. King and Arthur Embery, have purchased O. C. Beal's brick and tile yard at Grand Blanc, Mich.

The Fort Scott (Kans.) Hydraulic Cement Co., has been incorporated for the manufacture of brick, etc.

Wm. H. & J. W. Young have purchased land and will operate a brick plant nearly Berkeley Springs, Md.

E. E. Ropes, Astor, Fla., in a recent communication, says he thinks that city a good point for a brick plant.

The large plant of the Meridian (Miss.) Pottery Works was destroyed by fire the 1st inst. Loss about \$7,000.

E. M. Pike has purchased Mr. Castle's interest in the Chenoa (Ill.) Tile and Brick Works and is now sole proprietor.

The residence of M. R. Gleason, of the Empire Pressed Brick Co., Canandaigua, N. Y., was destroyed by fire the 26th ult.

The Salt Lake Pressed Brick Co., Salt Lake City, Utah, will increase the capacity of their plant by building another kiln.

We are advised by Wm. Perry, that a company composed of Wm. Perry, Wm. Lynch and D. E. Thrower, has been organized at Ridgeville, S. C., for the

manufacture of brick for the Charleston market. They have a capital stock of \$10,000. J. C. Steele, Statesville, N. C., will furnish the necessary machinery.

A company is being organized at Rockdale, Texas, for the manufacture of brick. W. H. Veasey of that city is interested.

Geo. and Jas. Thornton, have leased the brick yard at Bancroft, Mich., and will operate it under the firm name of Geo. Thornton & Son.

J. D. Fay, Columbus, Mo., writes that he is running his yard night and day in order to fill an order for nine million brick for the State University.

The Bibbville (Ala.) Fire Brick Co., is moving its plant to Bessemer, Ala., and will make extended improvements, including new machinery, etc.

The Savage Fire Brick Co., Keystone Junction, Pa., one of the oldest brick-making plants in the country, are equipping their yard with Simpson presses.

The Spencer (N. Y.) Brick Co., has been incorporated. The directors are William H. Bostwick, S. Alfred Seeley and Charles H. Puff. Capital stock \$10,000.

The brick manufacturers of Dover Point, N. H., and vicinity have formed an organization to be known as Piscataqua Brickmakers' Association. E. D. Pinkham of Dover Point is president.

The Richmond (Va.) Brick and Tile Works has been organized with a capital of \$15,000. W. B. Gav. Boston, Mass., R. Wilson, Frederick, Md., and W. L. Walters, Richmond, Va., are interested.

ON page 507 of this issue, our readers will find an attractive 'ad.' of a new stiff clay brick machine, the "Cleveland" which we opine derives its name from the city of its birth and not the Presi-

dent. However that may be, the "Cleveland" brick machine is said to be a winner by virtue of its great strength and capacity. For further particulars address the manufacturers.

Geo. Burnham's Sons, Milwaukee, Wis., have abandoned their old yard on Park street and are erecting a new plant farther out of the city at the intersection of Potter and Howell avenues.

H. M. Faith, Warrenburg, Ill., writes that business in that locality is good, he having sold all of his last season's products and could have disposed of more. He is running his plant to its fullest capacity.

C. & A. Potts & Co., of this city, report that the demand for their disintegrators and mold sanders for this season has been beyond their anticipations. They have made shipments during the past month to all parts of the United States.

S. K. Fletcher, General Agent, successor to Fletcher and Thomas, dealer in brick machinery and brickmakers' supplies, Indianapolis, Ind., reports a great improvement in his line in the past six weeks.

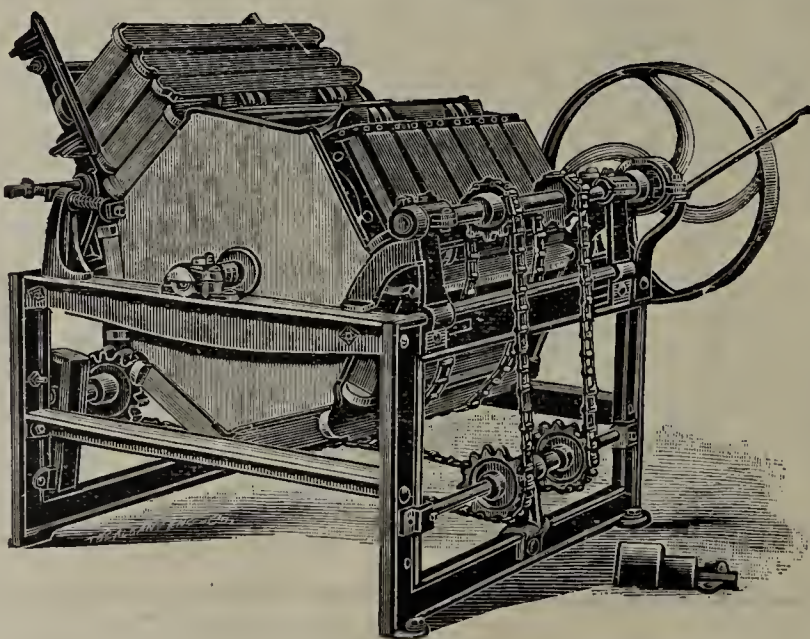
The Frey-Sheckler Co., Bucyrus, O., advise us that business is quite brisk with them. They have enough orders ahead to keep them busy for two months, and think the prospect is good for satisfactory trade throughout the summer.

Jas. A. Francis, Shamokin, Pa., is building a large plant near Green Ridge, Pa., for the manufacture of pressed brick. The plant is expected to be ready for operation May 1st. It will cost \$25,000 and have a daily capacity of 20,000.

C. & A. Potts & Co., Indianapolis, Ind., have just shipped a plant of machinery, including one Horizontal Stock Brick Machine, sander, engine, boilers and all

J. A. BUCK'S NEW CHAMPION BRICK MOULD

SANDING MACHINE.



J. A. Buck, the inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine, having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton to letters patent for said machine.

The "New Champion" is a great improvement over the old "Champion," doing away with belts and gearing, and being much more simple and durable.

There has been a large number of the Improved Champion Sanding Machines sold this season and they are giving the very best satisfaction. Prices so reduced that no yard can afford to be without one.

Address all communications

[Mention the Clay-Worker.]

to J. A. BUCK, No. 76 Oneida St., COHOES, N. Y.

DO NOT BUY A
SOFT CLAY BRICK MACHINE

[FOUNDED 1879.]

Until You Have Investigated Ours.

Send for Photo.

W. E. TALLCOT & CO., Croton-on-Hudson, N. Y.

Fire Brick

We make a special High Grade Fire Brick (all shapes) for Brick Kiln Construction.

NOT EXCELLED By any. Our quotations will surprise you.
We sell Fire Brick on their merits and
their use will prove **AN ECONOMY.** GROUND CLAY IN
.....BULK OR SACKS.

We solicit your favors.
Manufacturers of.....
High Grade Fire Brick for Every Purpose.

THE AMERICAN FIRE BRICK & CLAY CO.,
MINERAL POINT, OHIO.



Send For Our Catalogue "A", Sketch Book Supplement,
or Lithograph.

We Make Tubular Boilers and Outfits Only.

THERE IS A WHOLE SERMON

.....IN THE ABOVE LINE.

FULTON STEAM BOILER WORKS & FOUNDRY, - - Richmond, Ind.

**STRONG, WELL - BUILT, SERVICEABLE
STEAM ENGINES**

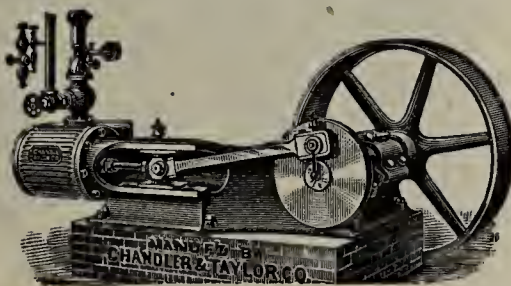
12 to 100 Horse-Power.

Adapted to heavy continuous work. Every Engine tested under full load.

Suitable Tubular & Firebox BOILERS On hand for immediate delivery

For descriptive catalogue address

CHANDLER & TAYLOR CO., - Indianapolis, Ind.

**THE "AJAX" BRICK MACHINE**

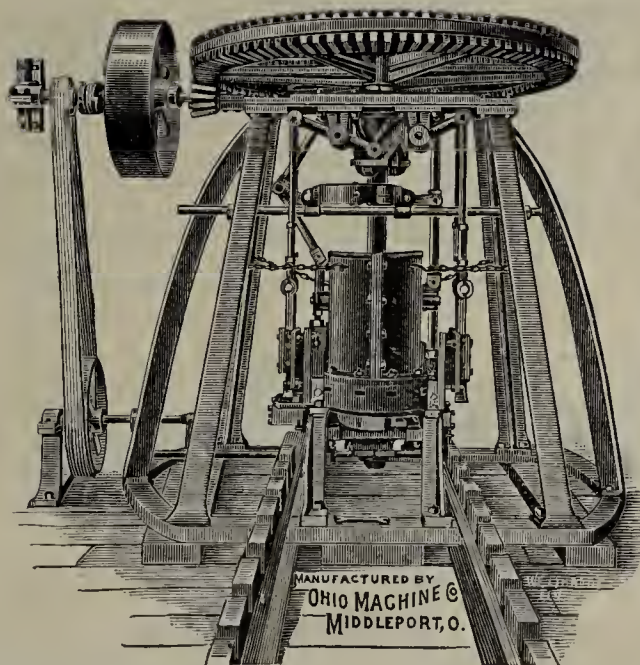
MANUFACTURED BY

Ohio Machine Co.,

Middleport, Ohio.

Under the very Latest Improved Grant-Murray Patent.

This machine is constructed with the object of giving to purchasers the very best results obtainable for the money invested. It is at once Simple, Durable, Convenient, and Easily operated. We claim these machines make the strongest brick in the market, a brick that is very superior for Street Paving and building purposes. Their superior quality as pavers may be ascertained by reference to some of the leading cities of Ohio and West Virginia. This machine works the clay very stiff, pressing all the clay into each brick that it will possibly contain, thus imparting the quality requisite to a No. 1 Paving Brick. We guarantee these machines to our customers, and solicit investigation as to their merits. For further particulars please correspond with

**OHIO MACHINE CO.,**

MANUFACTURERS,

Middleport, Ohio

We manufacture the Grant & Murray Patent Repress
Brick Machine, pressing 4 brick each revolution
and 40,000 per 10 hour day.

supplies needed for a complete outfit to Tobasco, Mexico. The purchaser of same informed Messrs. Potts & Co., that he intended surprising the natives, no other brick machine ever having been erected in that section of the country.

Any of our readers within a reasonable distance of Chicago who can make a nice red floor tile 9x9x2½, please address WILLDIG, care CLAY-WORKER.

Chambers Bros. Co., Philadelphia, Pa., in a recent letter say: "Inquiries for machinery are more numerous than a month ago, but there is not much increase in the actual volume of business. We expect to be busy some day, however, and are just contracting for the erection of a new foundry building 50x80 feet, to be fitted with improved facilities, and we are making a number of other changes in our works."

From various quarters come reports as to business prospects of an encouraging character. We are in receipt of a communication from the Simpson Brick Press Co., Chicago, Ill., in which they say: "Business is picking up with us, and we have recently taken a number of orders for plants, including our steamer. We have all we can do and since we have moved into our new offices often wonder how we ever turned around in the old quarters."

The American Fire Brick and Clay Co., of Mineral Point, Ohio, report a fair trade on their special brands of brick which they are manufacturing for kiln construction. They have recently received large orders from new companies erecting shale brick plants in Ohio, which were taken in competition with other well known grades of fire brick. At this time they are erecting a large addition to their works to enable them to take care of their orders for high grade brick which notwithstanding the dull times shows a steady increase.

WANTED a second-hand dry pan. Must be in good condition. State capacity, length of time in use, make, etc. ADA, 41 d Care "Clay-Worker."

WANTED. A skilled burner for paving brick. Must be strictly temperate. References required. Address, Box 12, 41 d "Care Clay-Worker."

WANTED SITUATION as manager or foreman, by a practical man in a press brick yard. Can superintend the building of kilns. Well up in setting and burning and handling of men. Apply to Box 11, 41 c Care "Clay-Worker."

SITUATION WANTED By a practical brick and tilemaker as foreman or burner. Over 25 years' experience with up and down draft kilns, and with all kinds of fuel. Address, S. BONES, Box 54, Wickliffe, Ohio. 41 c

A BARGAIN. One Grand Automatic Brick Machine, only used 18 months, \$275. 18,000 pallets, 35x10x¾, apiece 2½c. 600 racks or ladders, eight shelves, apiece 4c. 5 off-bearing trucks one wheel and spring, \$2. 400 ft. 1½ lb. steel T rails, wheelbarrows, 3 in. and 4 in. grate bars, etc. Must be sold by all means. Box 10, 41 d "Care Clay-Worker."



Complete specifications with drawings of any patent may be secured from Edward C. Weaver, Councillor and Attorney in Patent Law, 900 F. street, Washington, D. C. Enclose fifteen cents in stamps to cover cost of each copy, and order by the number of the patent.

516,306—Brick kiln, by Hardy L. Hayes of St. Joseph, Mo. Filed March 16, 1893.

516,375; 516,376 and 516,377—Machines for making brick and tile, by Joseph J. Kulage of St. Louis, Mo. Filed Sept. 1, 1890 and later.

516,378.—Process of Manufacturing Brick, by Joseph J. Kulage of St. Louis, Mo. Filed May 2, 1892. The process consists in the manufacture of the usual mud bricks, drying of the same and regrounding into dry dust for utilization in the ordinary dry press.

516,453—Brick Press, by Edward W. Seamans of Grand Rapids, Minn. Filed October 2, 1893.

516,615—Brick Kiln, by John M. Shuch, et al of Des Moines, Ia. Filed August 29, 1892.

516,629—Pottery Kiln, by Alfred E. Detwiler of Milwaukee, Wis. Filed Nov. 29, 1890.

516,883—Brick Machine, by William Zortman of Allegheny, et al. Filed April 29, 1893.

516,969—Machine for making hollow earthenware articles, by Joseph P. Guy, of Burslem, England. Filed April 9, 1893.

516,995—Clay feeder, by Milton F. Williams of St. Louis, Mo. Filed August 26, 1892.

517,010—Attachment for brickmaking machines, by Lemuel Patterson of Allegheny, Pa. Filed March 28, 1893. The device consists of an endless belt armed with knives for striking off brick moulds.

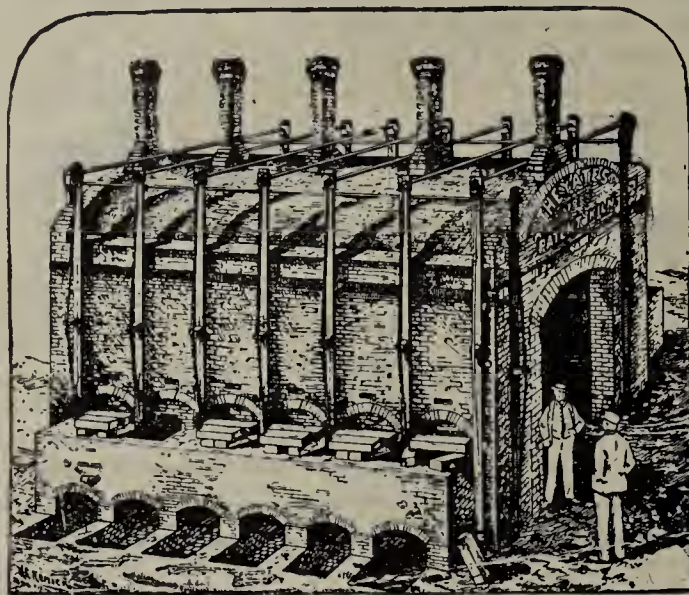
517,510—Tile machine, by John Adamson, of Fort Worth, Texas. Filed May 15, 1893.

517,609—Glaze for fire clays, by Benedict Frey of New York. Filed December 8, 1893.

517,637—Continuous Kiln, by Peter L. Youngren of Oakland, Cal. Filed July 3, 1893.

517,700—Drying kiln, by Adolphus Kimbal, et al, of Arkansas City, Ark. Filed July 25, 1893.

The YATES IMPROVED DOWN DRAFT KILN,



For Burning All Kinds
of Brick.

BOTH ROUND AND SQUARE KILNS.

Fully Protected by Patents.

THIS Kiln has worked its way to the front by results, which is the highest test of merit.

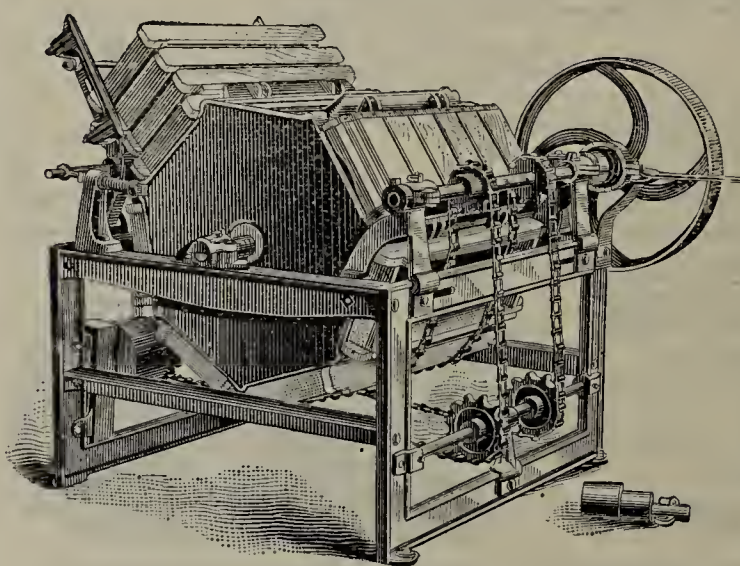
Send stamped envelope for particulars to

ALFRED YATES,

Johnsonburg, Penn.,

or W. N. PIKE, Contractor,
Malden, Mass.

Don't Fail to Get Our Descriptive Circular and References.



CHAMPION Brick Mould

SANDING MACHINES.

This cut represents the latest improved Champion. No belts, apron or gearing. Simple, strong, and Serviceable.

A. H. NEWTON,

Manager and Sole Agent,

HAVERSTRAW, N. Y.

NOTICE To Brickmakers, Dealers and Others.....

Any person purchasing Champion machines from other than the above, render themselves liable to damages, as no other person has the right to manufacture said machines.

THE THURMAN FUEL OIL BURNER CO.,

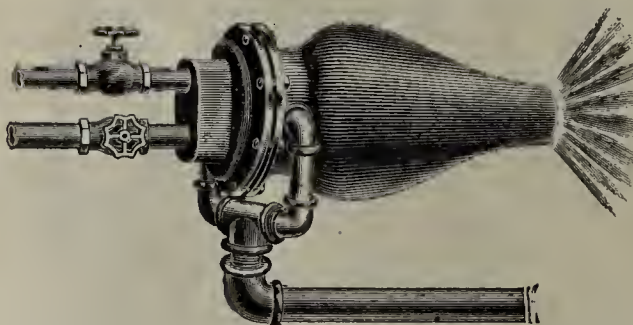
Designers, Contractors and Engineers, Fuel Oil Equipment,

GENERAL OFFICES: 35 and 36 Cordova Building,

INDIANAPOLIS, IND.

JOHN S. THURMAN, Mech. Engineer.

509 Monadnock Block, CHICAGO, ILL.



We are not Connected with
any other Oil Burner Company.

The only perfect Crude Oil Burner on the market. The cheapest and best. Absolutely smokeless. It is Economical. Reliable. Requires no expert to manage. Cheaper than Coal. It perfectly atomizes the oil with the air and steam.

MAKES LESS NOISE THAN ANY OTHER
BURNER.

For stationary Boilers, Brick Kilns, Locomotives and all Steam Plants. No soot. No Sparks. No Smoke. No Odor.

TRY OUR IMPROVED BURNER IN YOUR KILNS.

GENERAL
AGENTS

Red Seal Boiler Compound

For the removal and Prevention of
Scale in Steam Boilers.

Write for Prices.

"Out of Sight—" The Victor Pneumatic Valve.



Victor Pneumatic Tire (trap door open, exposing valve.)

A hole in the rim—

A trap door,

And a choker

Constitute the greatest improvement ever attempted in Pneumatic Tire construction.

Found on Victor Bicycles only. Best things are always reserved for Victors.

No other Pneumatic Tire has an inner tube removable through the rim.

No other but what has a protruding valve, adding weight and preventing perfect wheel balance.

Victors are first in tires and improvements.

OVERMAN WHEEL CO.,

BOSTON.
NEW YORK.

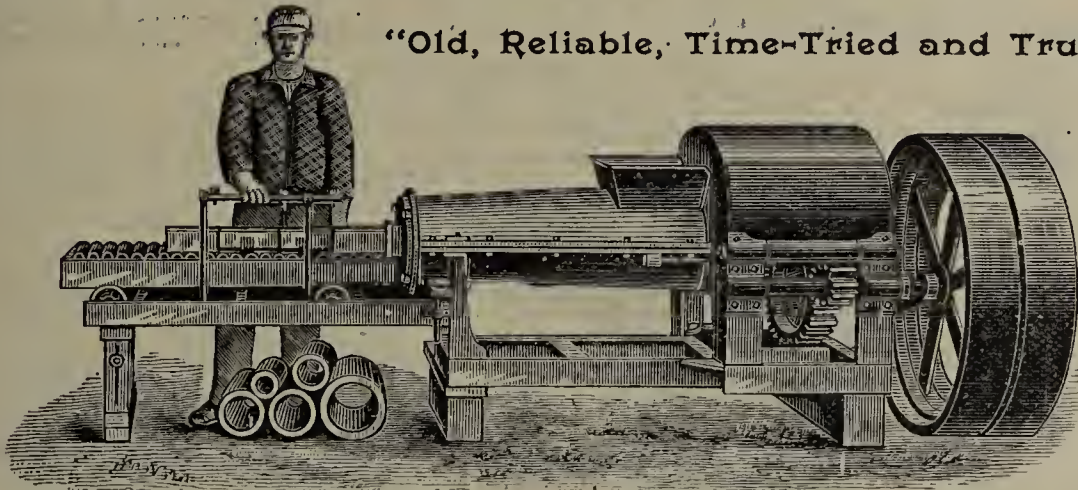
PHILADELPHIA.
CHICAGO.
SAN FRANCISCO.

DETROIT.
DENVER.



KELLS & SON'S IMPROVED BRICK AND TILE MACHINES.

"Old, Reliable, Time-Tried and True."



P. H. Kells, the Original Inventor of the Auger Machine.

This machine works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. Patented June 22nd, 1880; and February 12, 1884. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

We have had Twenty-seven Years' Experience in the Manufacture of Brick and Tile Machines.

We have made an improvement on our No. 1 Machine by which we can make tile from 3 inches up to 12 inches and on our No. 2 Machine we can make tile from 2½ up to 10 inches.

For Illustrated Circulars, Prices, Etc., address

KELLS & SONS, Adrian, Mich.

H. C. BAIRD & SON,
PARKHILL, ONTARIO,

Sole Manufacturers for the Dominion of Canada of the above machines, also makers of the NEW QUAKER BRICK MACHINE.

FOR SALE, WANTED, ETC.

Advertising rates in this column 25 cents a line, or 4 cent a word, each. insertion; about seven words make a line—Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

FOR SALE. Two Sword machines, Brewer make, very little used. Change of system, reason of selling. Address **FRANK O'BRIEN**, 41 d Monroe, La.

WANTED. Situation as molder or mold-maker on sewer pipe works. Had many years experience in the business and thoroughly understands it in all branches. **E. FINCH**, 41 c Salineville, O.

FOR SALE. To Brickmakers. About 1,800 twin pallets, five cars and two transfer cars, Chambers make, for sale cheap. Apply to **THE HERCULES CEMENT Co.**, 43 d Catasauqua, Pa.

FOR SALE CHEAP, and on reasonable terms—a good Drain Tile Factory, well located and equipped. For full particulars write to **GEO. S. POLLOCK**, 4 tfe 224 Ash St., Indianapolis, Ind.

WANTED. To correspond with a manufacturer of brick machine who wants to change location where a position can be had suited to ability. Address **PERFECTED MACHINE**, 411 Care Clay-Worker.

WANTED. A position as foreman or superintendent by a young man who is a practical brickmaker, and will take a working interest in a well located plant. Experienced with sort, stiff and dry press processes. Good references. Parties wanting a valuable man address **Box 7**, 41 p Care Clay-Worker.

WANTED. A burner who understands the burning of continuous kilns. Position all the year round to right party. Mention salary expected. **McCAY & Co.**, 41 c Frankford, Philadelphia, Pa.

FOR SALE. One two-flued boiler, 26 feet long, 40 inches in diameter. This boiler is a good one, fire front, grate bars, smokestack all complete. Will sell cheap on board cars at Homestead. We have lately put in a pair of boilers of larger size. Address **HOMESTEAD BRICK Co.**, 41 d Homestead, Pa.

WANTED. Position as superintendent by an expert brickmaker. Twenty years experience in soft, dry clay and repress processes. Know how to handle men, references good. Address **Box 9**, 41 c Care Clay-Worker.

RECEIVER'S SALE. The extensive brick plant of the Ohio Paving Co., at Columbus, Ohio, will be sold to close up the affairs of the company. This plant covers 2½ acres, in a fine location with buildings kilns and machinery suitable for a large output of brick. It will be sold at a very low figure and offers a fine opportunity for the establishment of a fine press brick business. The brick can be sold easily in Columbus at a good price. Address **N. B. ABBOTT, Receiver**, 41 d Columbus, O.

MANAGEMENT OF FIRE CLAY AND SILICA BRICK WORKS. Advertiser having had the management of important works, manufacturing both fire clay and silica brick, for upwards of 20 years, in England and this Country, including the largest and best known in the latter, is open for re engagement. Have a thorough knowledge of the chemistry of fire clays, the various requirements as to the composition of refractory goods for all metallurgical purposes, and a practical acquaintance with every detail of the manufacture, including both coal and producer gas kilns. First-class references. Address **Box 8**, 41 d Care Clay-Worker.

FOR SALE. One No. 2 Pott's Disintegrator, in use one month. One up-right Potter's Pug Mill. Address D. CULBERTSON & Co., White Hall, Ill.
2 6 c

FOR SALE. A two-mold Boyd Dry Press Brick Machine, in perfect order, very little used. POTOMAC TERRA COTTA Co., Washington, D. C.
2 6 c

FOR SALE. Horse power brick machine, in good condition. Address FRED H. BROCKETT, North Haven, Conn.
1-5-c-

PARTIES who want to go into the roofing tile business can get advice about patterns, machines, cars dryers, kilns, etc., at the address of ROOFING TILE, care Clay-Worker.
1-6-c-

FOR SALE Very cheap. Two Clay Pulverizers in a No. 1 order. One set of Clay Rolls. One four-mould Dry Press. One Clay Elevator. Shafting and Pulleys. A great bargain, if sold together. Address, M. F. W. & Co. Care "Clay-Worker."
2 tfd

FOR SALE. Three combination plastic press brick machines. These machines are of an excellent manufacture and highly adapted to plastic clays. Also one dry press machine and three power presses. Apply or address to ALFRED YATES, Mgr. Somerset & Johnsonburg Mfg. Co., Johnsonburg, Pa.
3 3 d

WANTED. Position as manager or superintendent by an expert brickmaker and burner, 25 years practical experience in the manufacture of all kinds of brick—dry press, re-press, soft and stiff mud brick a specialty. Thoroughly understand the construction of a brickyard in all its details. Can burn brick with wood, coal and oil as fuel. Best of reference. Address W. C. B., care Clay-Worker.
s tf 1p

SECOND-HAND MACHINERY. We offer the following second-hand machinery for cash:
One Leader Brick Machine, in good order.
One Leader Brick and Tile Machine, in good order.
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One Hoosier Soft Mud Brick Machine.
One 15 h. p. horizontal stationary engine, good as new.
One 30 h. p. double vertical stationary engine, in excellent condition.
THE DECATUR LEADER MFG. CO.,
s 1 tf Decatur, Ill.

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Post Office, National Military Home,
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March 6th, 1894.

SALE OF BRICK PLANT.

NOTICE IS HEREBY GIVEN that sealed proposals will be received at the office of the Western Branch, N. H. D. V. S., until March 26th, 1894, for the sale of the plant for the manufacture of vitrified brick at said Home.

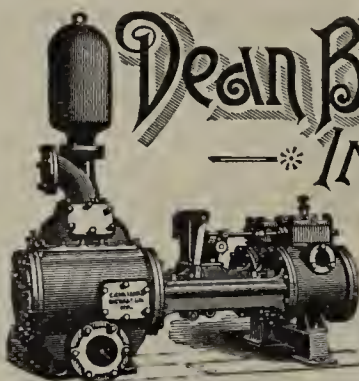
The plant consists of an eighty h. p. engine, two boilers, a brick machine, pug mill and all connecting machinery necessary for the manufacture of vitrified brick, curbing, etc.

The plant to be removed within sixty days from the date of the acceptance of the bid.

For further information, apply to the Governor of the Home.

BY ORDER OF THE BOARD OF MANAGERS:
3 1 d m ANDREW J. SMITH, Governor.

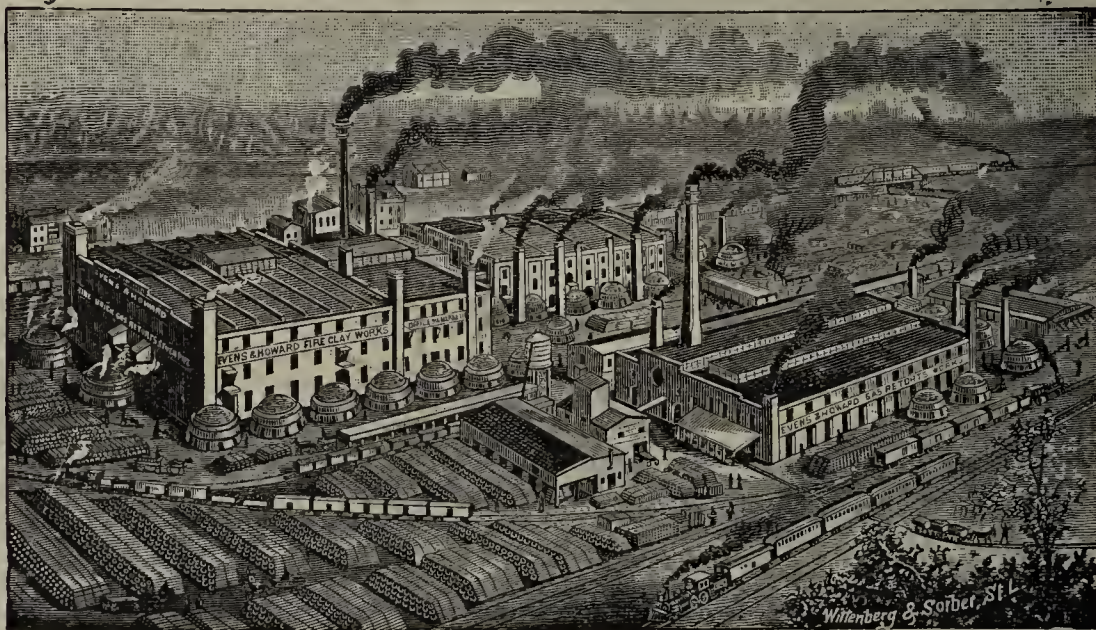
FOR SALE. Whole or one-half interest in brick plant in good order. Good market. We own the clay land. 430 acres timber land. For particulars address, JOHN F. MACK, JR., Marquette, Mich.
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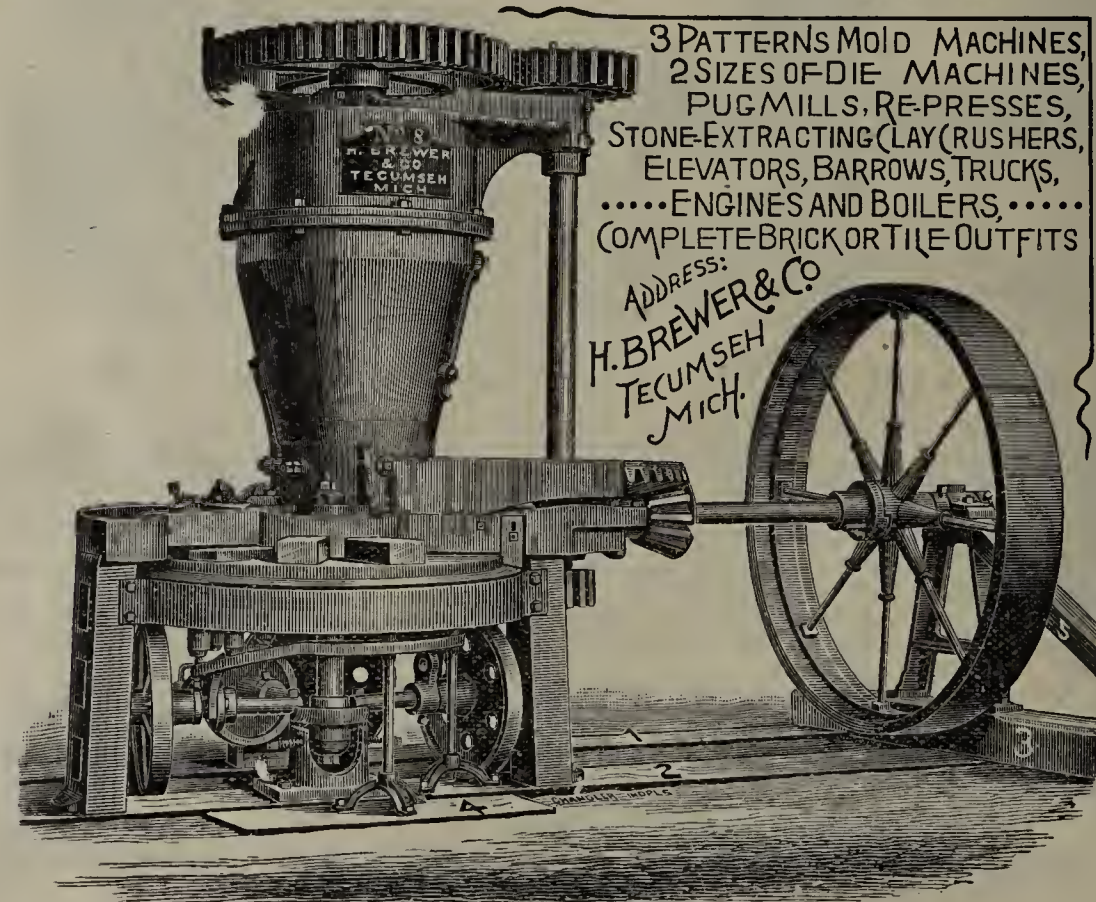
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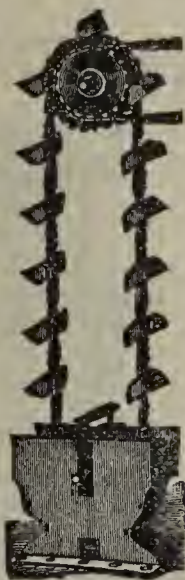
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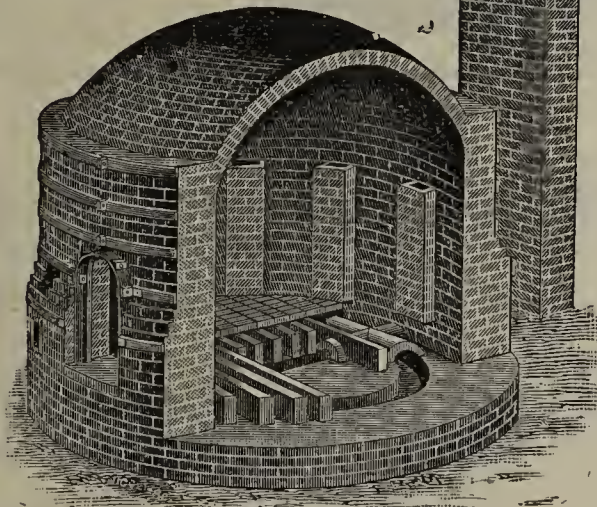
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E. M. PIKE, Patentee

CAPT. G. H. ETTLA, Agt.
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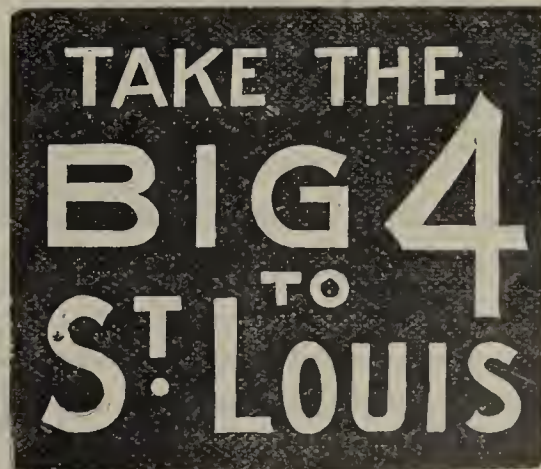
correspondence solicited.

[Mention the Clay-Worker.]

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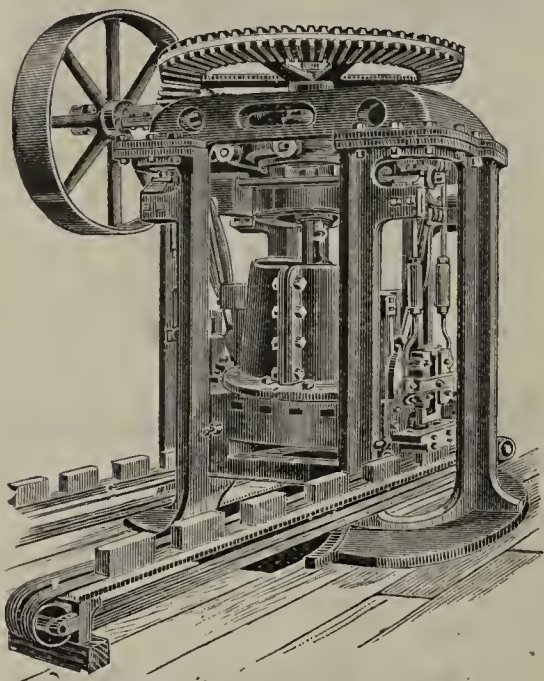
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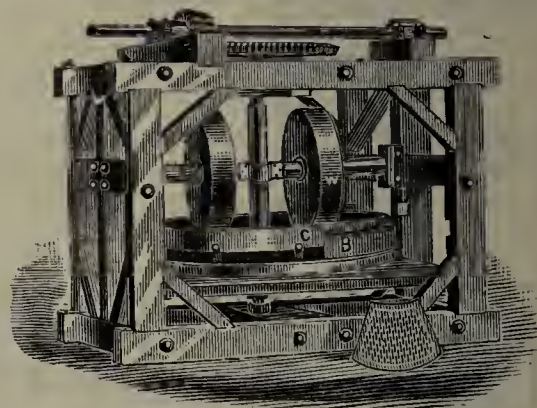
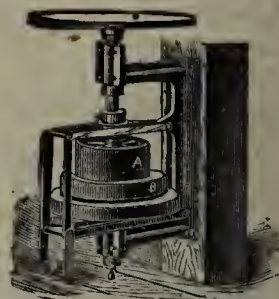
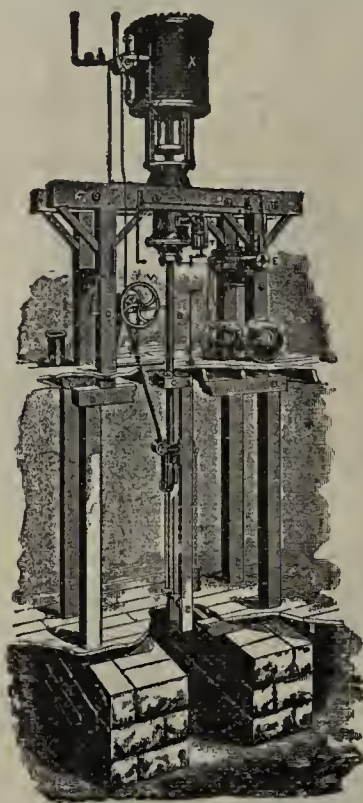
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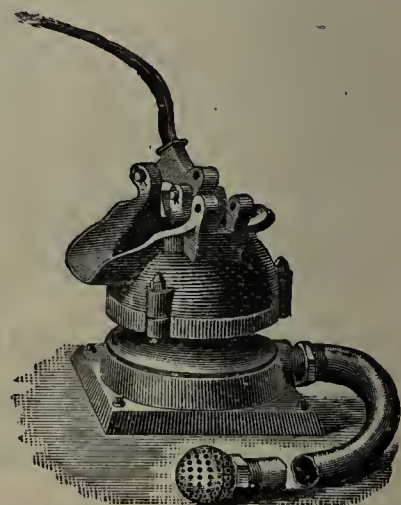
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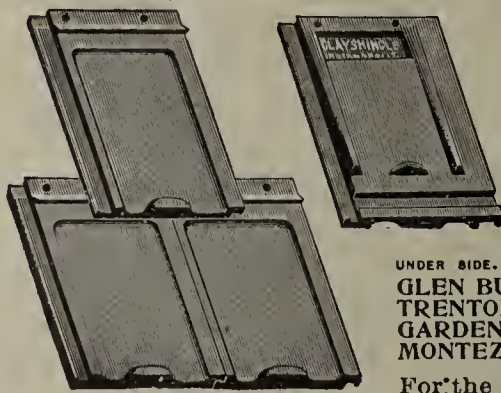
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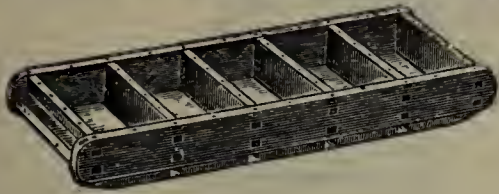
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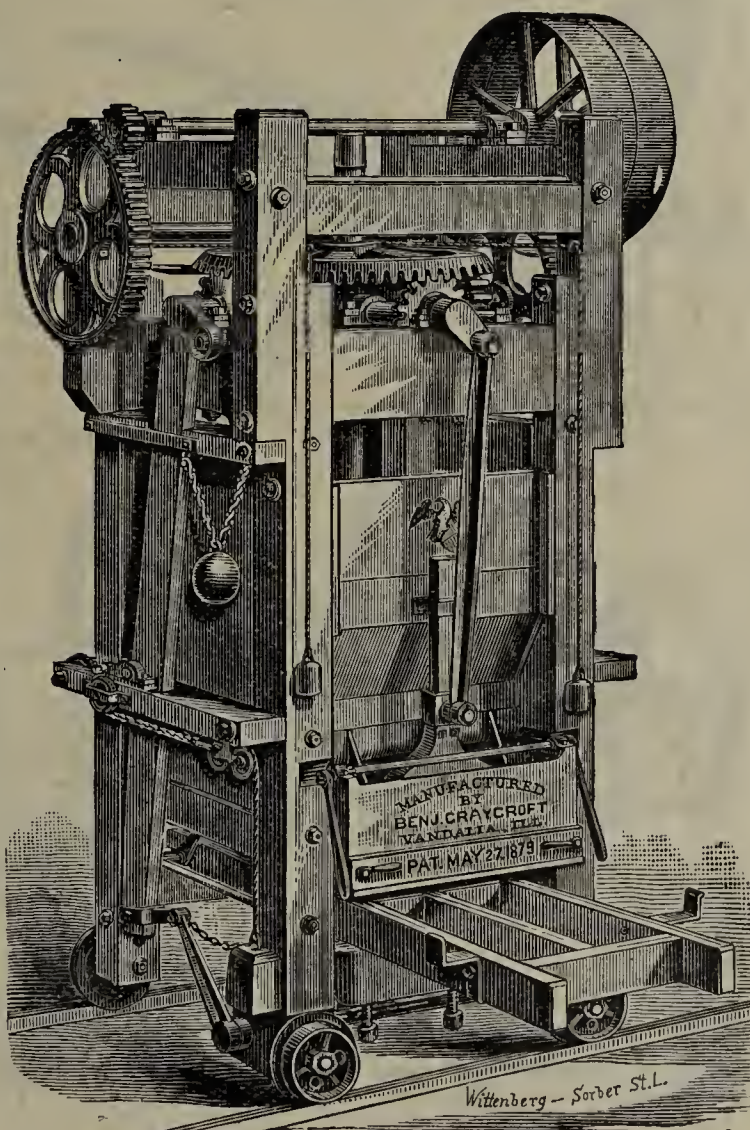
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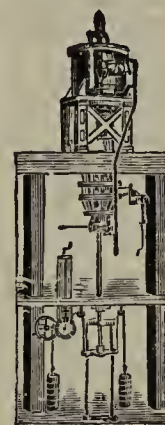
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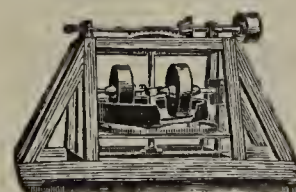
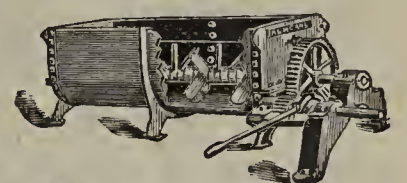
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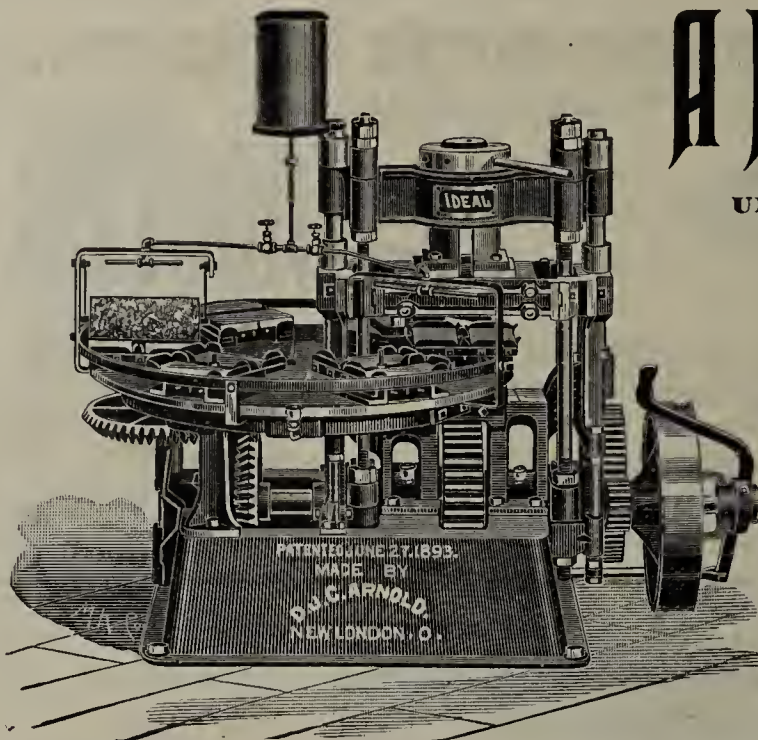
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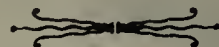
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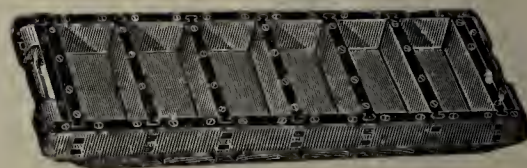
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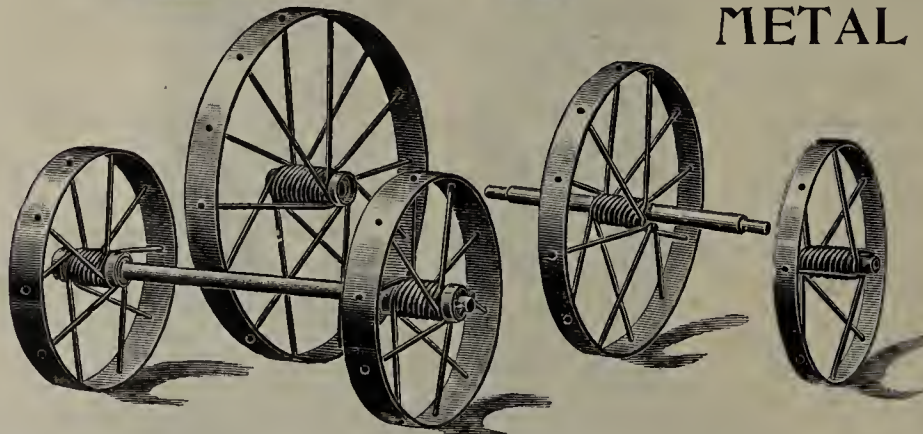


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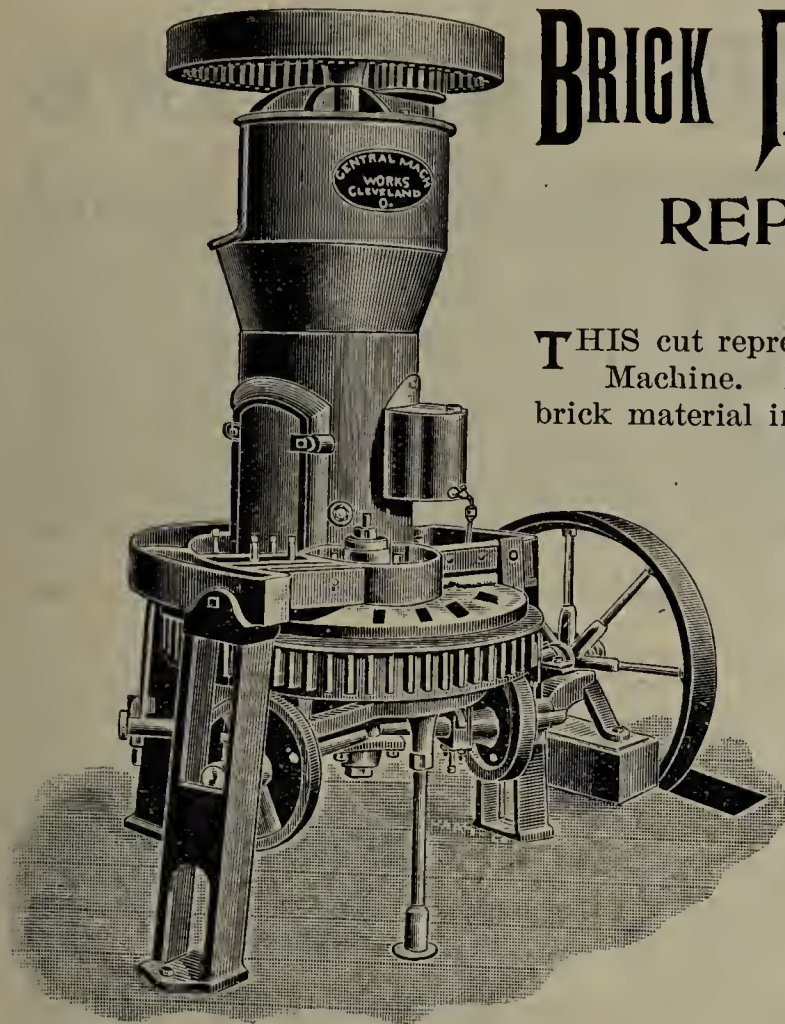
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Send for Catalogue and Prices.



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THIS cut represents our Stiff Mud Brick Machine. It will work any kind of brick material including fire clay, shale or common clay right from bank without the use of a pug mill. Each brick is pressed separately and can be haked 7 or 8 high, or repressed right from machine.

Over 500 in operation.

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Manufactured by

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MACHINE
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Below are analyses of the **PLATT BRICK & FIRE PROOFING CO.'S** Fire Clay Deposits.

| | No. 1. | No. 2. |
|----------------------------|--------|--------|
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| Silica..... | 86.63 | 55.11 |
| Alumina..... | 10.92 | 26.71 |
| Oxide-iron..... | .10 | 4.29 |
| Sulphureous-acid..... | ... | 4.16 |
| Totals..... | 99.97 | 99.96 |

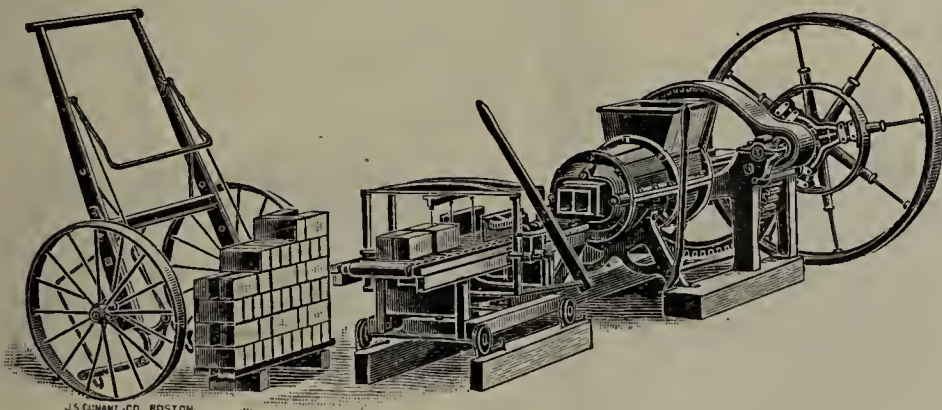
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THIS cut represents our "One X" Machine, which makes 10,000 to 15,000 per day. But we have a large Double Geared Machine for side or end cut brick which makes 15,000 to 20,000 per day. Write for Catalogue and Prices, and mention the CLAY-WORKER.

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Sandusky and Peoria

—AND—
INDIANAPOLIS and
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Direct connections to and from all points in the United States and Canada. Trains arrive and depart from the Indianapolis Union Station as follows:

| DEPART. | |
|------------------------|------------|
| No. 20 Passenger..... | 7:05 a. m. |
| *No. 22 Passenger..... | 1:20 p. m. |
| No. 24 Passenger..... | 7:00 p. m. |

| ARRIVE. | |
|------------------------|-------------|
| *No. 21 Passenger..... | 10:30 a. m. |
| No. 23 Passenger..... | 2:50 p. m. |
| No. 25 Passenger..... | 6:20 p. m. |

Trains not marked run daily except Sunday *daily, †daily except Saturday.

No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. & A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west.

For time tables or any other general information call on any agent of Lake Erie & Western or Ft. W., C. & L. railroads, or address C. F. DALY, H. C. PARKER, General Pass Agt Traffic Manager, Indianapolis, Ind.

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Is the title of a pamphlet issued by the Illinois Central R. R. Co. If you are thinking of making a change in location and are not well-informed as to the advantages of locating either in the West or South, write for a copy. If you want in a nutshell the

SALIENT POINTS OF OVER 100 PLACES

on the line of the Illinois Central and Yazoo & Mississippi Valley Railroads, giving the population, city and county debt, death rate, assessed valuation of property, tax rate, annual shipments, raw materials, industries desired, etc., apply to the undersigned. Our line is in the shape of the figure "7" and runs from Sioux Falls, S. D., and Sioux City, Ia., to New Orleans, passing through South Dakota, Iowa, Minnesota, Wisconsin, Illinois, Indiana, Kentucky, Tennessee, Mississippi and Louisiana, and has

NEARLY EVERY KIND OF RAW MATERIAL

used in manufacturing, together with populous sections which are large consumers of the manufactured product. To sound industries which will bear investigation, substantial inducements will be given by many of our places, and they will be welcomed heartily by the different sections traversed by the Illinois Central and Yazoo & Mississippi Valley Railroads. For all information on the subject, address GEO. C. POWER, Industrial Commissioner I. C. R. R. Central Station, Chicago, Ill.

11 5 T.

To CAPITALISTS: AND OWNERS OF CLAY BEDS, Etc.

WILLIAM CLAYTON,
Potter's Chemist,

—60 Butler Street, TRENTON, N. J.

GIVES special attention to the analyzing of clays, flint spar and all materials necessary to the manufacture of pottery, sanitary ware and brick. Clay beds examined and if necessary experiments made on the spot, showing the adaptation of the clay. After twenty-five years of experience as a manufacturer and potter's chemist, Wm. Clayton has now given up the whole of his time to analytical chemistry as it is applied to clays, etc., their compounding and manipulation and practical use. Mr. Clayton gives opinions and practical advice to those intending to build and operate potteries and can furnish bodies, glazes, etc., etc. Particulars on application.

VANDALIA LINE.

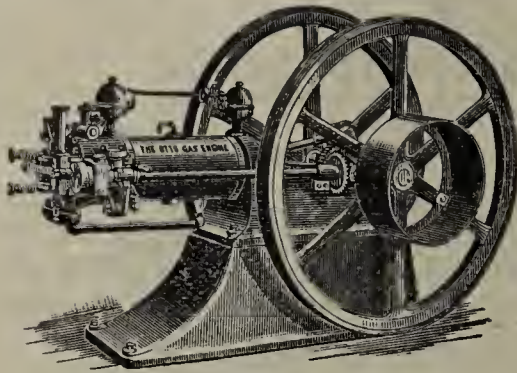
| *Daily. | 1 Daily, except Sunday. | |
|--------------------------------|-------------------------|-----------|
| From Indianapolis | Leave. | Arrive. |
| St. Louis Accommodation..... | 1 7:30 am | 1 7:40 pm |
| St. Louis Fast Line..... | *1 1:50 am | * 5:00 pm |
| Trains 21 and 20..... | *12:55 pm | * 2:50 pm |
| Terre Haute Accommodation..... | 4:00 pm | 11:00 am |
| Evansville Express..... | *11:20 pm | * 3:35 am |
| St. Louis Express..... | *11:20 pm | * 4:40 am |

Trains connect at Terre Haute for E. and T. H. points. Evansville sleeper on night train. Sleeping and parlor cars are run on through trains. Dining cars on trains 20 and 21.

The F. F. V. Vestibule Limited via the Chesapeake & Ohio R'y, is the only Solid train with through Dining Car between New York, Philadelphia, Baltimore, Washington, Cincinnati and the West. Lighted with Electricity. Heated with Steam.

C. B. RYAN,
H. W. FULLER, Ass't Gen'l Pass. Agent.
Gen'l Pass. Agent, CINCINNATI, OHIO.
WASHINGTON, D. C.

POWER GASOLINE



OTTO GAS ENGINE WORKS, 33d and Walnut St., PHILADELPHIA, PA.

.... FROM

Direct From the Tank.

Cheaper THAN Steam.

No Boiler. No Steam. No Engineer.

BEST POWER FOR BRICK YARDS.

Otto Gasoline Engines,

'STATIONARY OR PORTABLE.

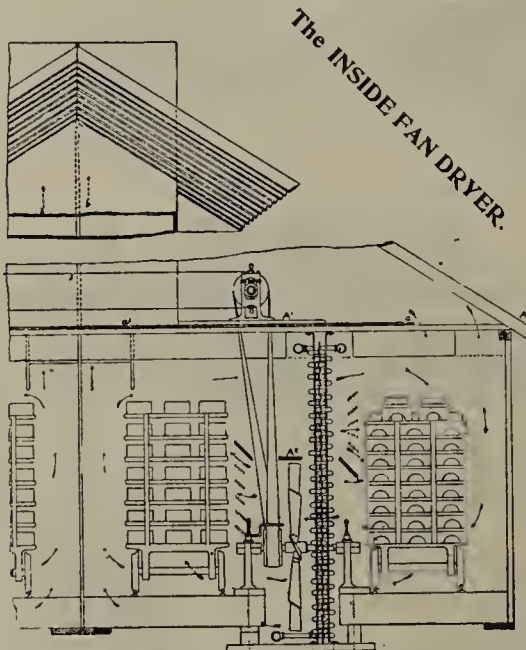
1 to 50 H. P.

8 to 20 H. P.

Send for Catalogue, Prices, etc., describing work to be done.

THE EFFECTIVE UTILIZATION OF EXHAUST STEAM A SPECIALTY.

Solid "Air Dried" Bricks Easily Secured in From Five to Ten Hours, Saving Attendance and Use of Live Steam at Night.



U. S. Pat. Aug. 16, 1881. No. 245,742.
U. S. Pat. Mar. 31, 1891. No. 449,170.
U. S. Pat. Mar. 31, 1891. No. 449,231.
British Pat. Mar. 31, 1891. No. 5,520.
Canadian Pat. May 30, 1892. No. 39,025.
Canadian Pat. May 30, 1892. No. 39,026.

S. G. PHILLIPS AGENT and PATENTEE

Apparatus For Drying Bricks, Lumber and Other Material.

❖ 161 Grand St., RAILWAY, N. J. ❖

The Inside Fans do it.

They take the inside track.

Other steam pipe dryers are easily changed to increase capacity at less proportionate cost.

One tunnel space—of three—occupied by a line of fans, has dried well in one-fifth of the time formerly, or ordinarily required; and even with no change in the piping.

Come and see several dryers in operation; or send for testimonials of superior drying in from 5 to 8 hours; and with the heat from the engine exhaust steam only.

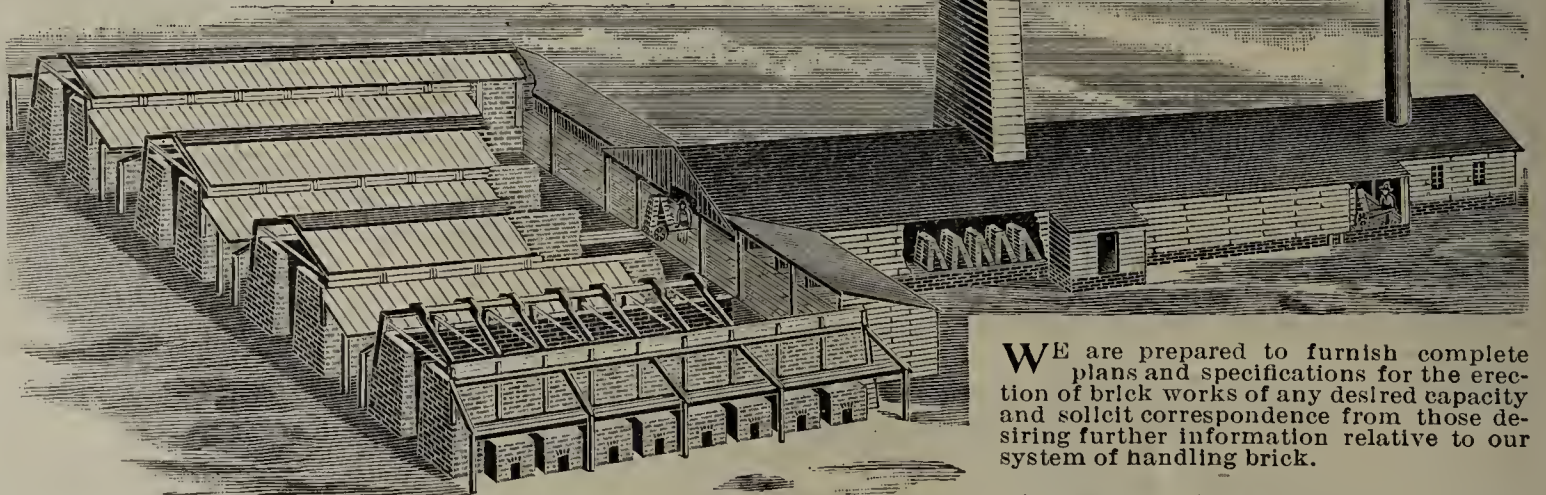
The Mock Portable Rack and Pallet System FOR HANDLING BRICKS.

The Most Expeditious, the Safest and Easiest Method of Handling Brick from Machine to Kiln.

IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.

What Users say of the MOCK SYSTEM.

Mr. J. C. Adams, Indianapolis, Ex-Pres. of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for four seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."



WE are prepared to furnish complete plans and specifications for the erection of brick works of any desired capacity and solicit correspondence from those desiring further information relative to our system of handling brick.

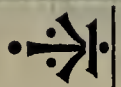
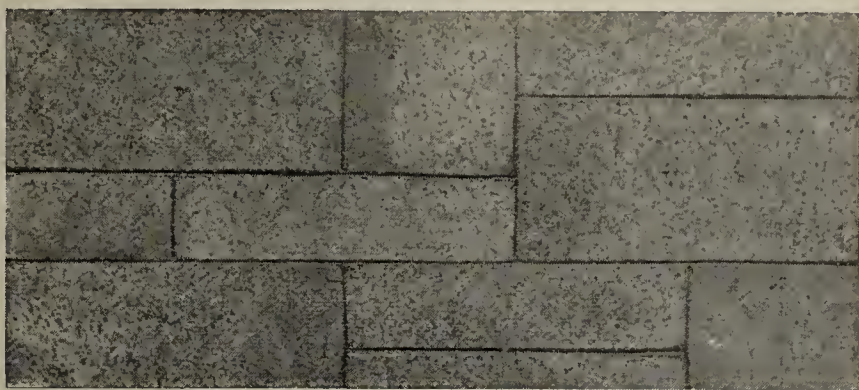
MOCK BROS., Muncie, Ind.

The BOSTON BRICK ASHLAR.

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

ROCK FACE.

TOOLED FACE.



FISKE, HOMES & CO., Boston.

NORTHWESTERN TERRA COTTA CO., Chicago.

LICENCEES.



Mey Detachable Chain Belt, Patented Feb. 7, 1888.

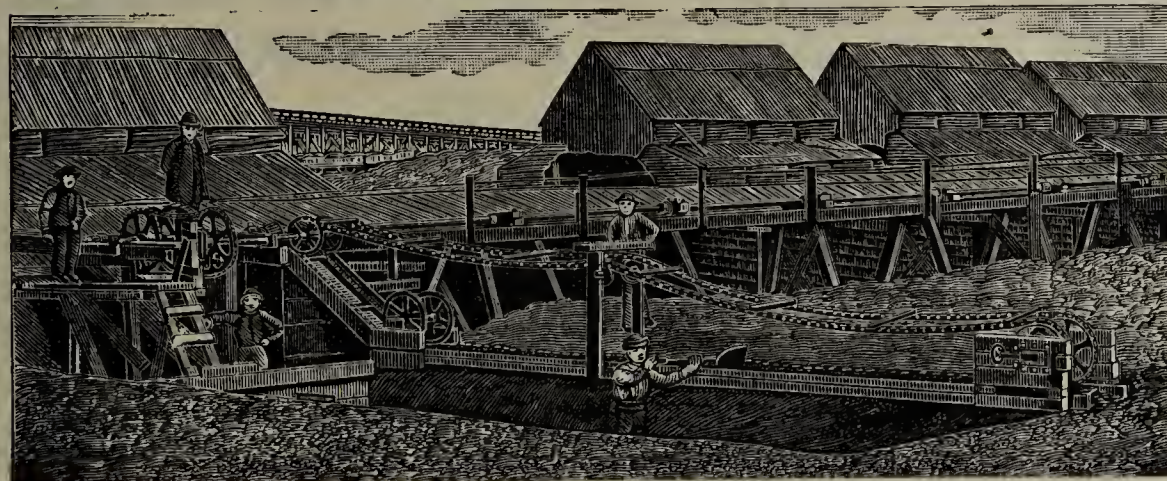
F. H. C. MEY CHAIN BELTING
ENGINEERING WORKS,

APPROVED APPLIANCES FOR

Elevating, Conveying & Transmission of Power

64 to 68 Columbia St., BUFFALO, N. Y.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



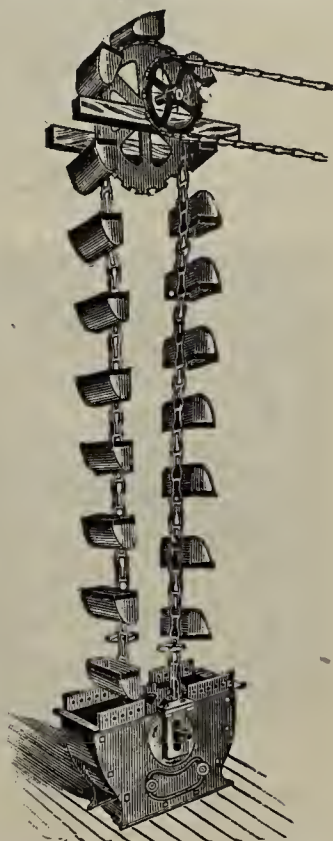
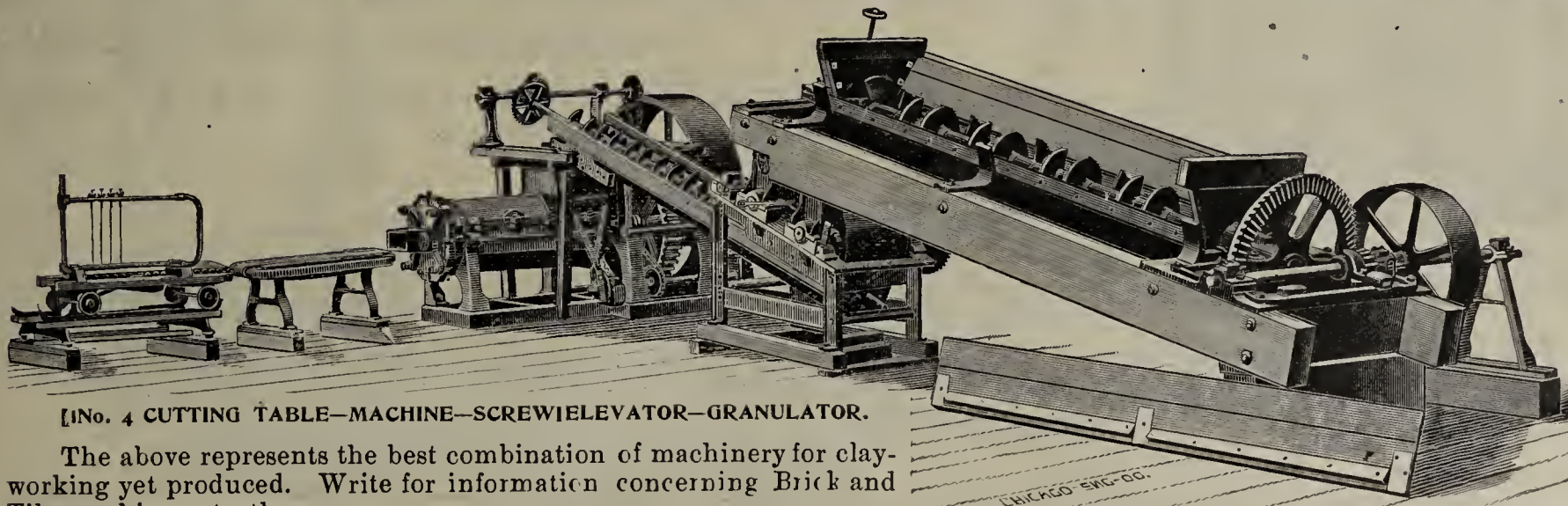
Mey Patent Clay Elevator.

at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

**Make Many More
Thousands**

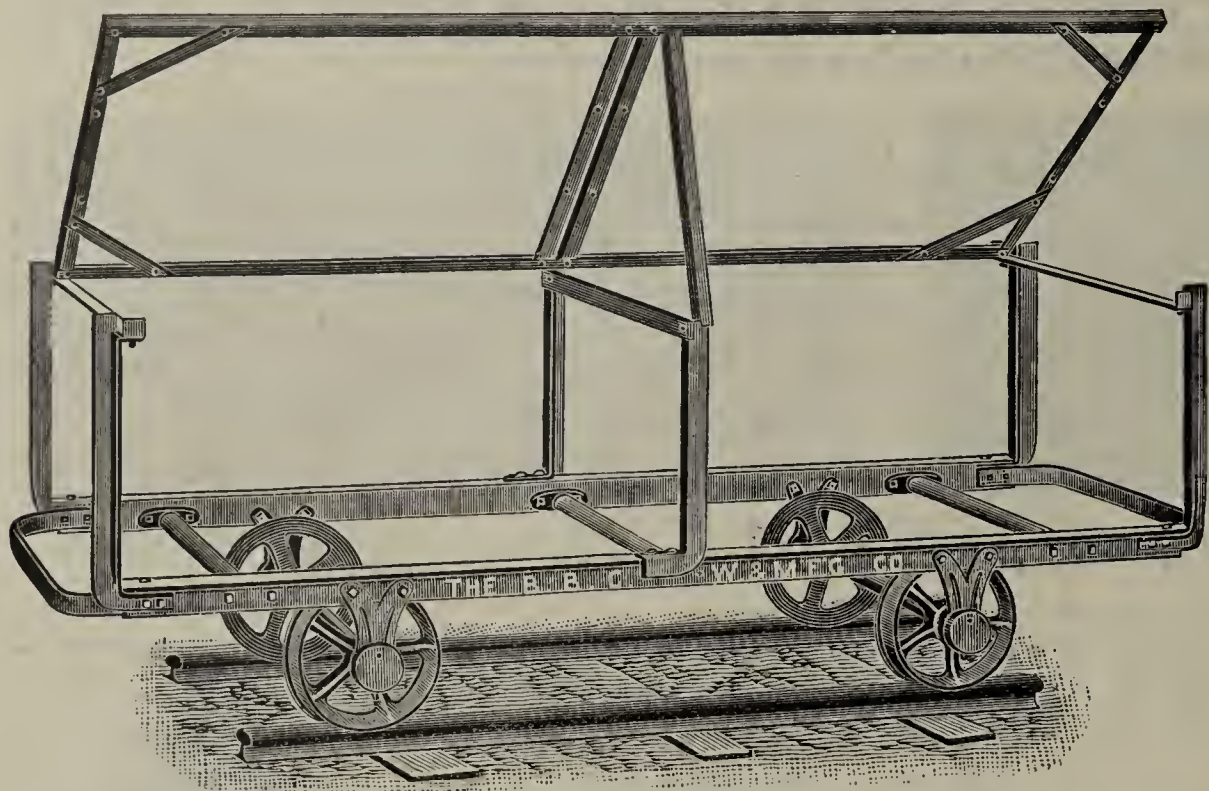
of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED
PRICE LIST.**ADRIAN BRICK AND TILE MACHINE CO.**

[No. 4 CUTTING TABLE-MACHINE-SCREW ELEVATOR-GRANULATOR.

The above represents the best combination of machinery for clay-working yet produced. Write for information concerning Brick and Tile machinery to the

ADRIAN BRICK AND TILE MACHINE CO., Adrian, Michigan.



BRICK DRIER CARS.

ONE brick manufacturer who has used both the common cast iron and our all Steel Brick Drier Cars, says, "The

Cast Iron Cars

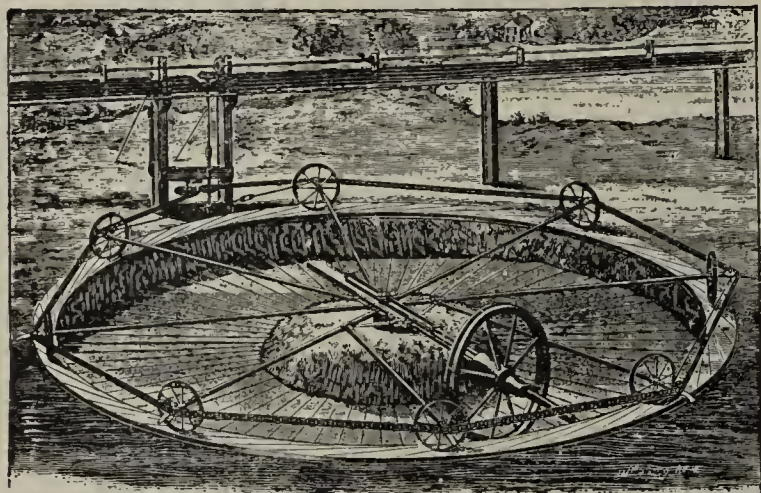
With which our yards were started have cost us fully three times as much as your

All Steel Cars."

Profit by experience.

The Ball-Bearing Car Wheel & Mfg. Co.,
961-981 Hamilton St., CLEVELAND, OHIO.

SUCCESSOR TO
CLEVELAND WHEELBARROW & MFG. CO.



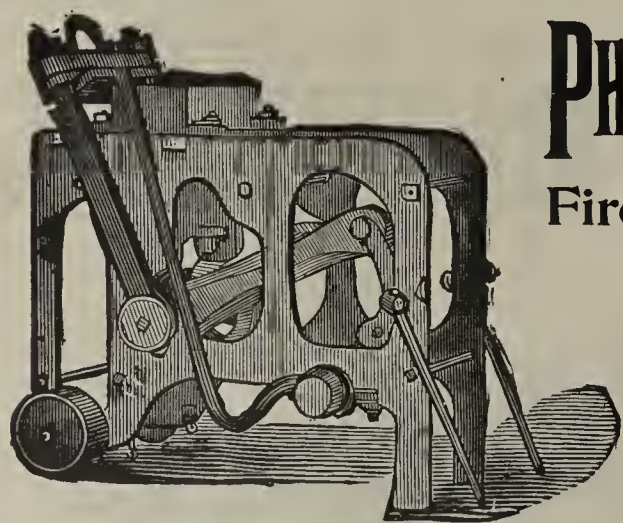
DORNFELD'S PATENT CLAY TEMPERING MACHINE,

Manufactured by

The E. Kunert M'f'g Co.,

Watertown, Wis.

Send for Catalogue and Prices.



RED BRICK PRESS.

GEORGE CARNELL,

Nos. 1,819, 1,821 and 1,823 Germantown
Avenue and Fifth Street,

PHILADELPHIA, - - - PENN.

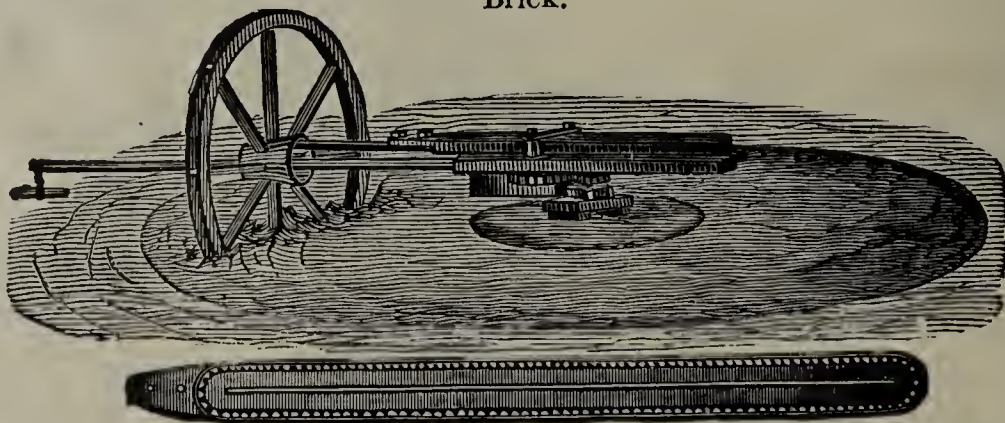
Send for Circular and Price-List.

PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.

BRICK MOLD LINERS.

Do YOU know that....

BRANCH-CROOKES SAW CO.,

St. Louis, Mo.,

Are making the hardest and toughest Brick Mold Liners for all the various Dry Press Brick Machines now in use in this country? Well they are. Now we understand there is a pool on these Liners. We are not in it. Try a few sets of our liners and be convinced both as to quality and price. We beg to refer to the Thomas Pressed Brick Co., of Brussels, Calhoun Co., Ill.

Branch-Crookes Saw Co.,
St. Louis, Mo.

THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES,
Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



BRICK

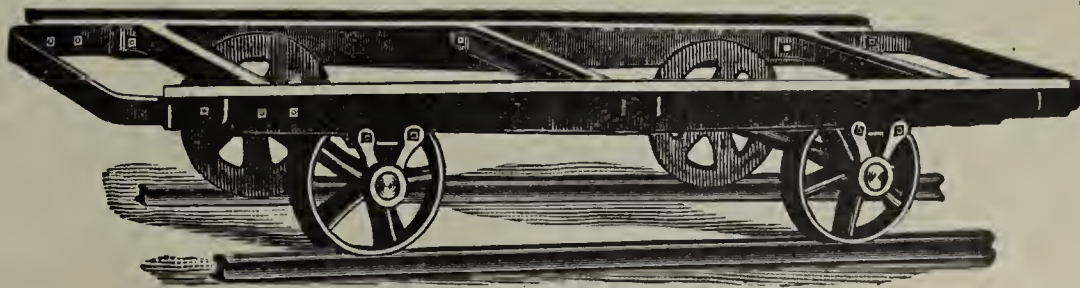
48 Styles.

Also
Turn Tables,
Transfers
Kiln Doors,
Grate Bars,
T Rails and
Iron Pipe.



MAKERS

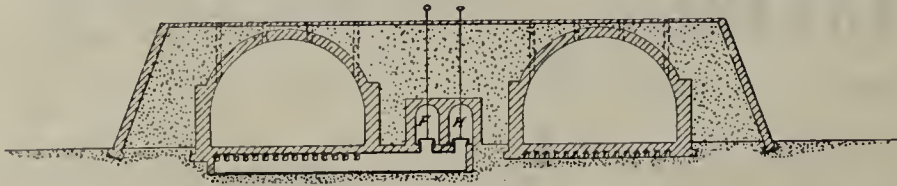
Send For Price List.



STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG. CO.,
Cleveland, O.

YOUNGREN'S IMPROVED CONTINUOUS KILN.



Marks a Great Advance in the Art of Continuous Burning

Accuracy of results reduced to a certainty.
Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.
Under ordinary circumstances the kiln pays for itself in six months.
Do not decide on kilns before making a thorough investigation.
Choose a kiln that is fully guaranteed as to results.
Read what some of the users say about Youngren's Continuous Kiln and be convinced.

PETERSEN BRICK COMPANY,
MANUFACTURERS OF PRESSED, ORNAMENTAL AND COMMON BRICK.

P. L. YOUNGREN, Oakland, Cal.

SAN JOSE, Cal., Aug. 25, 1893.

DEAR SIR:—In reply to your inquiry as to the working of our Continuous Kiln we take great pleasure in saying that the same is a success in every respect. As you well know our people were somewhat doubtful as to ability of your kiln to burn first quality of pressed and ornamental brick, but we have now demonstrated to their satisfaction, that the same can turn out from 35 to 40 per cent. of the finest quality of press and ornamental brick the color of which is even superior to those we formerly burnt in the E— downdraft kiln. As to common brick will say that every brick comes out hard and of good color. Wishing you success, we remain,

Yours truly

PETERSEN BRICK CO.,
Per H. M. STAMMER, Superintendent.

For particulars address

P. L. YOUNGREN, Oakland, Cal.

The KAUL Continuous Brick Kiln.

Patented March 23, 1892.

THIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

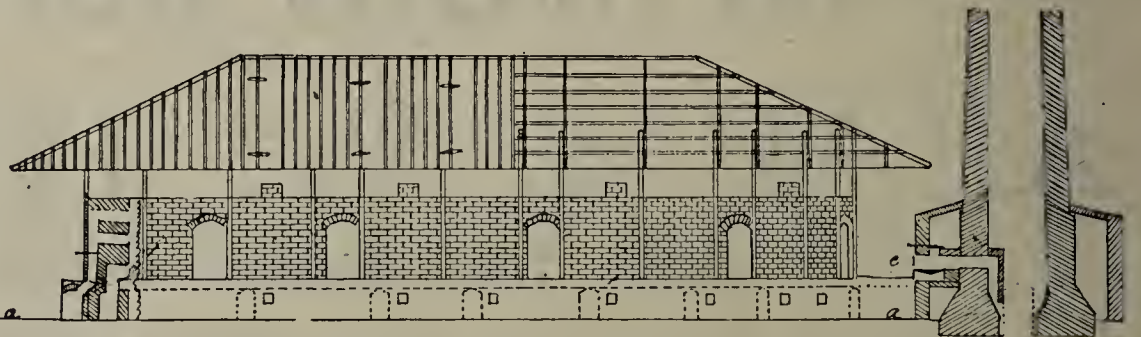
Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

Mention the Clay-Worker.]

CARL F. KAUL, Madison, Neb.



*Why Pay Royalties? Why Pay Yard Rights?
When You Can Get*

Bickel's Improved Down Draft Kiln

GUARANTEED WITHOUT.

We will build this Kiln and guarantee it to give satisfaction, either by contract or on a per cent. basis.

This Kiln is Simple and Durable in Construction, and Economical in Operation, and does not require an expert to handle it. Any good burner, who understands his business, can easily manage it.

There are no small tile to break or burn out, and no iron exposed to the flames.

This Kiln is built Strong, and to any desired size, and adapted to burning Fire Brick, Vitrified Brick, and Dry Pressed Brick, and all kinds of Pottery goods. Built Square or Round.

Advantages of BICKEL'S IMPROVED DOWN-DRAFT KILN: It burns the brick uniform throughout. It has no light or salmon brick in bottom courses. It does not burn the bottom courses at the expense of the top. It does not check or crack the brick as an up and down, or combined draft kiln will, and costs you less money to build.

For further information, address

BICKEL BROS. CONTRACTING CO.,

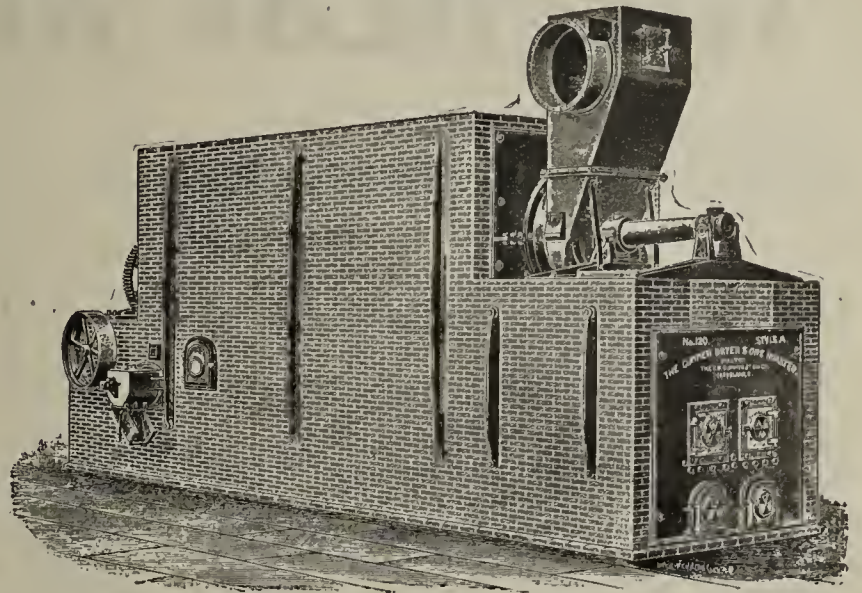
920 Market Street,

[Mention the Clay-Worker.]

ST. LOUIS, MO.

LABOR DISPENSED WITH; VERY LITTLE FUEL USED; NO BREAK DOWNS; SUPERIOR PRODUCT OBTAINED; CLAY DRIED SUMMER AND WINTER, RAIN OR SHINE, ARE A FEW OF THE SPECIAL ADVANTAGES OBTAINED BY USING THE

Cummer Clay Dryer



SIX SIZES MADE.

Prepares from 3 to 20 tons of clay per hour for dry pan or pulverizer. The clay is handled mechanically (without men) from bank to press or other machines.

NEW METHODS.

DRIES

Phosphate, Sand, Earths, Paint Stocks, Peat, Coal, Salt, Marl and Clay for Cement making, Chalk, Cereals of all kinds, Tankage, Night Soils, Animal Manure, etc., etc.

CALCINING AND ROASTING MACHINERY

for Gypsum, Ores of all kinds, Phosphate, Paint Stocks, etc., etc.

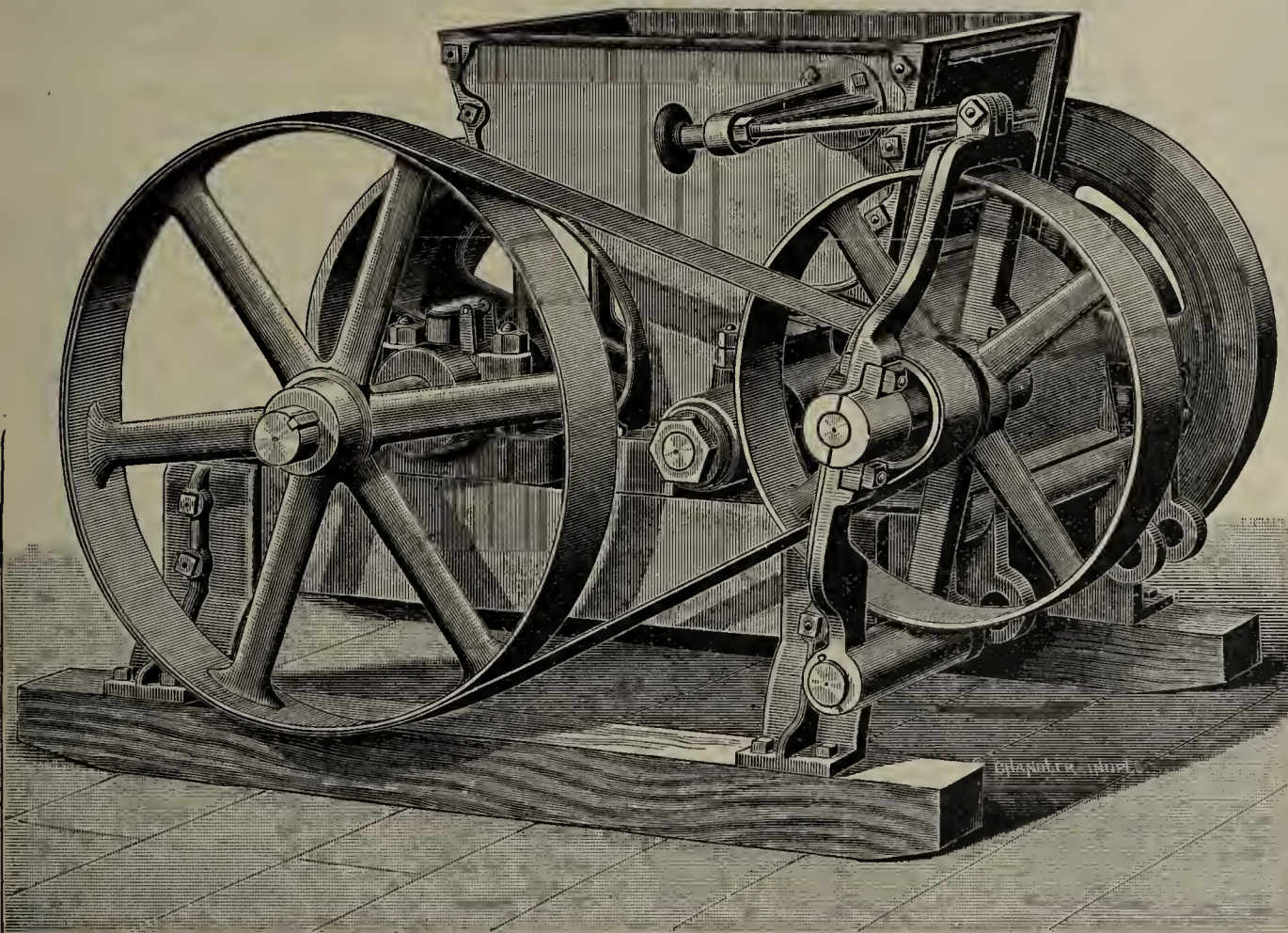
THE F. D. CUMMER & SON CO.,

613-616 Arcade,

CLEVELAND, OHIO, U. S. A.

SEND FOR
OUR NEW CATALOGUE.

THE... POTTS DISINTEGRATORS.



IT IS THE ONLY DISINTEGRATOR.

Will work any clay direct from the bank. It will not choke or clog. The Rolls are made from the best grades of iron and are chilled. Beware of cheap imitations, it pays to buy the best. Write for prices and terms.

Made in Five Sizes, having a Capacity from 25 M. to 150 M. Brick per day.

C. & A. POTTS & CO., Indianapolis, Ind.

THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

ST. LOUIS, MO., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

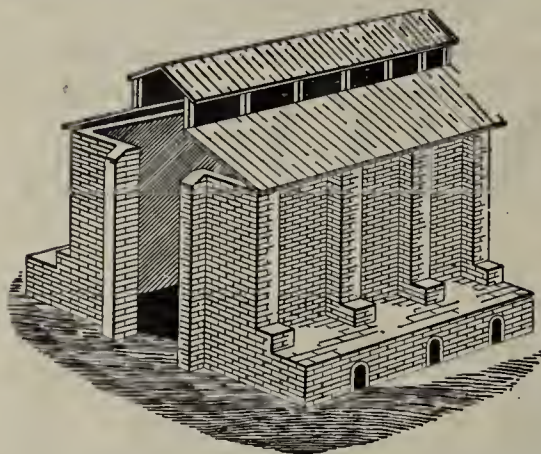
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.

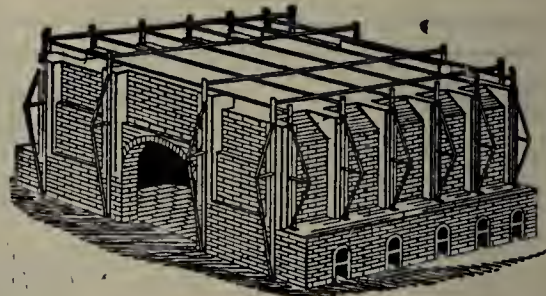


LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.

Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.



The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

.. .. VITRIFIED PAVING BRICK.

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }
NEVADA, MO., July 17, 1892. }

H. REPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }
ST. LOUIS, MO., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands. Yours very truly,

COTE BRILLIANT PRESSED BRICK CO.,
M. J. REILY, Superintendent.

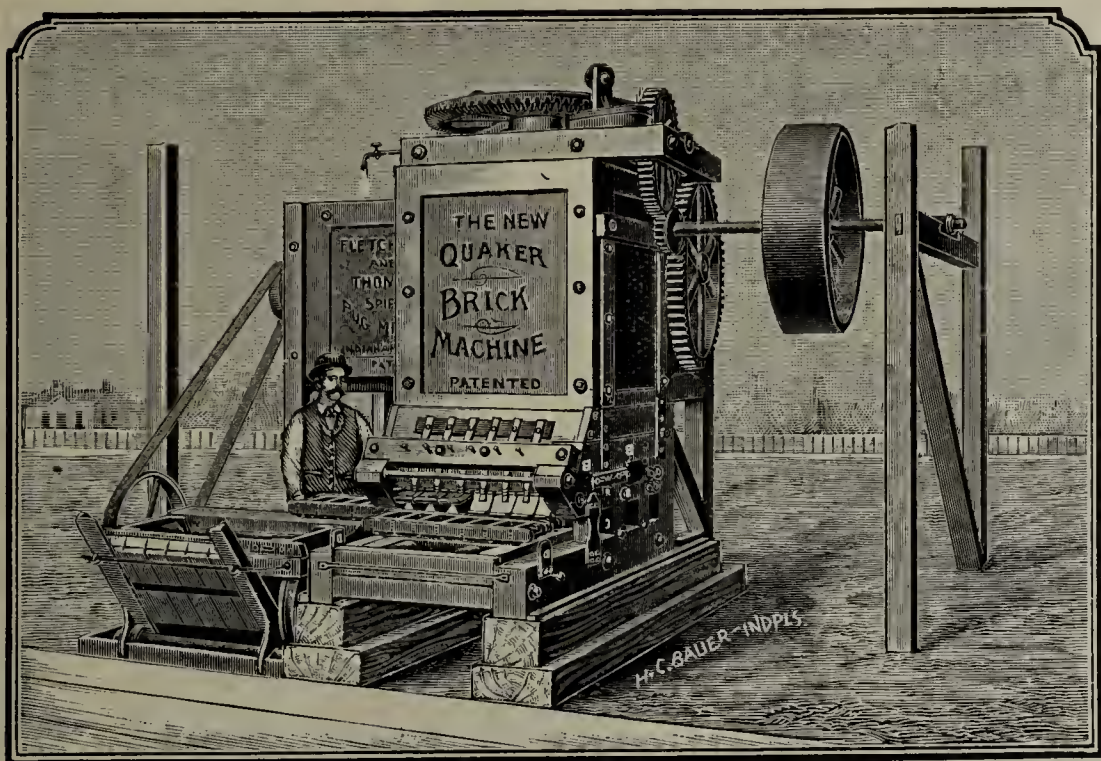
For further particulars and full explanation, please address me, and oblige

LOUIS H. REPELL,

1,913 Indiana Ave.



KANSAS CITY, MO.



EXTRA HEAVY, COMBINED OUTFIT CAPACITY 40,000 TO 50,000 PER DAY.

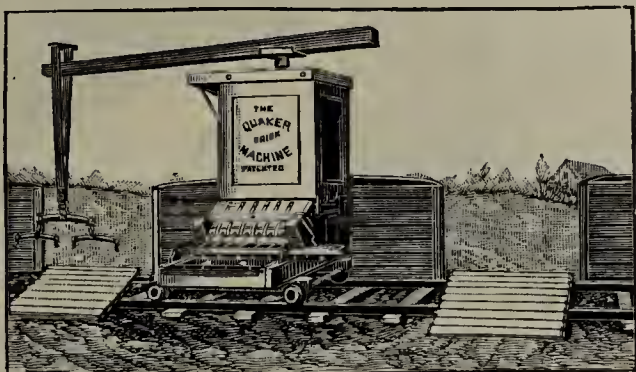
THE NEW MODEL

QUAKER

HORSE POWER.

The best machine for the man of moderate means ever used.

Capacity 15,000 to 20,000 per day.



WE CONTRACT TO ERECT AND EQUIP

PLANTS COMPLETE IN EVERY DETAIL.

Send for Illustrated Catalogue and Special prices before placing your order, as we can save you money.

S. K. FLETCHER, General Agent,
Successor to FLETCHER & THOMAS,
INDIANAPOLIS, IND.

**"Leviathan"**

The only Belt for Brick and Tile Machinery.
Will outwear any three Belts of other makes in the Market.
Runs in heat, steam and water without injury.
Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds; but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our clats of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,
WM. H. ASHWELL.**MAIN BELTING CO.,**

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

Thompson's Water-Proof Belt Dressing for
Leather, Rubber and Canvas Belting.

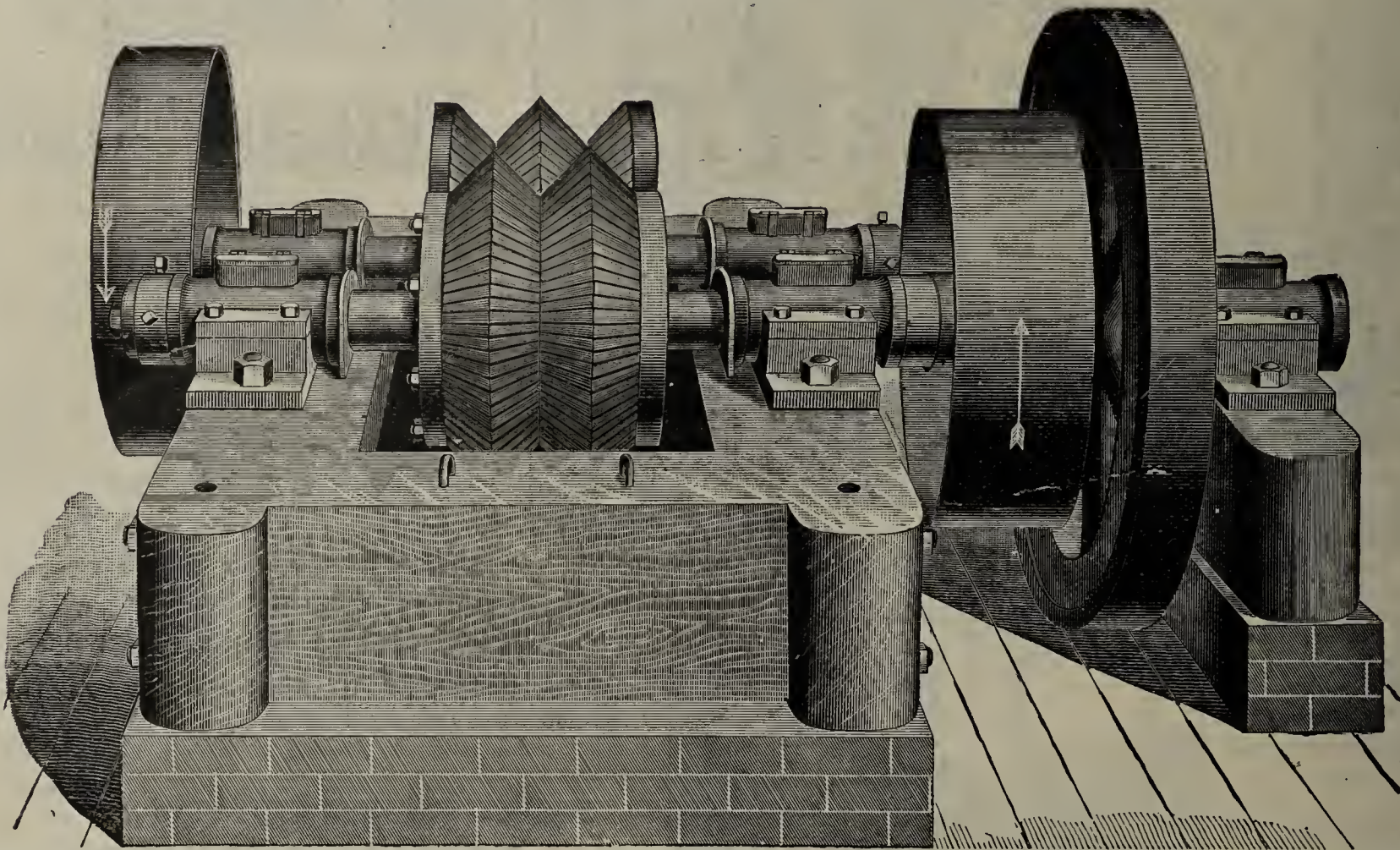
No user of Belting can afford to be without it.



the End.

NEWELL IMPROVED CLAY PULVERIZER

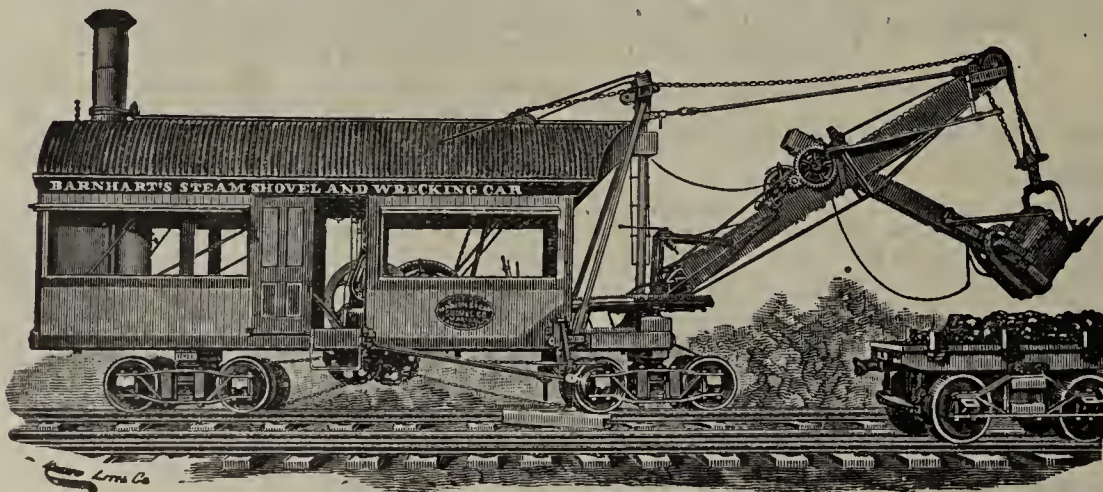
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeyer Building, New York, U.S.A.
26 Cortland and 21 Dey Streets,

STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have many elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

The Marion Steam Shovel Co.,
603 West Center Street,
MARION. OHIO.



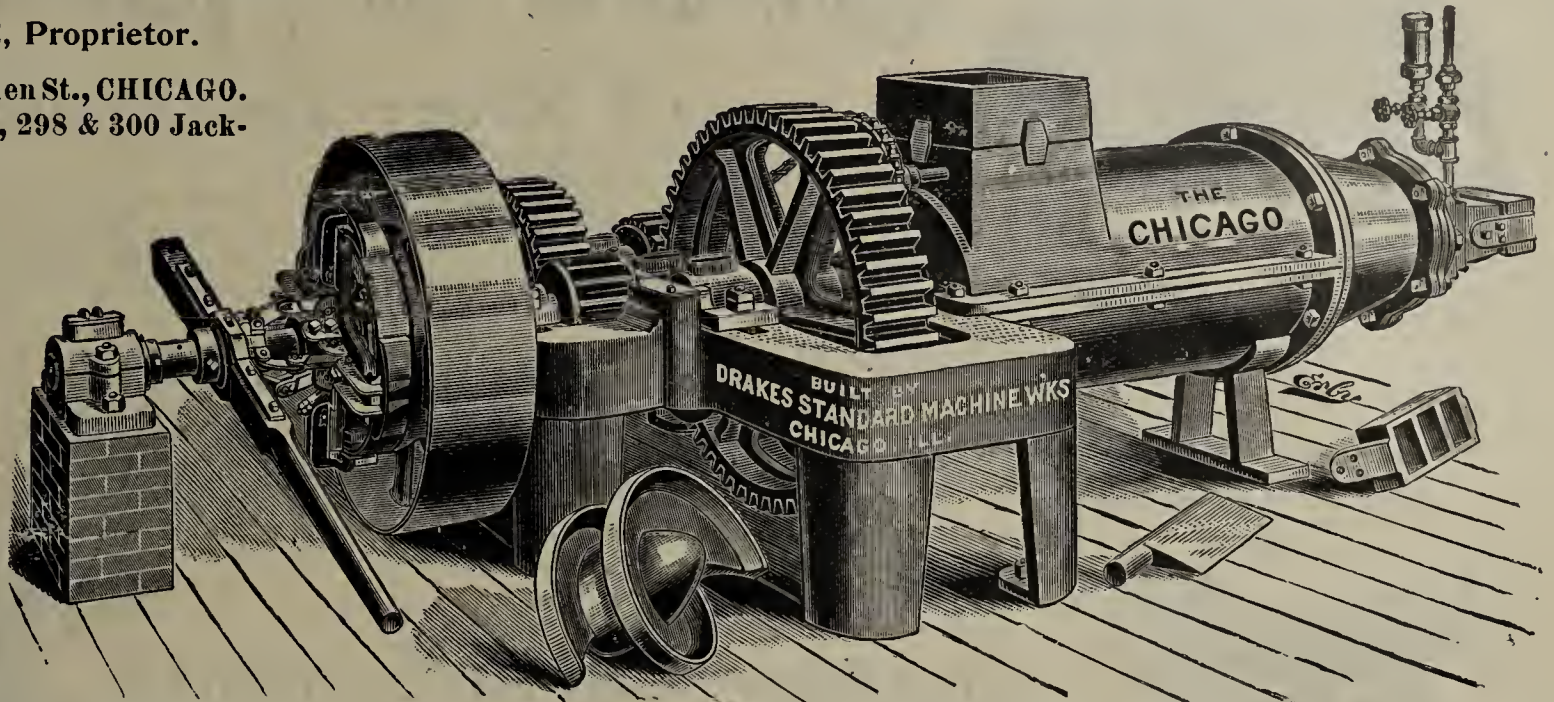
STYLE C—¾ YD

DRAKE'S STANDARD MACHINE WORKS,

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY.

C. T. DRAKE, Proprietor.

Factory, 7 & 9 Garden St., CHICAGO.
Office & Salesroom, 298 & 300 Jackson Boulevard.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 50,000 brick per day. Surpassed by none. References: Turner Brick Co., Turner, Ill.; John Mooney, Highland Park, Ill.; A. H. Maynard & Son, Waukegon, Ill.; Myers & Toll, Chicago, and others.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, CLAY CRUSHERS, HAND REPRESSES, ETC., ETC.

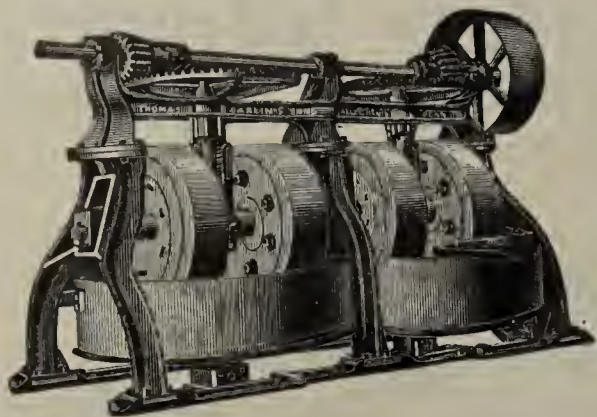
Our "GRANULATORS" are the leaders in Chicago. So says Alsip Brick Co., who are running 11 Granulators; also Hayt & Alsip May, Purington & Bonner Brick Co.; Purington-Kimbell Brick Co.; Purington Brick Co., and many others.

PRICES REASONABLE.

CORRESPONDENCE SOLICITED

J.H. & D. LAKE, CO.
MASSILLON, O.
U.S.A.
MFR'S. OF
PLAIN OR SPLIT
PULLEYS,
SHAFTING,
HANGERS, Etc.
ALSO
COUNTER SHAFTS
COMPLETE.

FRICITION
CLUTCH
PULLEYS;
CUT-OFF
COUPLINGS,
PLAIN OR
SPLIT;
FORMERLY OF HORNEILLSVILLE, N.Y.



OUR SPECIALTY.

GRINDING AND MIXING PANS

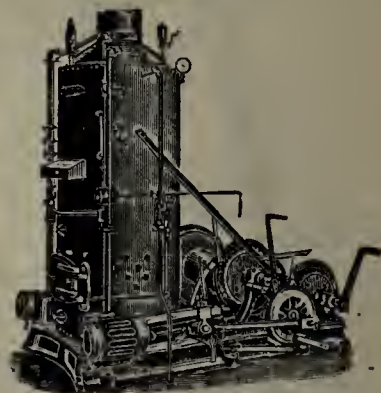
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,
 ENGINES AND BOILERS, HOISTING ENGINES,
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,
 ALLEGHENY, PA.



One 9 foot Dry Pan.
 One 6 foot Dry Pan.

IN STOCK: { One 8 foot Wet Pan.
 Eight 3 foot gauge Dump Cars.

MANUFACTURERS OF
 IMPROVED

CLAY WORKING MACHINERY

OF EVERY DESCRIPTION

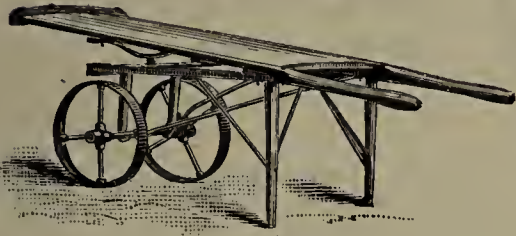
TAPLIN RICE & CO.

(CLAY MILLS,
 STEAM SEWER PIPE PRESS,
 DRY & WET PANS, DIES, CLAY BLOCKERS,
 POTTERS' WHEELS AND
 MACHINERY OF ALL KINDS.)

AKRON, OHIO, U.S.A.

PROMPT ATTENTION
 & DISPATCH GIVEN
 TO ORDERS

SEND FOR
 CATALOGUE
 A



BRICK AND TILE TRUCK.
Designed especially for Brick
and Tile. The best truck
on the Market.
Wt. 75 lbs.

MICHIGAN BRICK AND TILE MACHINE CO., MORENCI, MICHIGAN.

BRANCHES:

THE UTAH IMPLEMENT CO., 231-233 State St., SALT LAKE CITY.

WILLIAMS & HANKS, 1416 Penn. Ave., WASHINGTON, D. C.

J. C. HOTCHKISS, DES MOINES, IOWA.

W. C. MILLER, WAYNESVILLE, N. C.

EXTRA HEAVY

THIS PAN WEIGHS MORE,
WILL LAST LONGER,
DOES THE WORK BETTER,

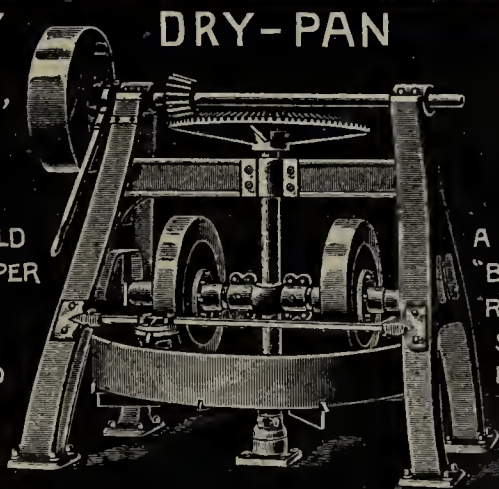
AND WHILE IT COSTS MORE TO BUILD, IS SOLD
AT A PRICE AS LOW AS OTHER PANS OF CHEAPER
GRADE. THE HOUSINGS ARE WARRANTED FOR
FIVE YEARS.

CUSTOMERS ARE ALWAYS PLEASED

THE BONNOT COMPANY
CANTON, O.

GENTLEMEN! THE DRY PAN, PURCHASED OF YOU' HAS BEEN
IN CONSTANT USE AND HAS GIVEN ENTIRE SATISFACTION.
WE WANT NOTHING BETTER.
YOURS VERY TRULY

BRAZIL BRICK & PIPE CO.
BY J. V. AYER, SECRETARY.



THE BONNOT CO. CANTON, O.

A GOOD SCREEN

IS AS NECESSARY
AS A GOOD MANAGER
IN A SUCCESSFUL PLANT.

A GOOD MANAGER WILL SURELY INVESTIGATE THE
"BONNOT" REVOLVING SCREEN. NO EXPENSE IS
REQUIRED LOOKING AFTER IT. THE OLD STYLE
SCREEN REQUIRES THE EXPENSE AND ATTENTION
NECESSARY TO KEEP IT GOING.

THE BONNOT COMPANY,
CANTON, O.

LOUISVILLE, KY, DEC. 27, 93.

GENTLEMEN! WE ARE VERY MUCH PLEASED WITH THE
WORKING OF THE REVOLVING SCREEN. IT HAS BEEN IN
CONTINUAL USE SINCE WE PURCHASED IT AND WE THINK
IT DOES THE WORK BETTER THAN ANYTHING WE HAVE
EVER TRIED.

YOURS TRULY,

KENTUCKY VITRIFIED PAVING BRICK CO
BY M. J. BANNON, V. PRES. & GEN. MGR.

WHEN IN NEED OF A DRY PAN—EITHER IRON OR WOOD FRAME
WRITE US BEFORE BUYING. WE MAKE THE STRONGEST
DRY PAN ON THE MARKET—AT A PRICE SUITED TO THE TIMES

PUG MILLS.



IF YOU WANT THE LATEST
THING OUT—A PUG MILL WITH ADJUSTABLE OUTLET—PRICE
NO MORE THAN A CHEAP ONE. WRITE FOR PARTICULARS.

IF YOU
WANT
INFORMATION
ON
REVOLVING SCREENS
ASK FOR
SPECIAL TERMS
ON
SCREENS.



HOW THEY ARE SOLD.
WE GUARANTEE THESE SCREENS TO DO CERTAIN WORK
WRITE US WHAT YOUR DAILY OUT PUT IS AND WE WILL KNOW WHAT
TO ADVISE. THE PERFORATED STEEL SHEETS ARE FURNISHED
TO SUIT THE REQUIREMENT.



ALL SCREENS
ARE WARRANTED TO DO EXACTLY WHAT IS CLAIMED
FOR THEM

Nolan, Madden & Co's Sale. . . .

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 ❖ I HAVE \$25,500 WORTH ❖  
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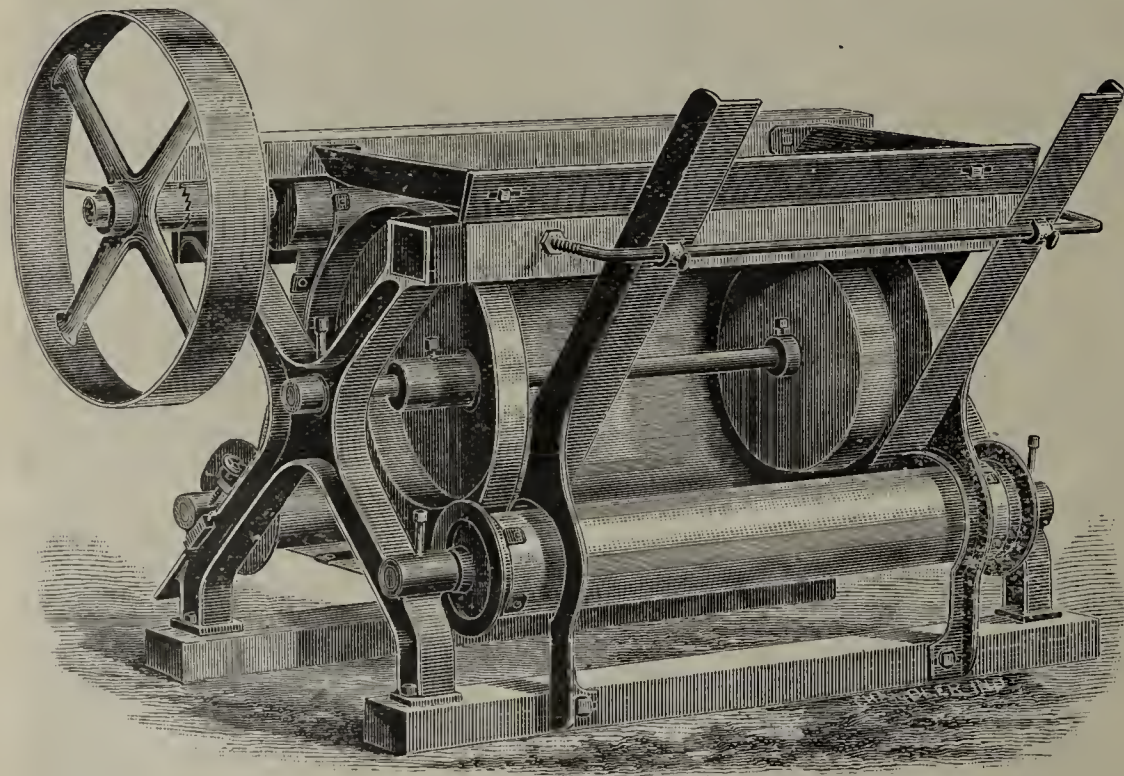
Of clayworking machinery for sale. This stock includes soft clay Brick Machines for steam and horse power, stiff clay Brick and Tile Machines, Cut-off Tables, Disintegrators, Pug Mills and Crushers.

Will make it to the interest of any purchaser to call and see us.

Come to Rushville, Ind., and see the best stock of clay machinery in the States and the best assortment.

JOHN F. SCANLAN, Receiver,
 For Nolan, Madden & Co.,
 RUSHVILLE, INDIANA.

What Did You Say? ➡



You were tired of being dictated to by your sander; if this be the case put in a

POTTS MOULD SANDER.

It will sand the moulds better than can be done by hand. It never gets DRUNK or STRIKES for higher wages. It is sure to be ready for work every morning. It has no chains to wear or break. Is easily and quickly adjusted to suit any size or shape mould you may wish to use. This

machine will save its cost in a short time. A boy can operate it. Write for prices.

C. & A. POTTS & CO.,
 Indianapolis, - - - - - Indiana.

RELIABLE AND MODERN Brickmaking Machinery

...FOR Sand Moulded Brick.

The result of over twelve years continuous experience in this particular field. We guarantee results.

Estimates promptly furnished. Address

Jonathan Creager's Sons,

Prices Greatly Reduced. ✂

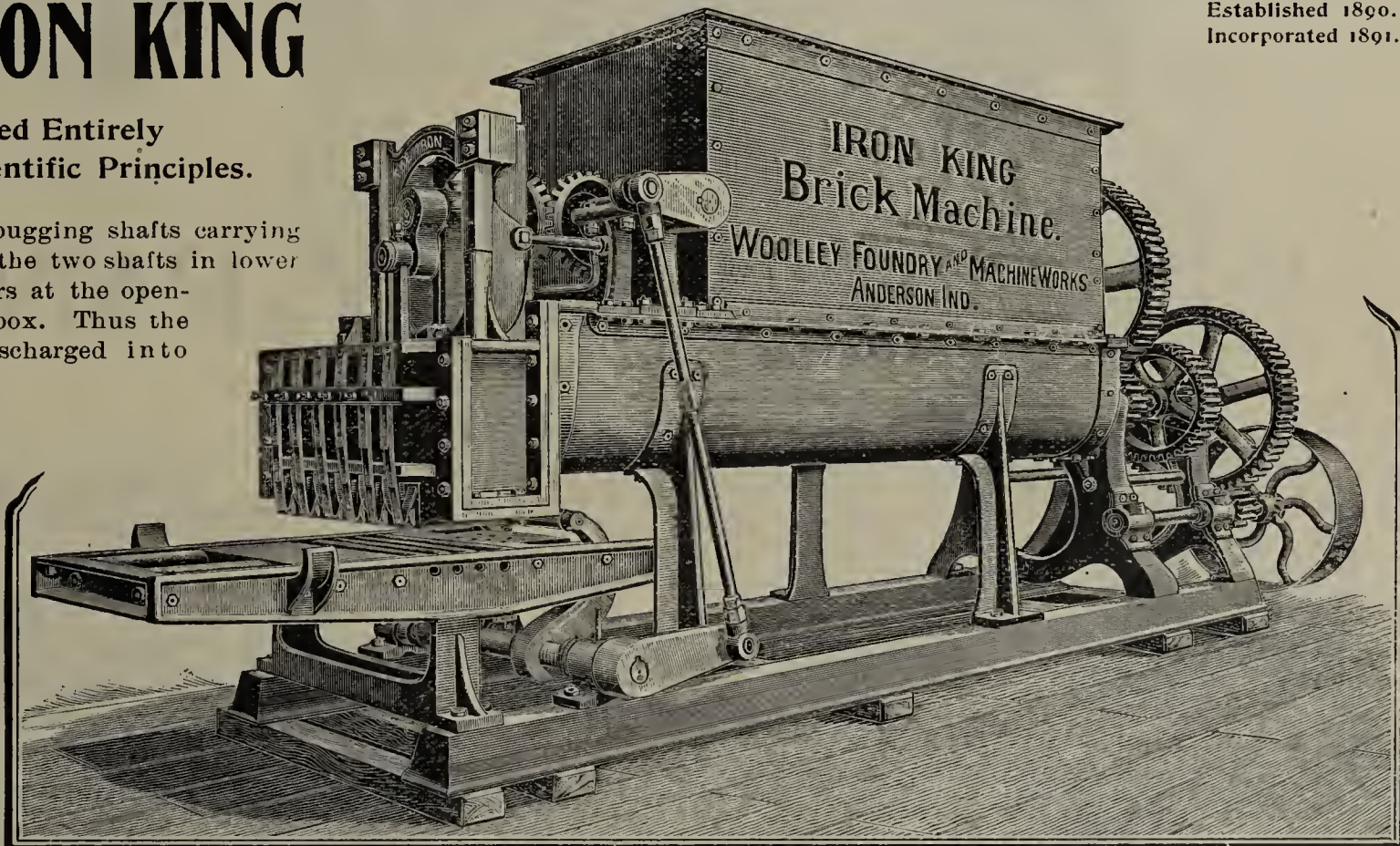
CINCINNATI, OHIO.

The IRON KING

Established 1890.
Incorporated 1891.

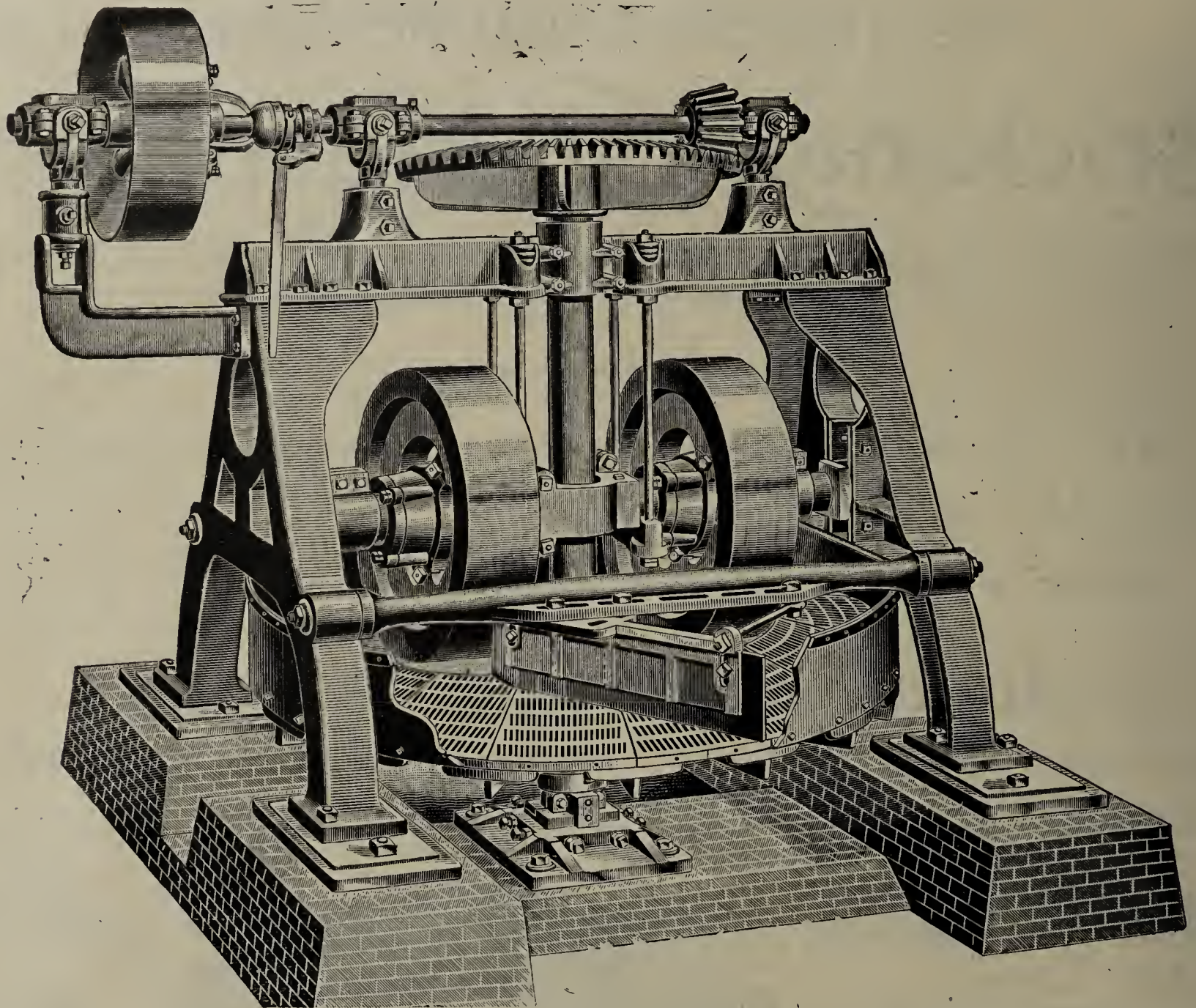
Is Constructed Entirely
On Scientific Principles.

It has three pugging shafts carrying steel knives. On the two shafts in lower chamber are augers at the opening of the press box. Thus the clay is evenly discharged into the press box, insuring an even pressure on each brick. Parties who are familiar with what is commonly known as soft clay machines, will readily understand the advantages that we gain, by dispensing with the old wiper or mud wing, and substituting the more modern and



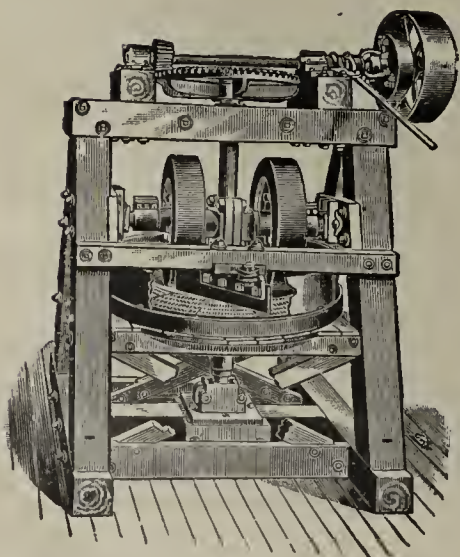
positive device known as the auger. This machine has more pugging capacity, is stronger and has more iron and steel in it, and will make stiffer brick than any machine using a sanded mold. This machine will bear investigation. Write for full description and testimonials, or come to our works and see the machine in stock, we can show it in practical operation in works near us. In conclusion, if you buy a machine without investigating the Iron King, you are the loser. Address,

WOOLLEY FOUNDRY & MACHINE WORKS, Anderson, Ind.



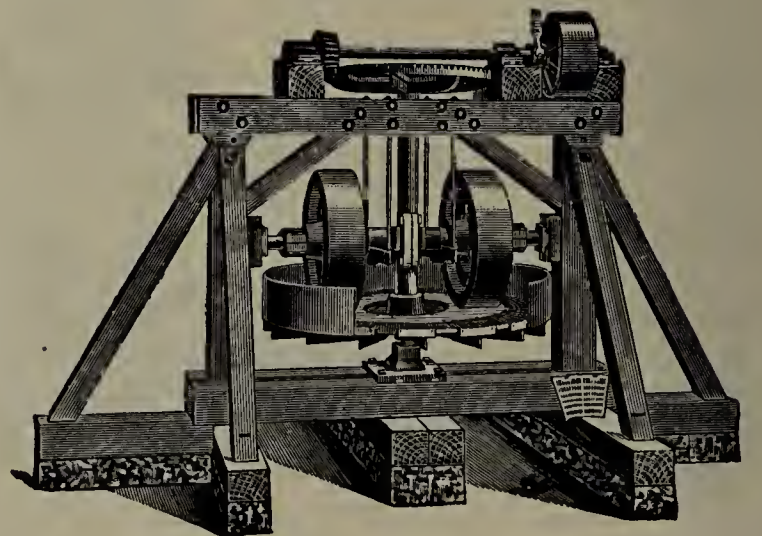
OUR SPECIALTY IS

DRY PANS.



IRON FRAMES,
WOOD FRAMES:

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All Sizes and Price  
to suit  
Any Size Plant.  
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.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

FROST ENGINE CO., Galesburg, Ill.,
U. S. A.

Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

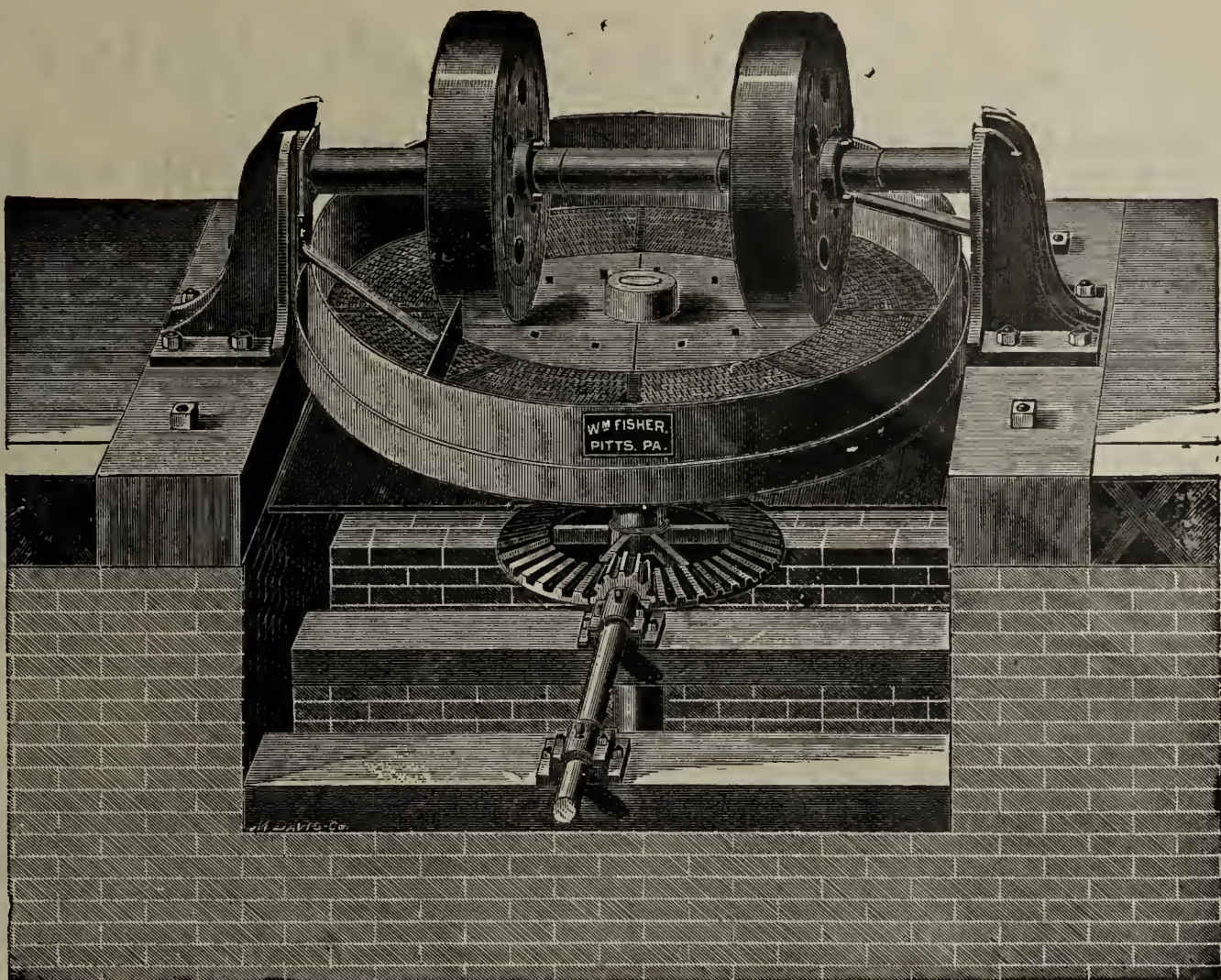
Pittsburgh, Pa.

Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and
Fire Brick Clay,
Limestone, Lime,
Sand, Phosphates,
Bones and other
refractory materials.



Wet Pans,

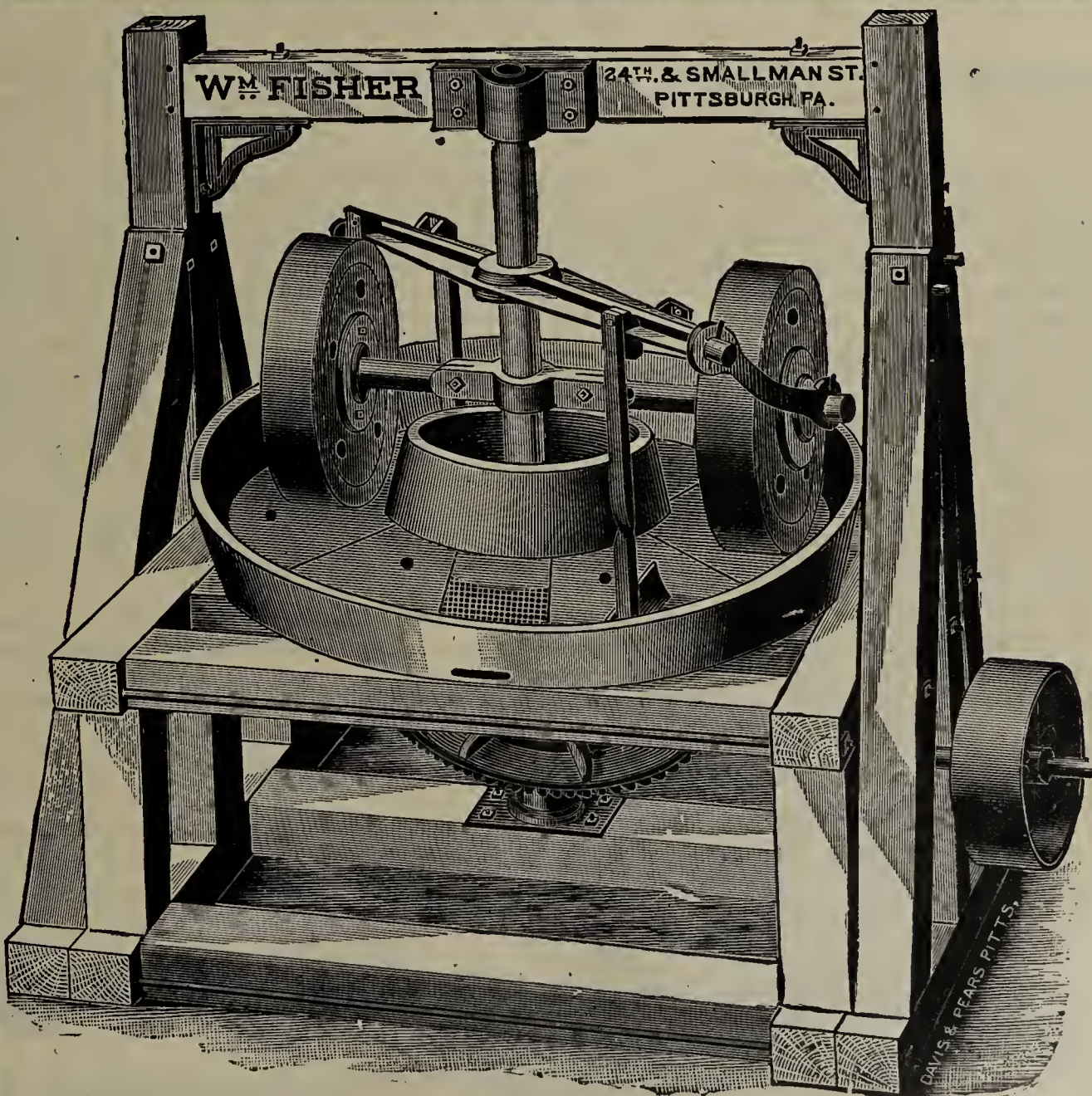
STATIONARY and REVOLVING,

FOR

Brick Works,
Steel Works,
Glass Houses,
Rolling Mills
and Paint Works.

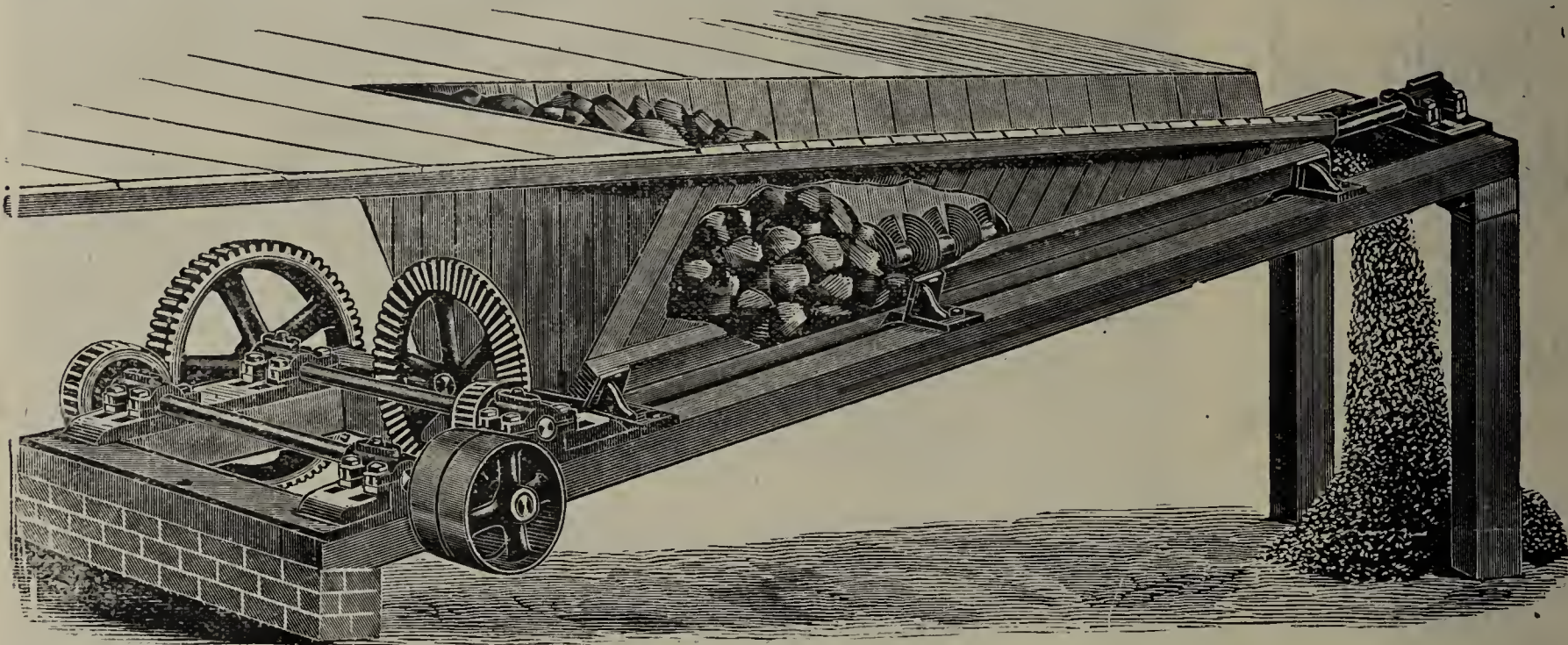


PUG MILLS,
BLAKE CRUSHERS,
BRICK PRESSES.



When writing for prices, state kind of material and capacity required.

EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
 2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
 3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
 4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
 5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
 6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.
- This machine is sold entirely upon its merits.

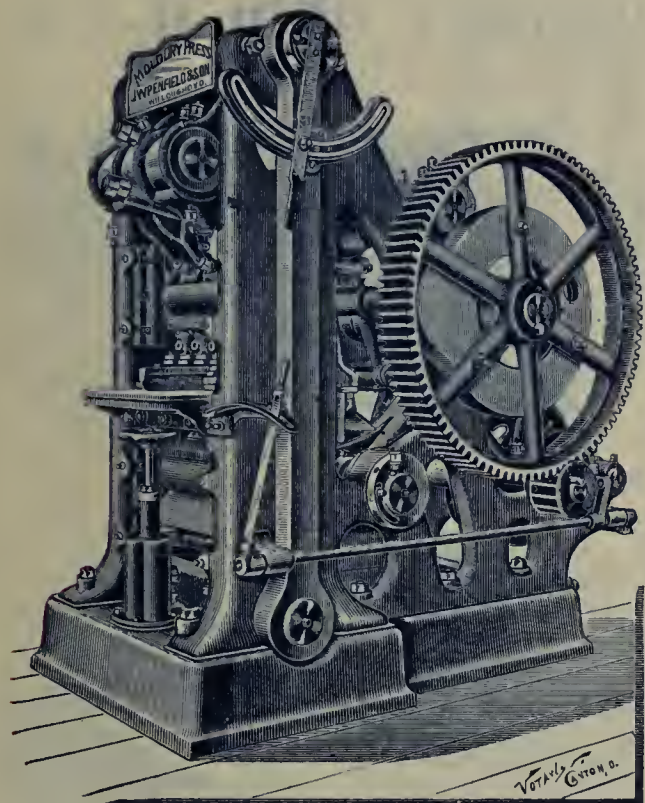
—REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

John Torrent,

MUSKEGON, MICH.

Mention Clay-Worker.



THE PEERLESS BRICK Co.

OF PHILADELPHIA,

Have won for themselves an enviable reputation as leading and successful manufacturers of the finest grade of pressed brick.

Having decided to adopt the Dry Clay process, they examined thoroughly into the merits of the machines of this class upon the market. They made tours of inspection, visited various manufactories, saw various machines in process of construction and in operation, and had their clay worked upon them; then compared results.

The conclusion they arrived at is not hard to guess: The Peerless Co. wanted the best, and so placed their order for a

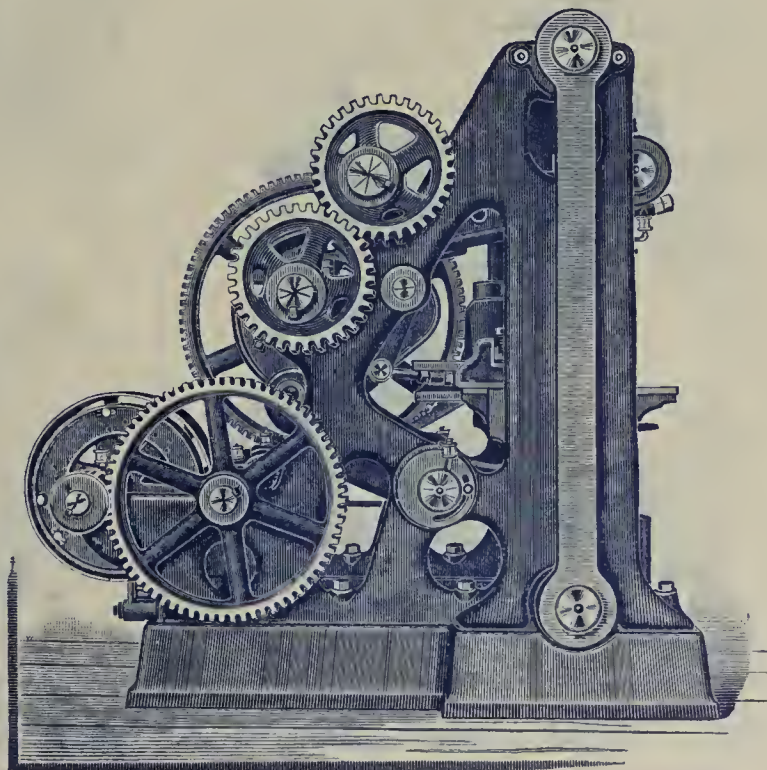
PENFIELD 4-MOLD DRY PRESS BRICK MACHINE

which has been shipped, and which they will soon have in operation.

For cuts and description of this machine, address,

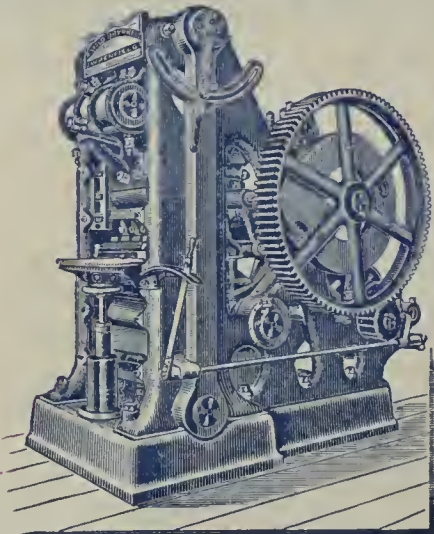
J. W. PENFIELD & SON,

WILLOUGHBY, OHIO, U. S. A.

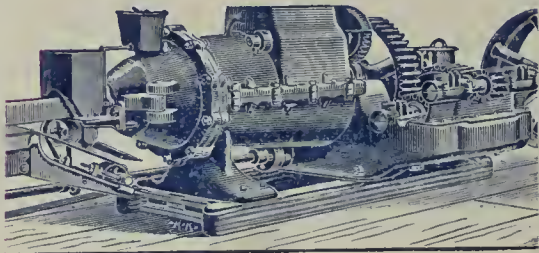


J. W. PENFIELD & SON, WILLOUGHBY, OHIO, U. S. A.

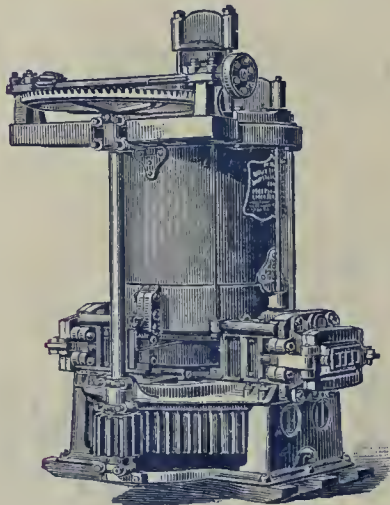
Some Things We Make :



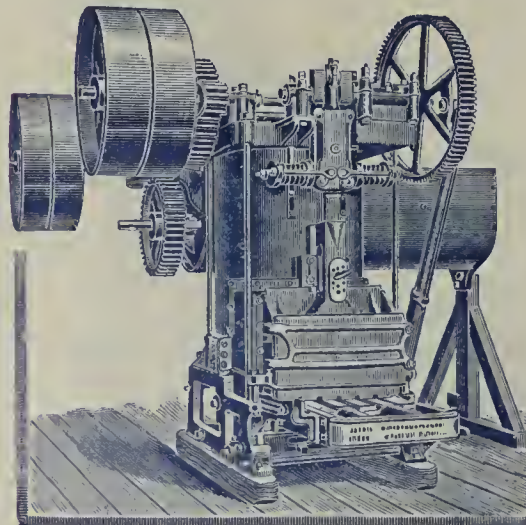
Dry Press Brick Machines.



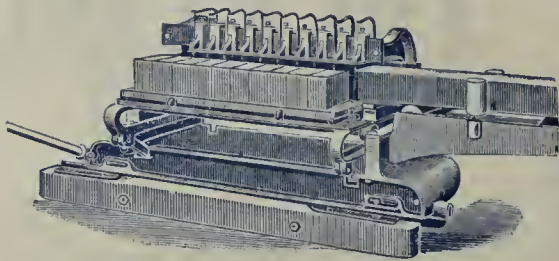
Auger Brick Machines;
Auger Tile Machines.



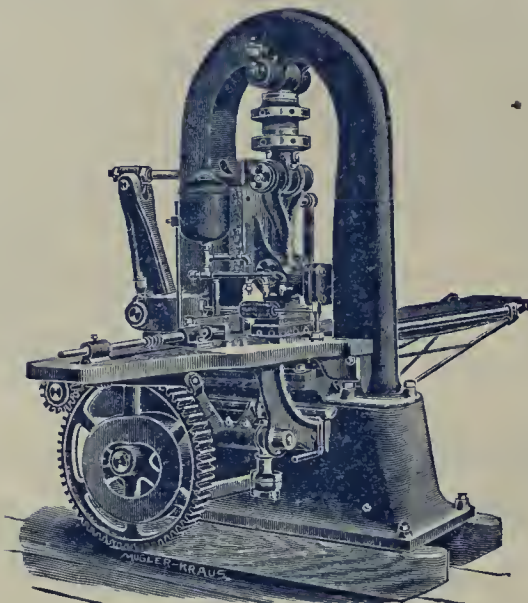
Plunger Brick Machines,
Also suited for making Tile, Fireproofing, Etc.



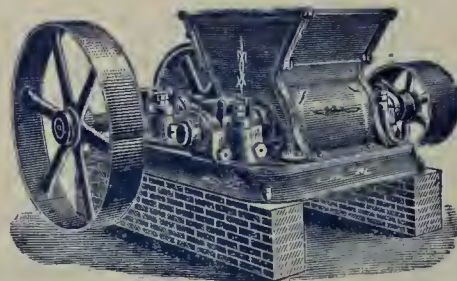
Stock Brick Machines,
For Sand-Mold Brick.



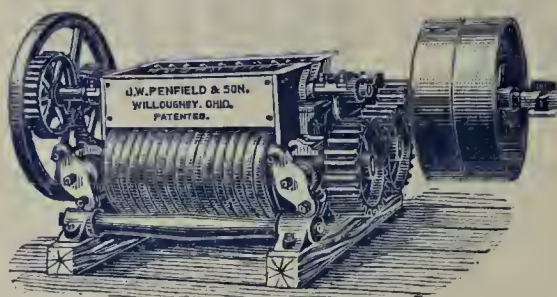
Board Delivery Brick Cutters.



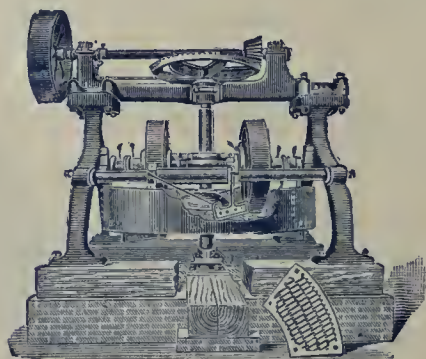
Brick Represses.



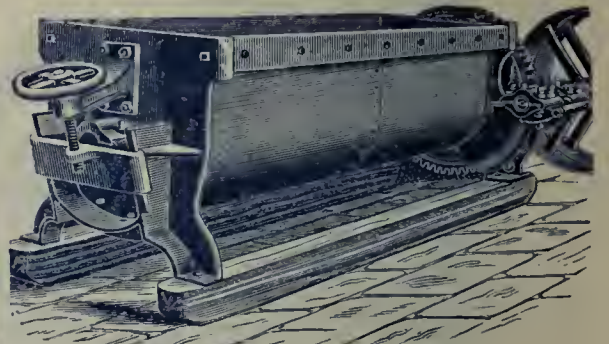
Disintegrators,
Singly or combined with Crushers or Pug Mills.



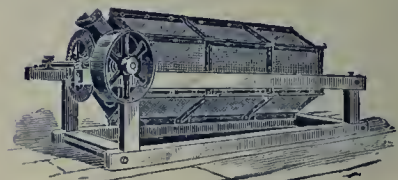
Clay Crushers; Stone Separators.



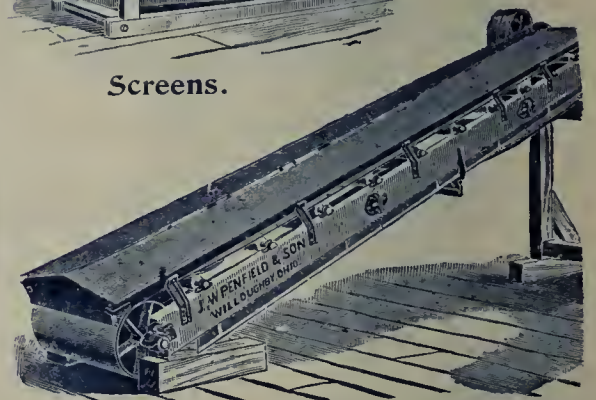
Dry Pans; Wet Pans.



Pug Mills; Granulators.



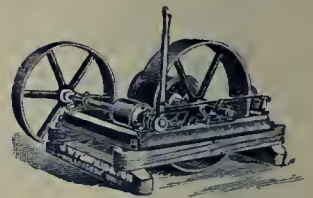
Screens.



Clay Elevators; Conveyors.

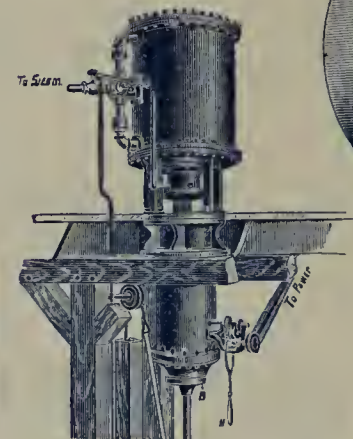
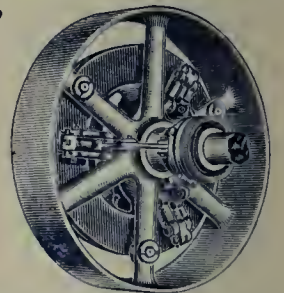


Clay Cars.



Winding Drums.

Barrows; Kiln Castings, Clutch Pulleys,
Sewer Pipe Presses,
Etc.



Send for Catalogue.

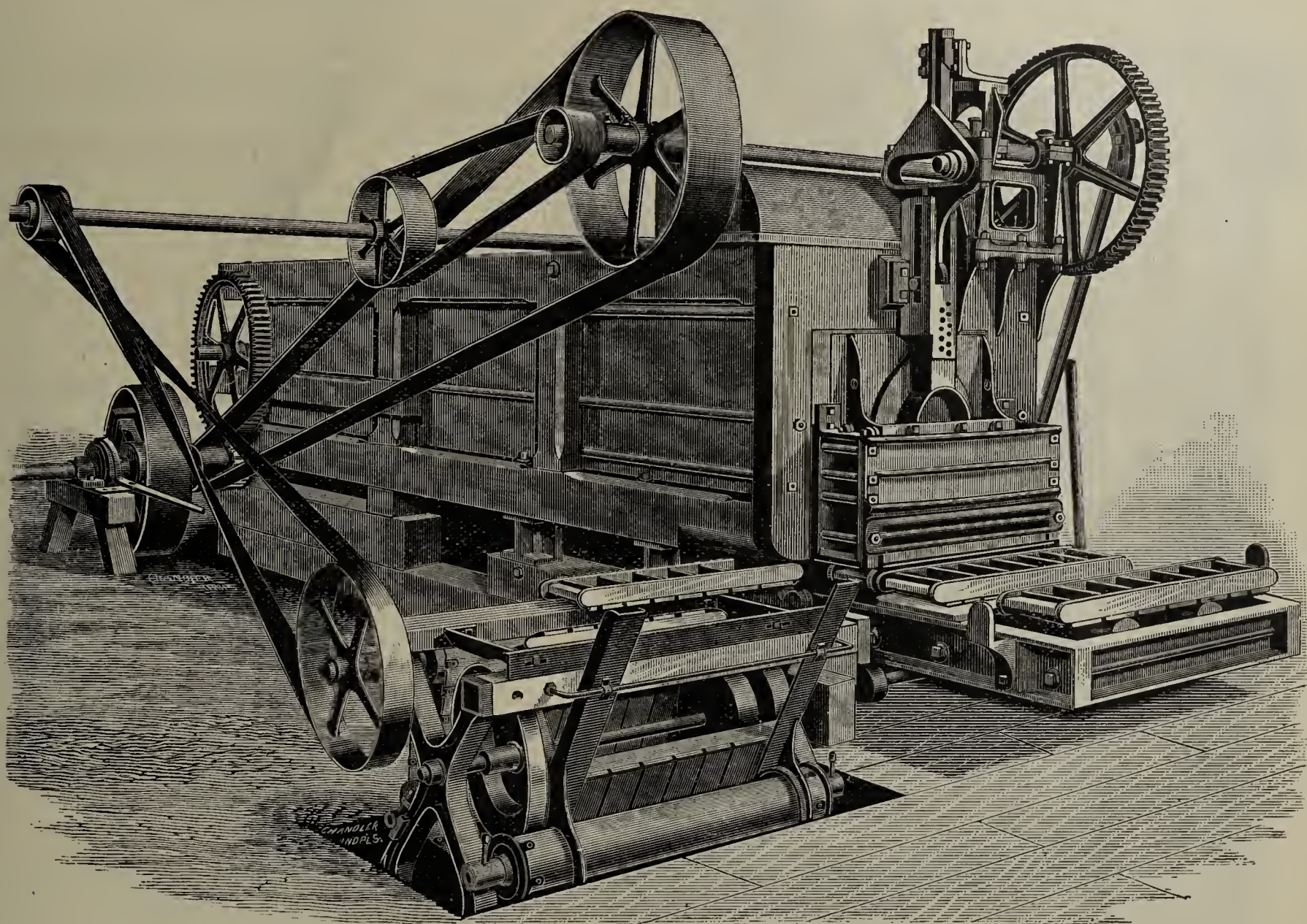
J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A.

J. W. PENFIELD & SON,
WILLOUGHBY, O.

J. W. PENFIELD & SON,
WILLOUGHBY, O.

The POTT'S HORIZONTAL STOCK BRICK MACHINE

The Standard Machine of the United States.



THIS machine will make more and better brick than can be made by any machine on the market. It is **simple in construction, strong and durable**, it will work the clay stiff and fill a **six brick mould perfectly**. It is the heaviest machine made. Read what the Third Vice-President of the N. B. M. A. has to say about the Potts Horizontal Stock Brick Machine after two years use.

J. A. BLAFFER & SON,
NEW ORLEANS, LA.,
MANUFACTURERS OF RED PALLET BRICK.

NEW ORLEANS, LA., March 5, 1894.

C. & A. POTTS & Co., Indianapolis, Ind.,

GENTLEMEN:—In reference to your inquiry as to the manner in which your **HORIZONTAL STOCK BRICK MACHINE** is doing its work, we beg leave to say that it gives entire satisfaction, it makes the brick perfectly square with smooth, sharp corners. The pressure is such that the clay can be moulded quite stiff. The brick do not spread in drying, (as you know this was the great objection to the vertical machine we formerly used the clay could not be moulded stiff enough but what the brick would spread in drying.) We are making regularly 200,000 good brick per week, and could increase the capacity if desired.

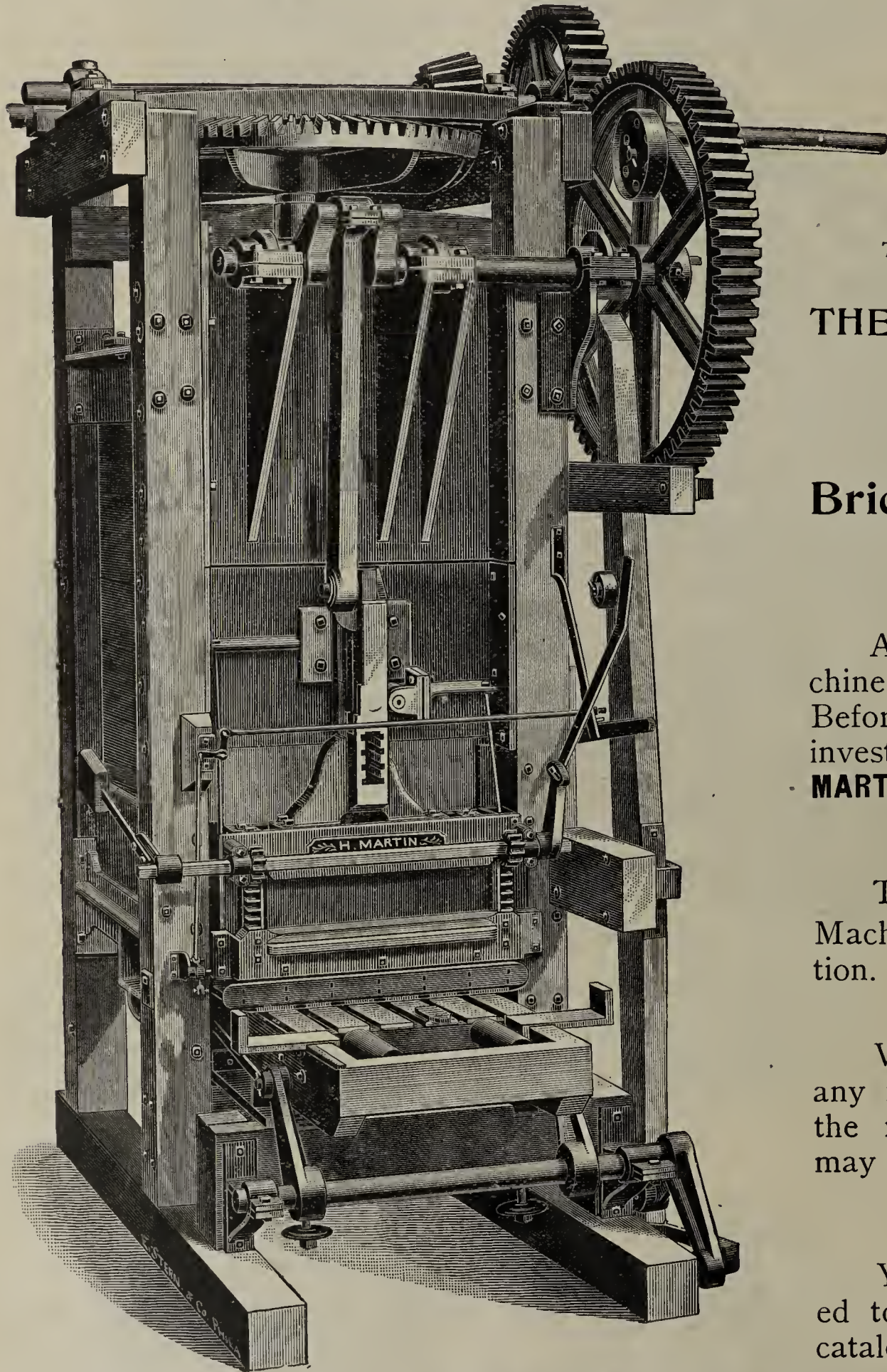
J. A. BLAFFER & SON.

We manufacture a full line of clayworking machinery. It will pay you to write us for prices.

C. & A. POTTS & CO., = Indianapolis, Ind.

Actual Use Decides the Durability of a Machine.

MARTIN'S LETTER "A"



IS PRONOUNCED BY....

 **Practical
Brickmakers**

TO BE 

**THE STRONGEST,
MOST PERFECT
 AND BEST
Brick Machine in Use.**

Are you looking for a machine that will work your clay? Before buying, do not fail to investigate the merits of the **MARTIN**.

There are over 3,000 of our Machines now in practical operation.

We will cheerfully furnish any information in reference to the manufacture of brick that may be desired.

You are respectfully requested to write for our new 1894 catalogue

THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

 INCORPORATED 

OFFICE: No. 36 E. James St.
WORKS: Cor. James and Christian Sts., }

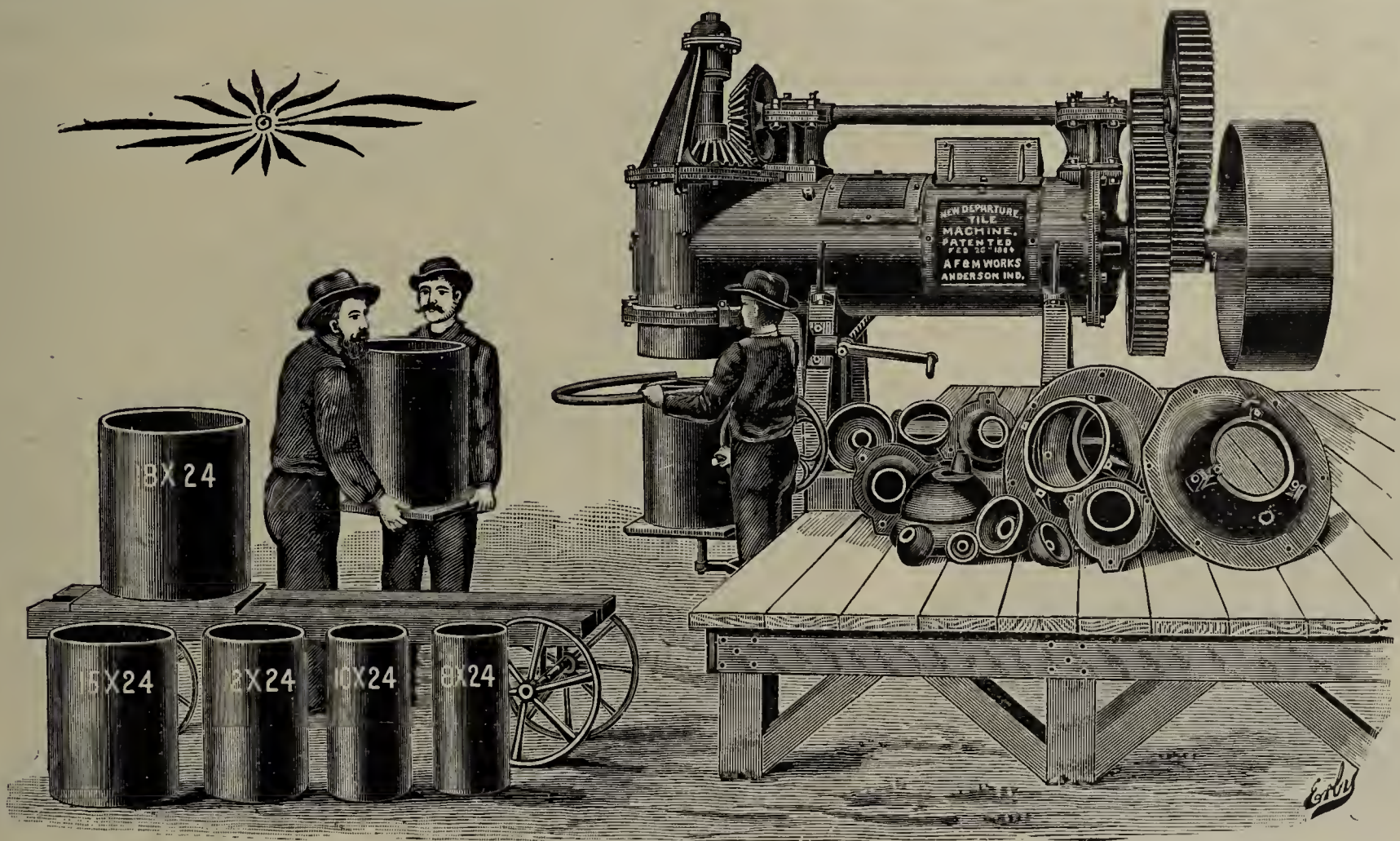
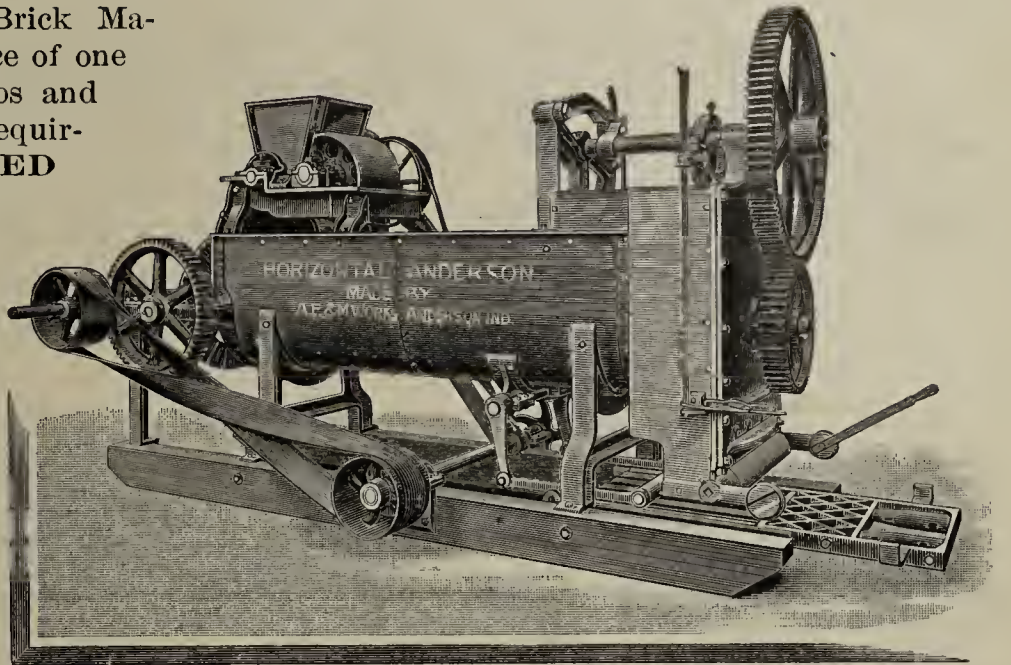
LANCASTER, PA., U. S. A.

A New Departure in Brick Machinery

THE HORIZONTAL ANDERSON

OUR latest and most complete combination of Brick Machine, Pug Mill and Disintegrator for the price of one Machine. No outside Plunger with bothersome Gibs and Plates. A Machine that will run for years without requiring any adjustment and never leak. **UNEXCELLED** for **GRINDING** and **PUGGING CAPACITY**; simple in construction and durable.

This Machine is self-contained and requires no other Shafting, Pulleys, Hangers or even Foundation, other than that shown in cut. Manufacturers of Brick by the soft mud process will find it to their interest to investigate this Machine before making their contracts for new Machinery. Write for descriptive circular, price, etc. We can save you money in the beginning, and make you happy in the end. Capacity equal to any other Machine on the market. We extend a cordial invitation to all prospective purchasers to pay us a visit and allow us to show them the Machine in operation.



THE GREATEST ON EARTH

We have imitators but no competitors. The **NEW DEPARTURE** makes all sizes of tile from 3 inches to 24 inches in diameter in a manner that defies competition.

DOWN DELIVERY FOR LARGE TILE.

SIDE DELIVERY FOR SMALL TILE.

THE ANDERSON FOUNDRY & MACHINE WORKS, - - Anderson, Indiana.

Fresh Evidence Monthly of the Highest Quality.



NEVER ! !

No other "soft mud" machine ever did what Mr. Kline states below. His is a winter yard and now in operation. "Go and see" something *no other "soft mud" machine CAN do.*

THE WELLINGTON MACHINE CO.,
WELLINGTON, OHIO:

READING, PA., July 27, 1893.

GENTLEMEN:—The "Monarch" machine we bought of you last December is doing wonderfully well. It makes finer brick after it has been used a while, or worn in to operate the clay. This "Monarch" machine makes brick that we turn up without marking them, right after they are dumped on the pallets. The brick stay in perfect shape; the corners are perfectly filled out.

I manufacture with this machine thirty thousand brick in less than seven hours. The brick made for repressing are made in the morning and repressed in the afternoon, and then hacked in the shed to dry. I have turned out over four million brick with the "Monarch" machine while in operation from last December, and I have plenty of call for them. I don't need to go to make sale, they come to my works and buy before they leave.

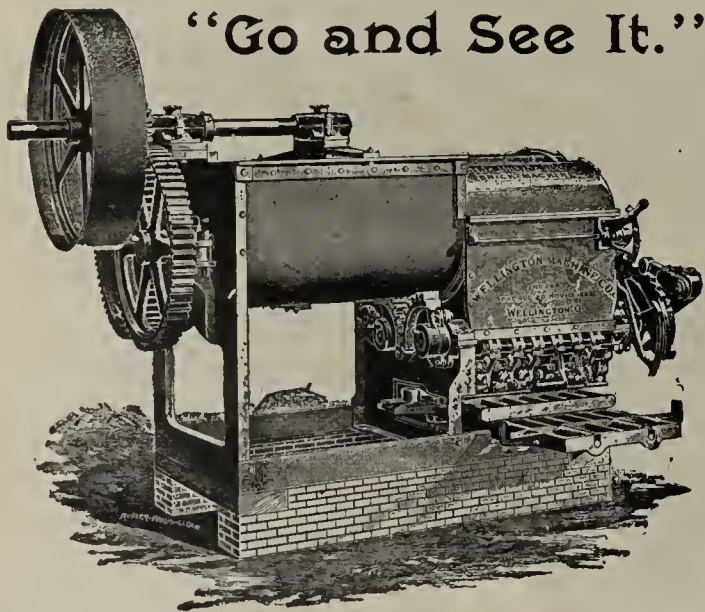
I have seen between thirty and forty brick machines, and none of them can do as fine work as the "Monarch." It is well geared and strong, and the expense of breakage is not worth talking about. It did not delay us.

I shall be pleased to show and fully recommend your machine to any one who is in need of one, and any one visiting our city can call upon us and inspect our "Monarch" personally.

Wishing you every possible success, which you deserve, I remain,

Very respectfully yours,

SIMON KLINE.



"Go and See It."

DON'T FORGET THESE FACTS.

That we worked five years developing the new principles in this machine, perfecting and simplifying every detail before we put it on the market.

That it is scientifically and mechanically constructed from the ground up, aiming not merely at goodness, but at perfection.

That it has 14 feet of pug mill (double), changing direction of movement of clay three times, cutting it all up.

That the presses are entirely in the mud. (This is the greatest point ever produced in a brick machine). Enabling moulding the stiffest possible material. Wear, leakage and friction are absolutely eliminated. This means much. Reflect on its importance.

That it is extremely simple. (Only four gears and none bevel.)

Immensely strong, (all iron and steel. Weighs 11,250 pounds.)

That long, easy moving, scientific leverages make its draft so light.

Investigate it now as it will last a lifetime, and is the "perfect machine" you have longed for so long. Only investigate is all we ask. GO AND SEE for yourself; the small cost of the trip, will be the best investment you ever made.

The Wellington Machine Co.,

Wellington, Ohio.

See the October CLAY-WORKER for list of 43 Happy Users.

THE "QUAKER"

Family of Machines, are the Most Used of Any Single Make of Machine.

The "New Model Quaker" Horse-Power Machine.

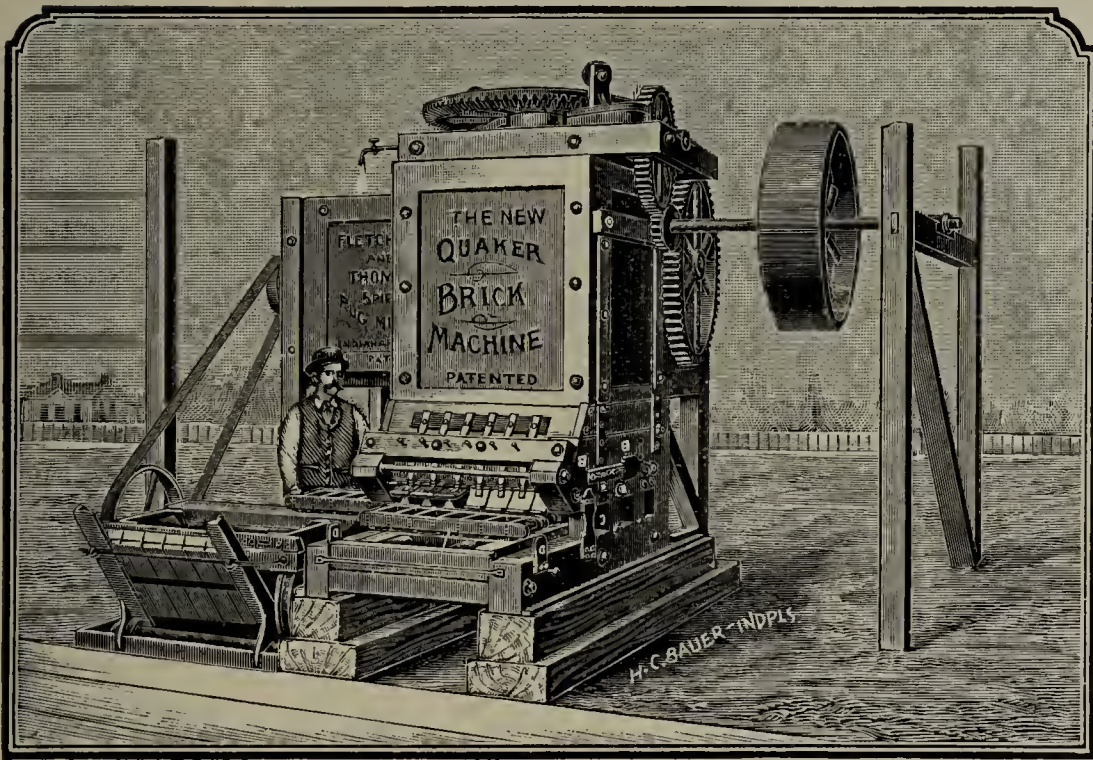
Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



Steam-Power Machines—Two Sizes

The "Regular" is the Horse-power Machine with necessary gearing for steam-power added.

The "Extra Heavy" is a much heavier, specially built machine, and has for years stood at the head of all upright, wooden framed machines.



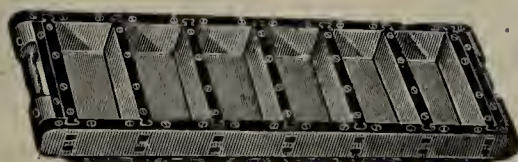
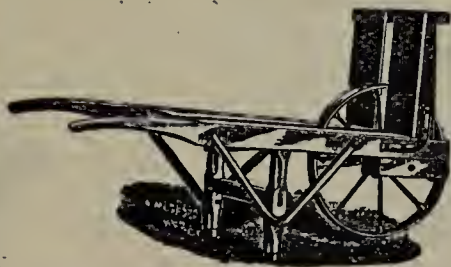
THE combination of our "Extra Heavy Steam Power Machine" with a "Horizontal Pug Mill" makes an outfit that will take clay from the bank, and make as many brick per day as any gang can take care of. Has made 50,000 per day.

Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

The Wellington Machine Co.,

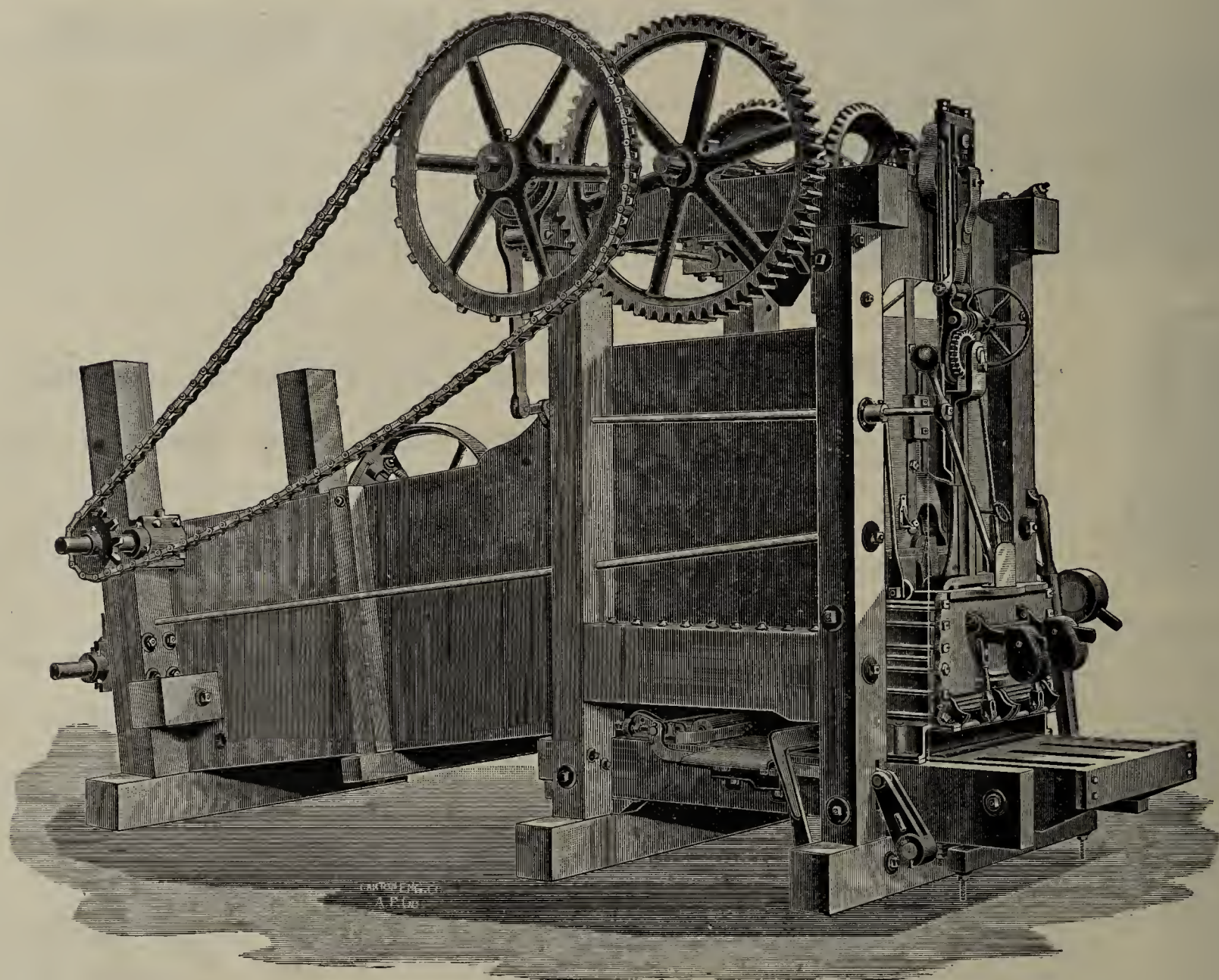
Wellington, Ohio.



(FOUNDERS AND MACHINISTS.)

OUR LATEST!

The "Tiffin" HORIZONTAL BRICK MACHINE



Possesses all the Good Points and
Patented Special Safety Devices

That have conduced to render our "Tiffin" Vertical Machine so popular with practical Brickmakers.

•❖ PRICES REDUCED. ❖•

| | |
|--|-------|
| Tiffin Horizontal Automatic Brick Machine..... | \$500 |
| " Vertical " " " | 400 |
| " Horse Power " " " | 300 |

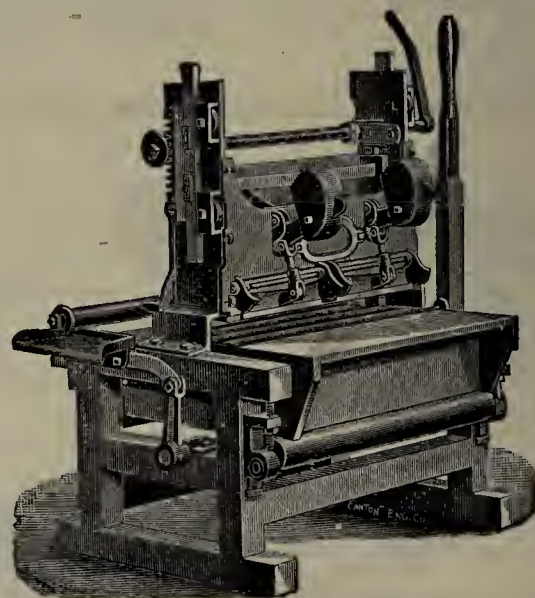
☛ If you have not received a copy of our Illustrated and descriptive Catalogue of Brick Machinery and Brickyard Supplies we will be pleased to mail you one.

TIFFIN AGRICULTURAL WORKS,

Manufacturers of Steam and Horse Power Automatic Brick Machines, Horizontal Pug Mills, Elevators, Crushers, Tilting Turn Tables, "Old Reliable" Brick Machines, Pug Mills, Trucks, Wheelbarrows, Molds, Etc., Etc.

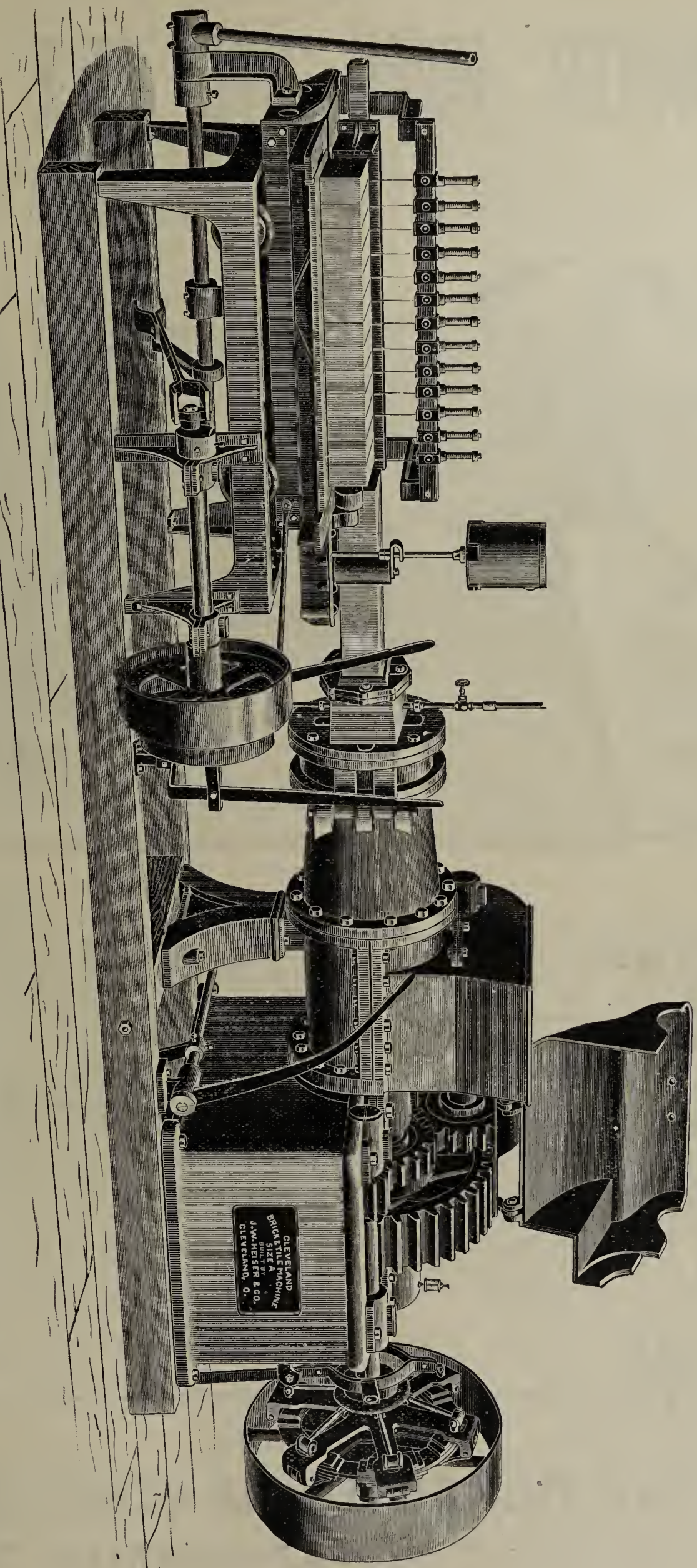
TIFFIN, OHIO.

The "Old Reliable"



MAINTAINS THE REPUTATION of being the best Machine on the market for use in small yards.

The "CLEVELAND" CLAY WORKING MACHINERY.



Size "A" Machine with Patent Board Delivery Power Cutting Table. Capacity from 25,000 to 40,000 Brick per day.

ALL OF OUR MACHINERY IS BALL AND PIN BEARING
GUARANTEED FOR ONE YEAR AGAINST WEAR OR BREAKAGE.

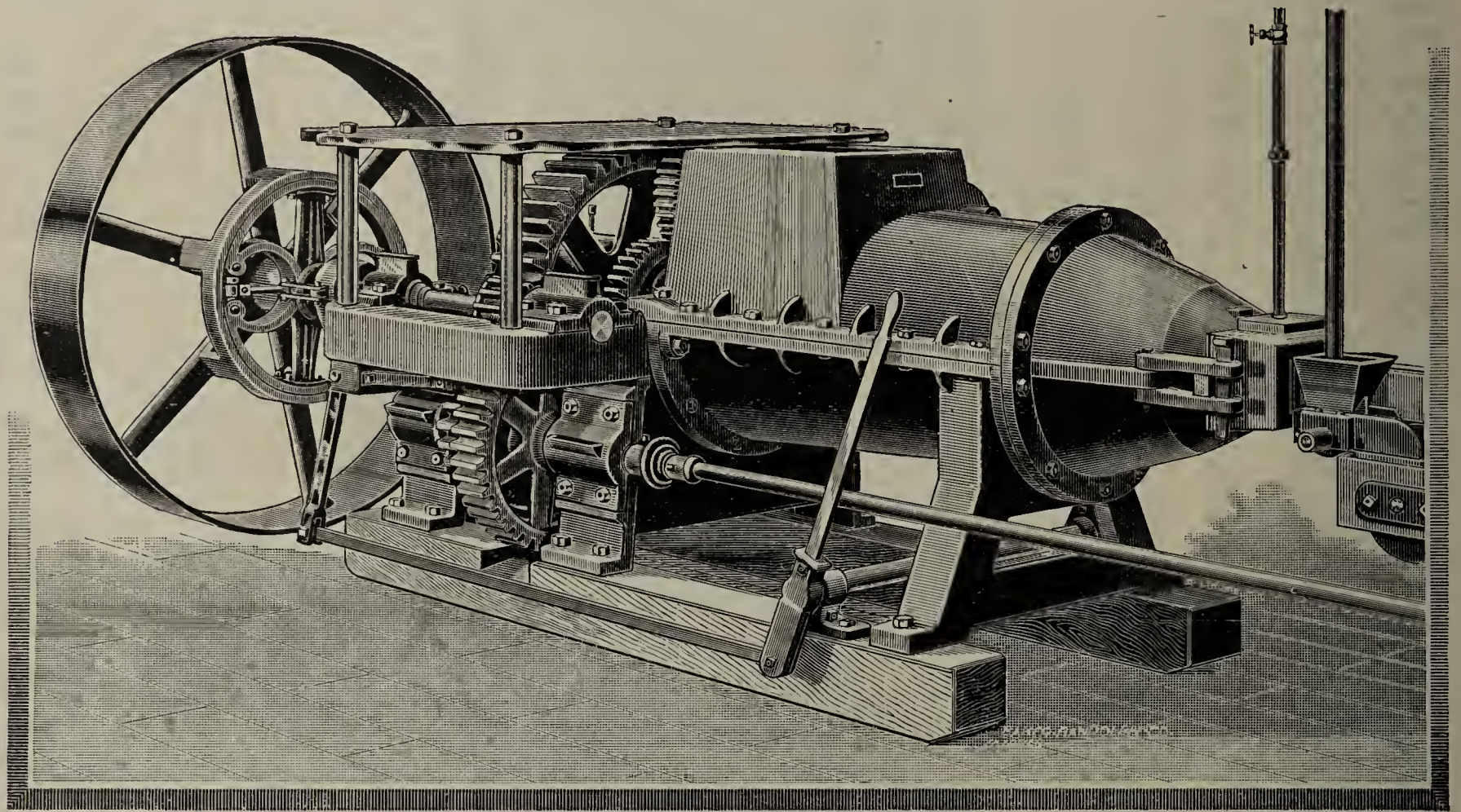
If you want superior machinery, improve your product, save money and have a balance on the right hand side of your Ledger, write to us for Catalogue and description of our machinery.

J. W. HEISER & CO., Manufacturers of CLAYWORKING MACHINERY, Cleveland, Ohio.

IMPROVED BRICK AND TILE MACHINERY,

MANUFACTURED BY

THE DECATUR LEADER MFG. CO.



Auger Brick Machine.

WHAT THEY THINK OF US AT HOME. . . .

—OFFICE OF—

The Tuttle Brick Company.

DECATUR, ILL., March 26, 1894.

THE DECATUR LEADER MFG. CO., City:

GENTLEMEN—The outfit of Brick machinery made by you for us gives entire satisfaction. We understand your automatic cutter is a recent design, and we would say that it deserves especial mention for its simplicity and perfect working.

Yours truly,

THE TUTTLE BRICK CO.,

JOHN DILLER, Manager.

Our line is complete. Send for printed matter.

THE DECATUR LEADER MFG. CO.,

Decatur, Ill., U. S. A.

[Mention the Clay-Worker.]

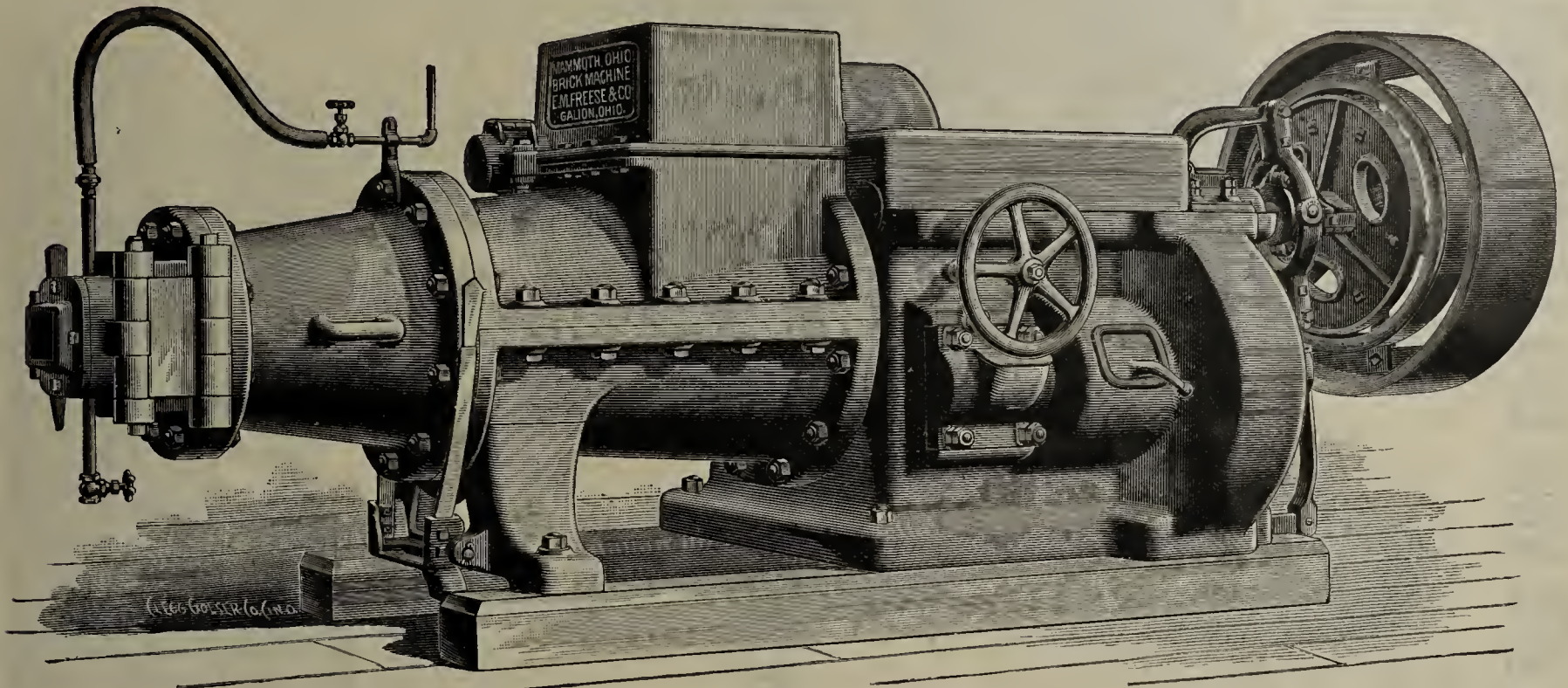
SUPERIOR BRICK MACHINERY.

For Paving, Building and Fire Brick.

Substantial, Simple, Practical.

Best Material and Workmanship.

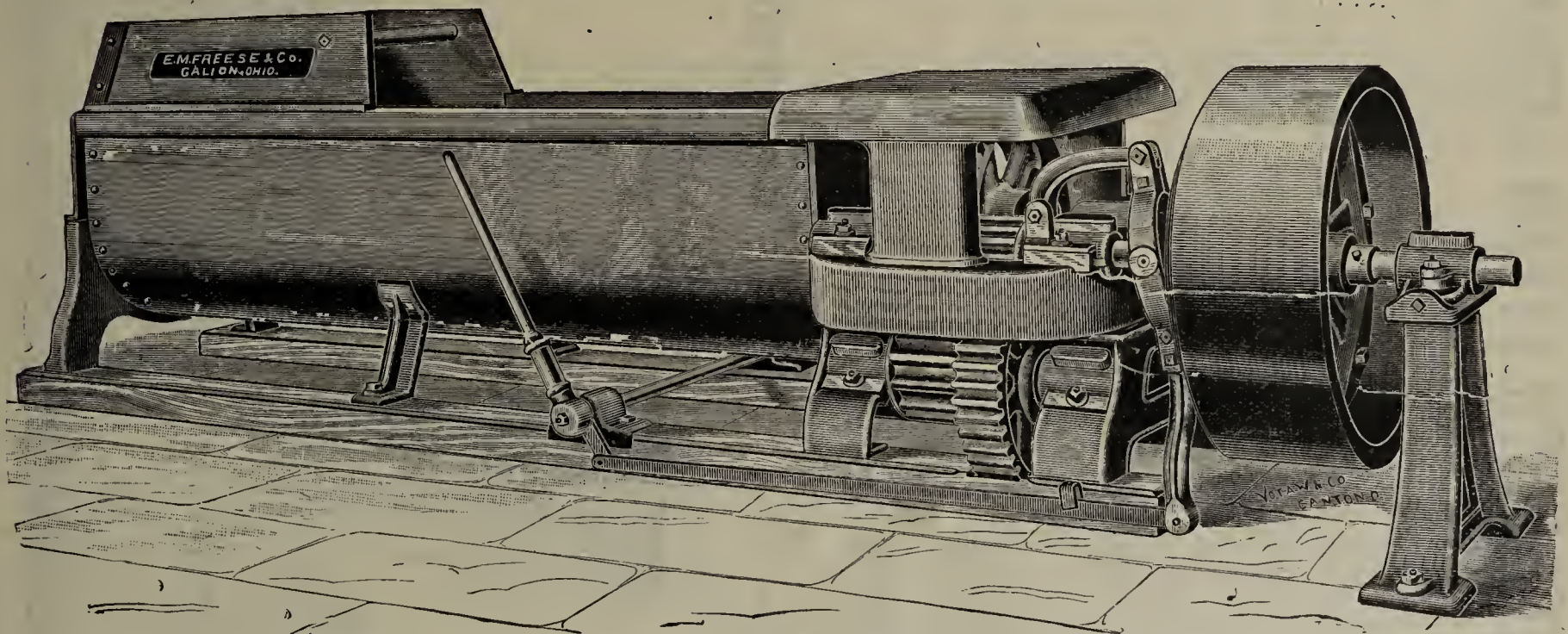
In short our Machinery is made for everyday use.



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

PUG MILLS THAT PUG THE CLAY.



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

IT WILL PAY~~~~~

ADDRESS E. M. FREESE & CO.,

~~~~~ GALION, OHIO.



# NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

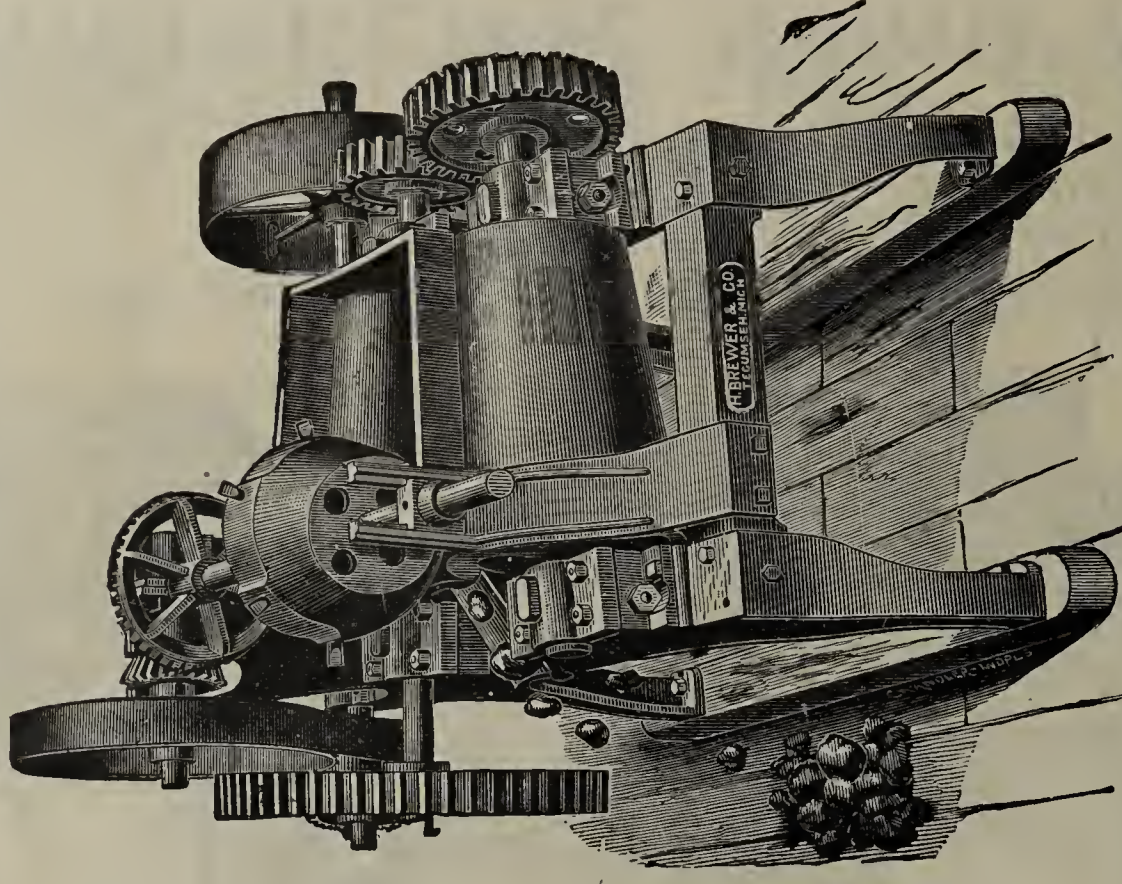
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

## H. BREWER & CO.,

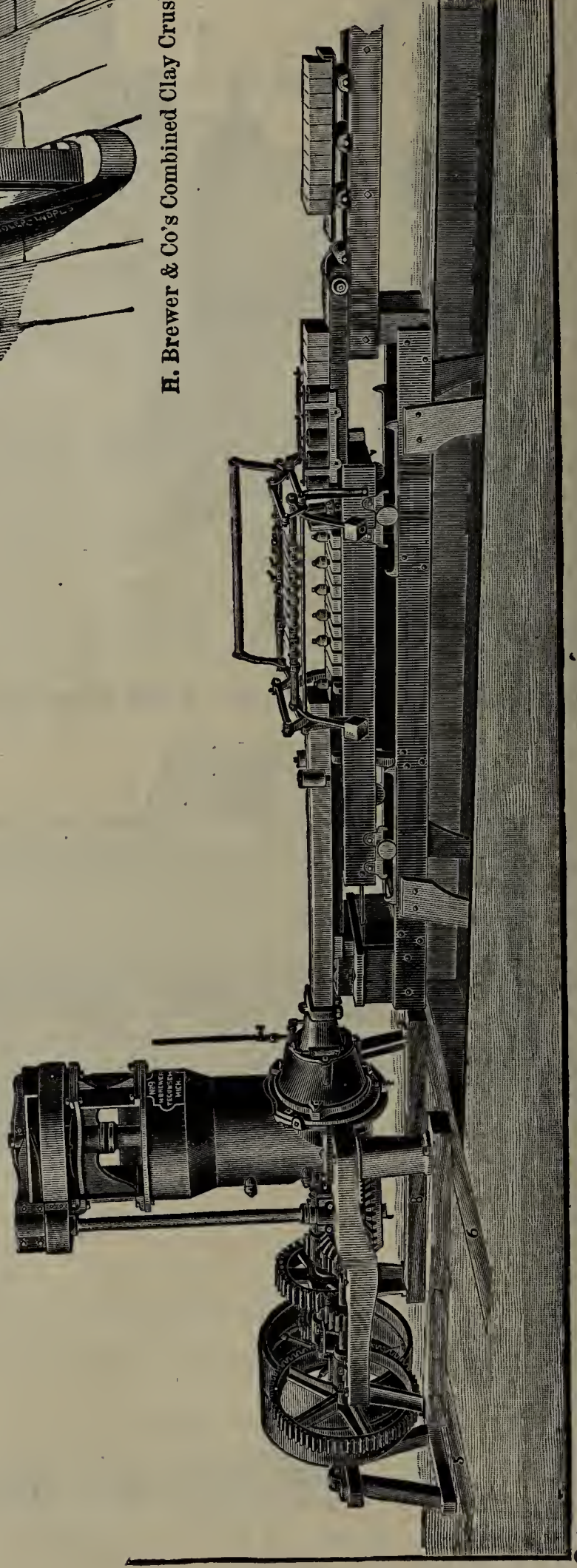
## Tecumseh, Mich.

[Mention the Clay-Worker.]



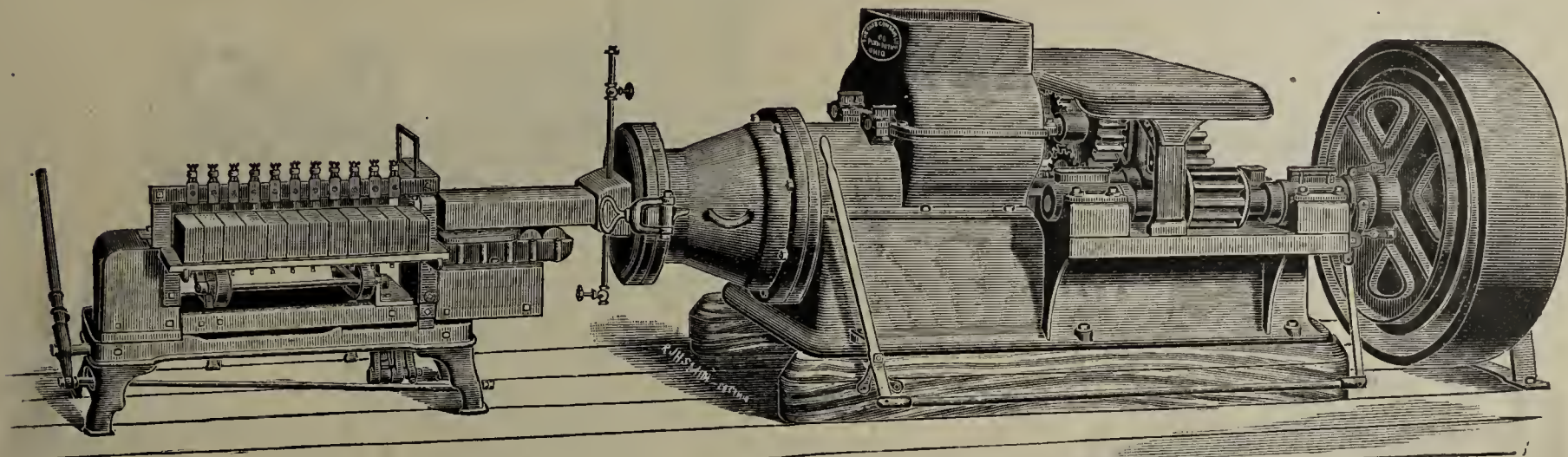
H. Brewer & Co's Combined Clay Crusher and Stone Separator.

The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



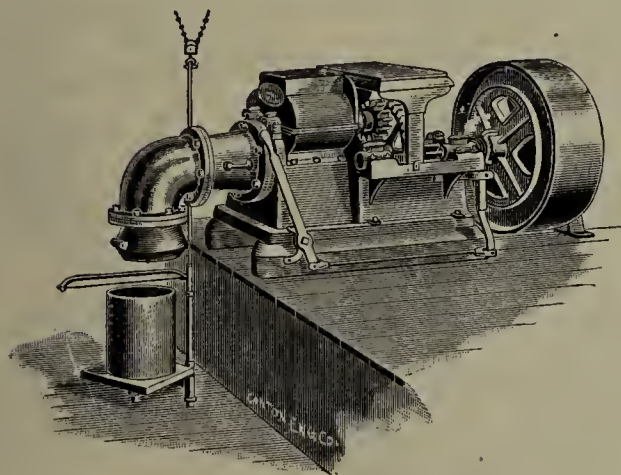


# "PLYMOUTH" BRICK AND TILE MACHINES



"A" Machine, with Board Delivery Cutting Table.

COMPLETE, RELIABLE,  
STRONG, DURABLE,  
INCOMPARABLE.



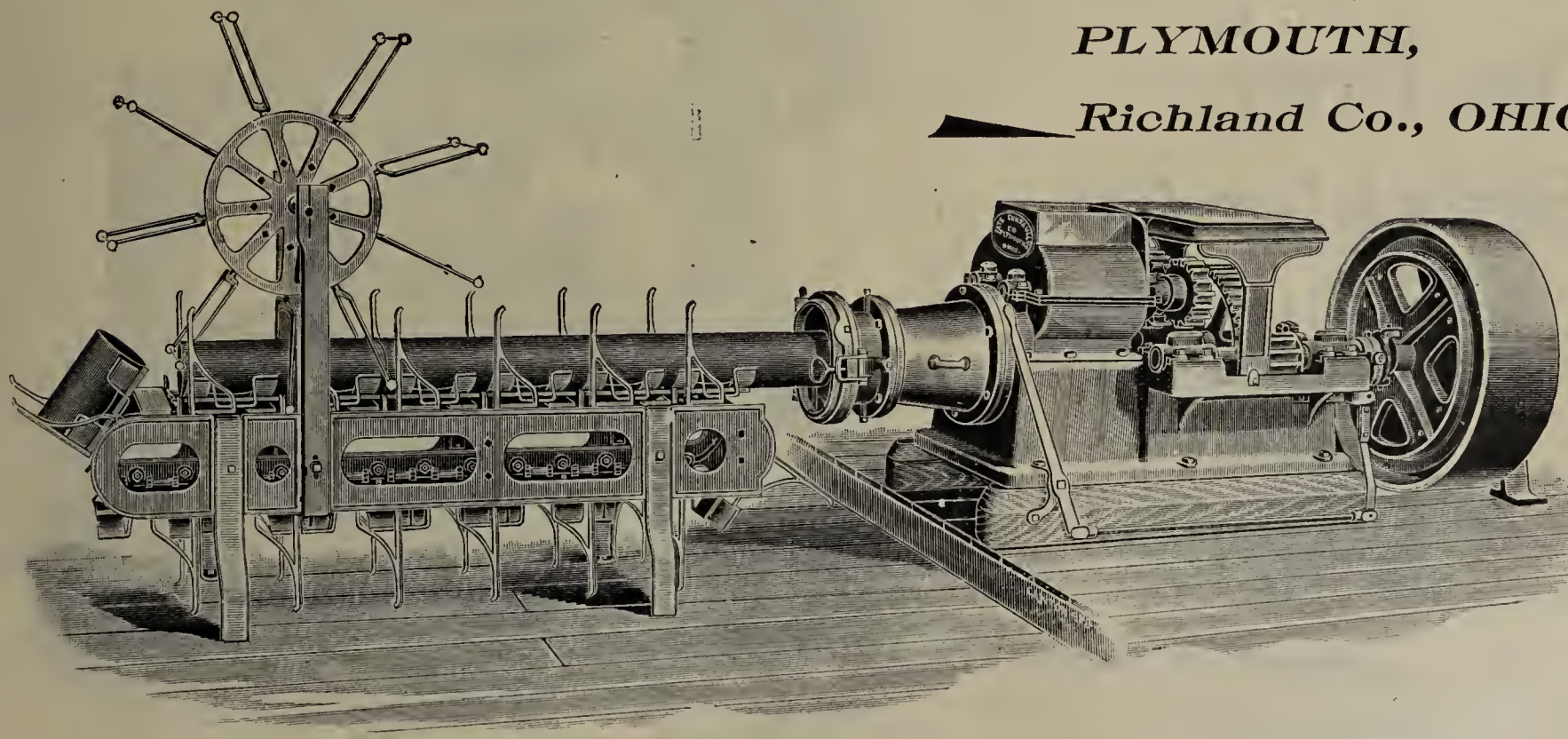
"D" Machine. With Elbow Attachment for Delivering Large Tile on End.

Send for Catalogue and Estimates On Entire Outfits

## THE FATE-GUNSAULLUS CO.,

PLYMOUTH,

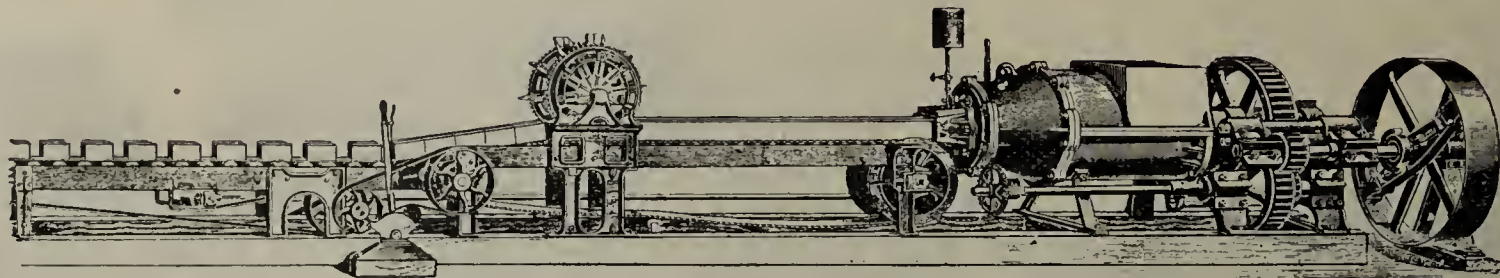
Richland Co., OHIO.



"D" Machine, with Automatic Cutting Table. For cutting tile from  $2\frac{1}{2}$  to 8 inches; also building blocks.



# THE FREY-SHECKLER CO.



No. 1 GIANT BRICK MACHINE AND AUTOMATIC CUTTING TABLE.

A WISE man will not build a house upon the sand. Neither will a wise clayworker buy inferior machinery. We claim for our machinery every prerequisite for the successful manipulation of clay into any of its known forms.

We are to-day equipping **Eight Complete Plants** for brick and Terra Cotta manufacturers who have spent their life time in the business and who are beyond a doubt competent judges of Clayworking Machinery.

Question—If the practical Brick or Tile manufacturer knows nothing of the appliances used in his line of business, who does?

Answer—No one.

We want every reader of the CLAY-WORKER to write us or call upon us in person and we will assure him that we have *the Best on the Market, and only the Best*. If you cannot come we will send our representative to you.

## The Frey= Sheckler Co.,

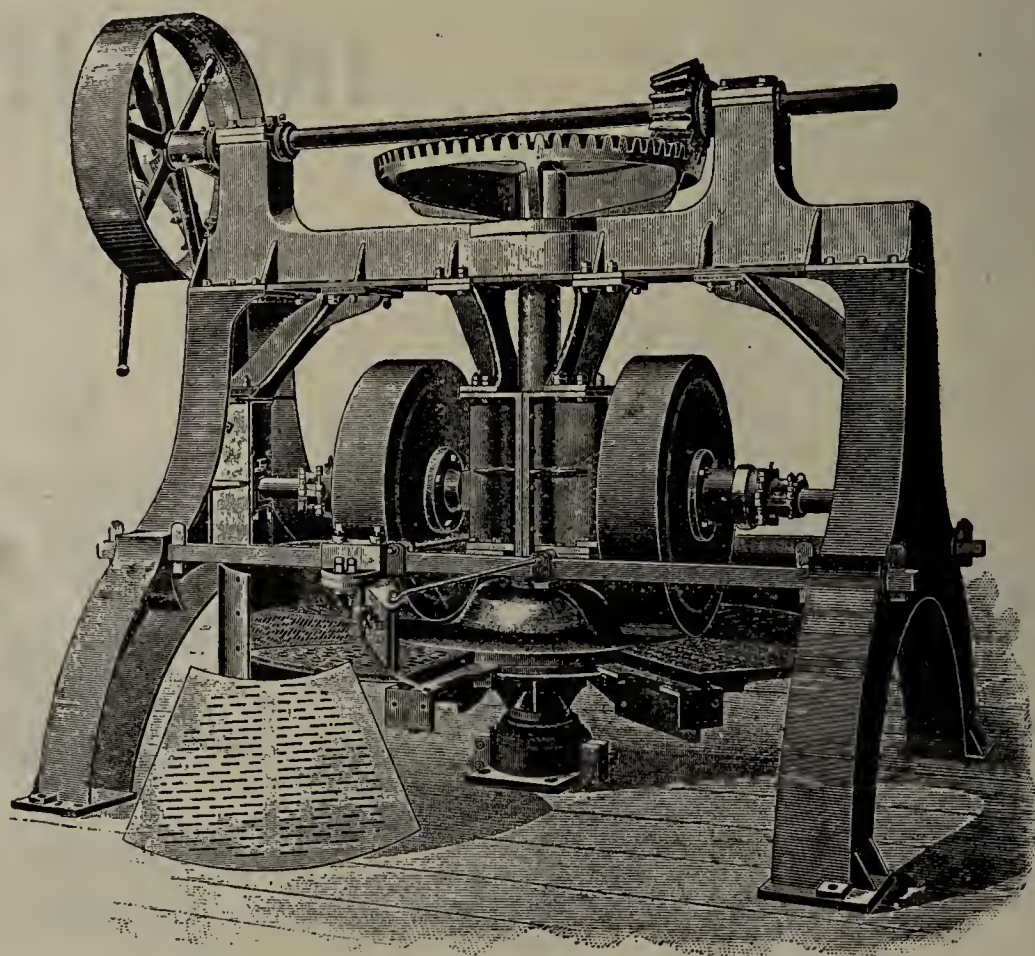
Manufacturers of...

Brick, Tile and Terra Cotta Machines,  
Pug Mills, Represses, Dry and Wet  
Pans, Grushers, Disintegrators, En-  
gines and Boilers, Etc., Etc.

Builders of THE BUCYRUS STEAM TUNNEL DRYER,

BUCYRUS, OHIO,  
U. S. A.

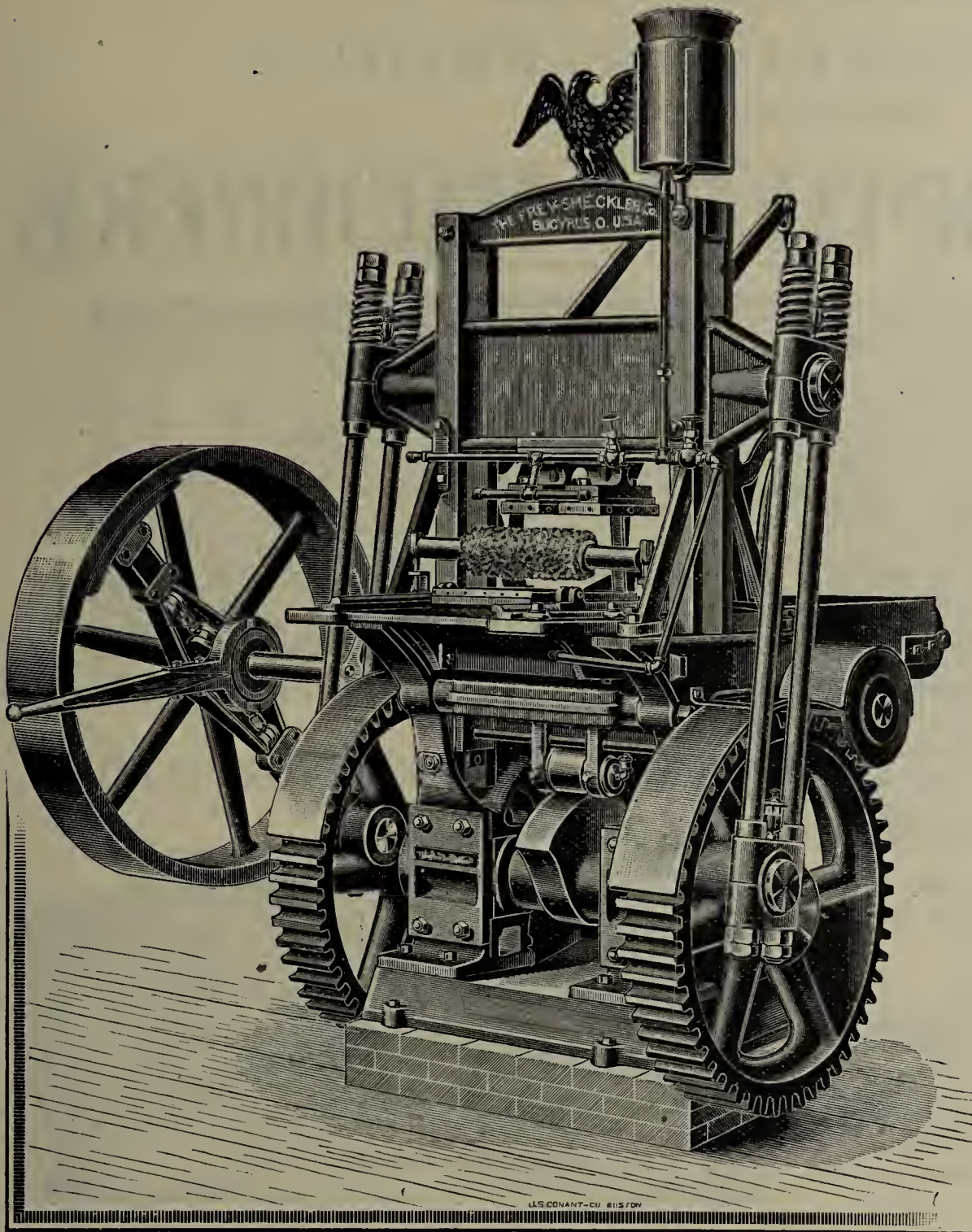
Send for Machinery and Dryer Catalogue.



NINE FOOT DIAMETER ALL STEEL AND IRON DRY-PAN.



# NO TOGGLE JOINTS.



EAGLE STEAM POWER DOUBLE DIE REPRESS.

In actual trials in the same factories, side by side with its competitors our EAGLE REPRESS has won in every test.

We have recently, in three factories, set up our EAGLE REPRESS alongside of rival Represses, leaving the customer to keep the one preferred, and in every instance the EAGLE was purchased and the other rejected.

## THE FREY-SHECKLER COMPANY,

MANUFACTURERS OF A  
Complete Line of Clay  
Working Machinery.

BUCYRUS, OHIO,  
U. S. A.

BUILDERS OF  
The Bucyrus Steam  
Tunnel Dryer.

Send for our 1894 Machinery and Dryer Catalogue.

Its Points of  
SUPERIORITY.

SIMPLICITY,  
STRENGTH,  
GOOD  
WORKMANSHIP,  
ACCURATE  
FEED,  
ACCURATE  
DELIVERY,  
DURABILITY,  
NO TOGGLE  
JOINTS.



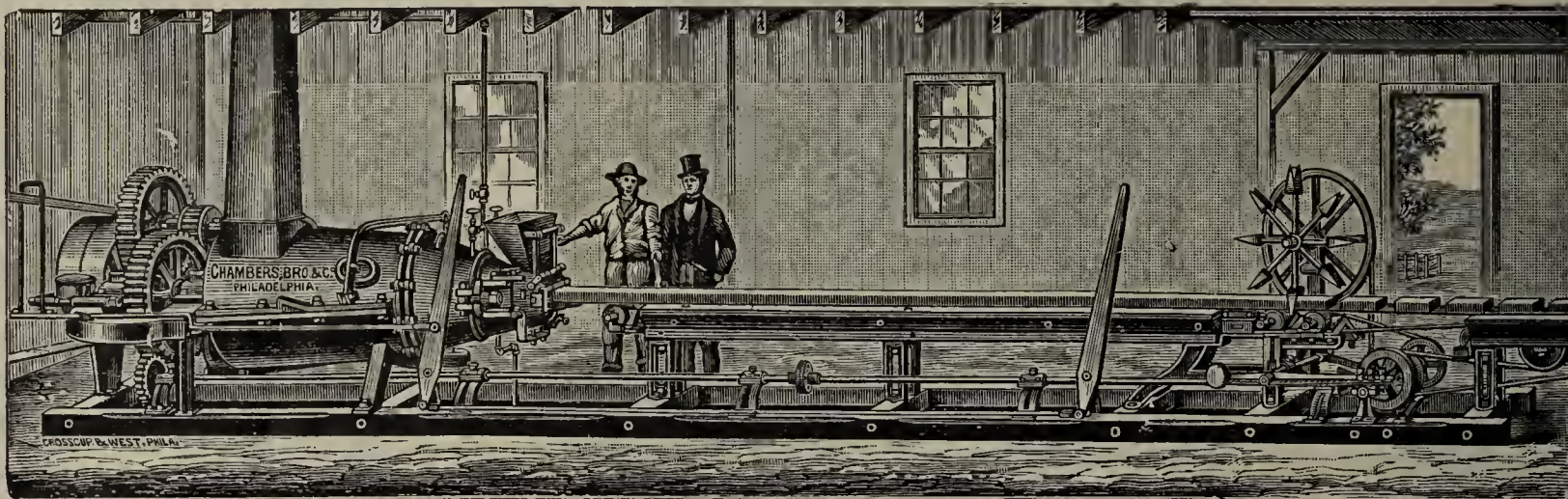
# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

❖❖ PHILADELPHIA, PENN. ❖❖



## IMPROVED BRICKMAKING MACHINERY.



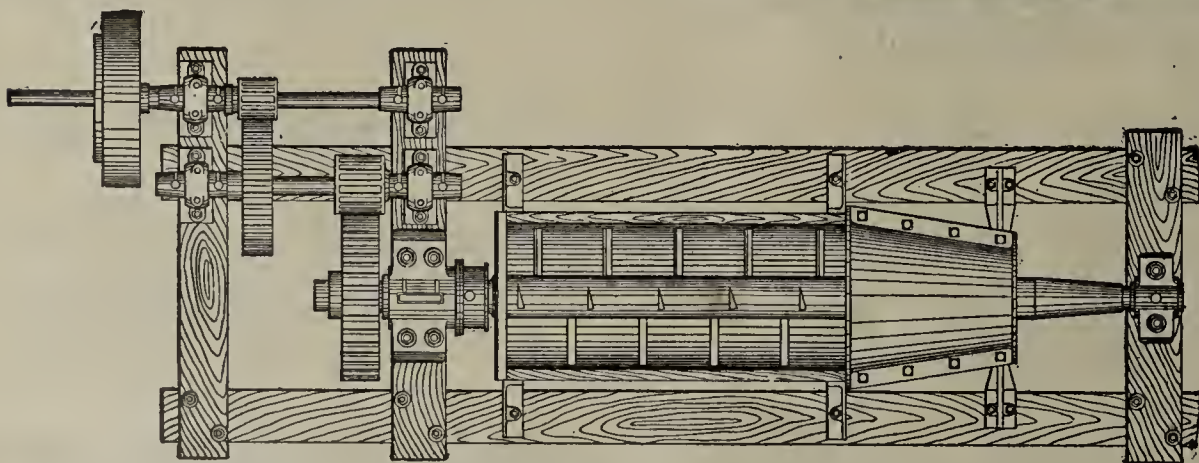
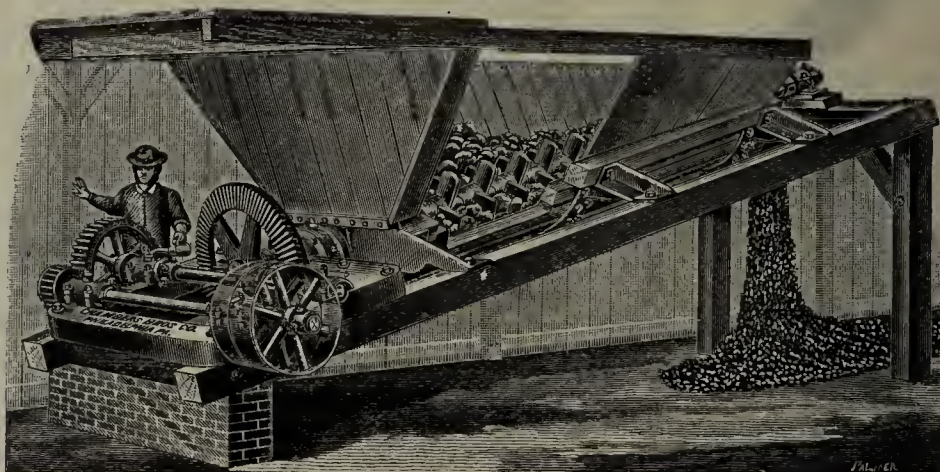
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ❖❖ CRUSHING ROLLERS,  
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



# CHAMBERS BROTHERS CO.,

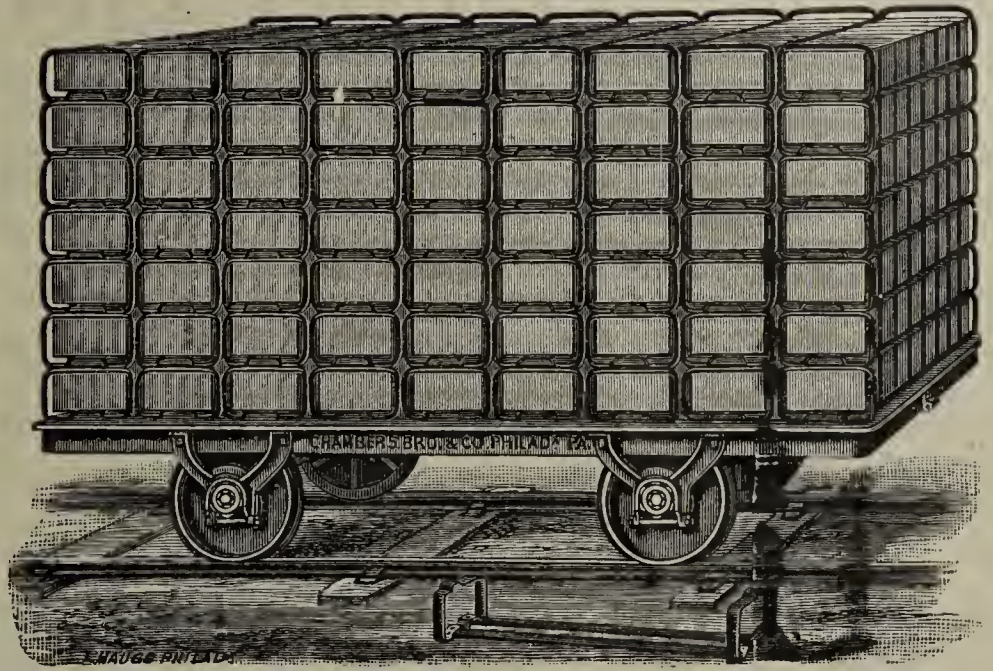
Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

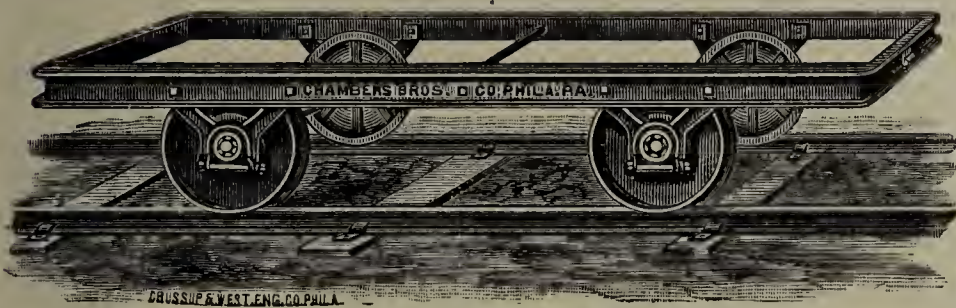
## IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

Cars and Complete Equipment  
For Artificial Dryers of  
all Kinds.

### STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

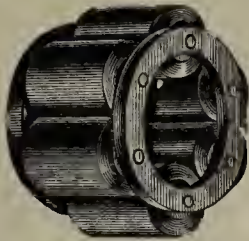


(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



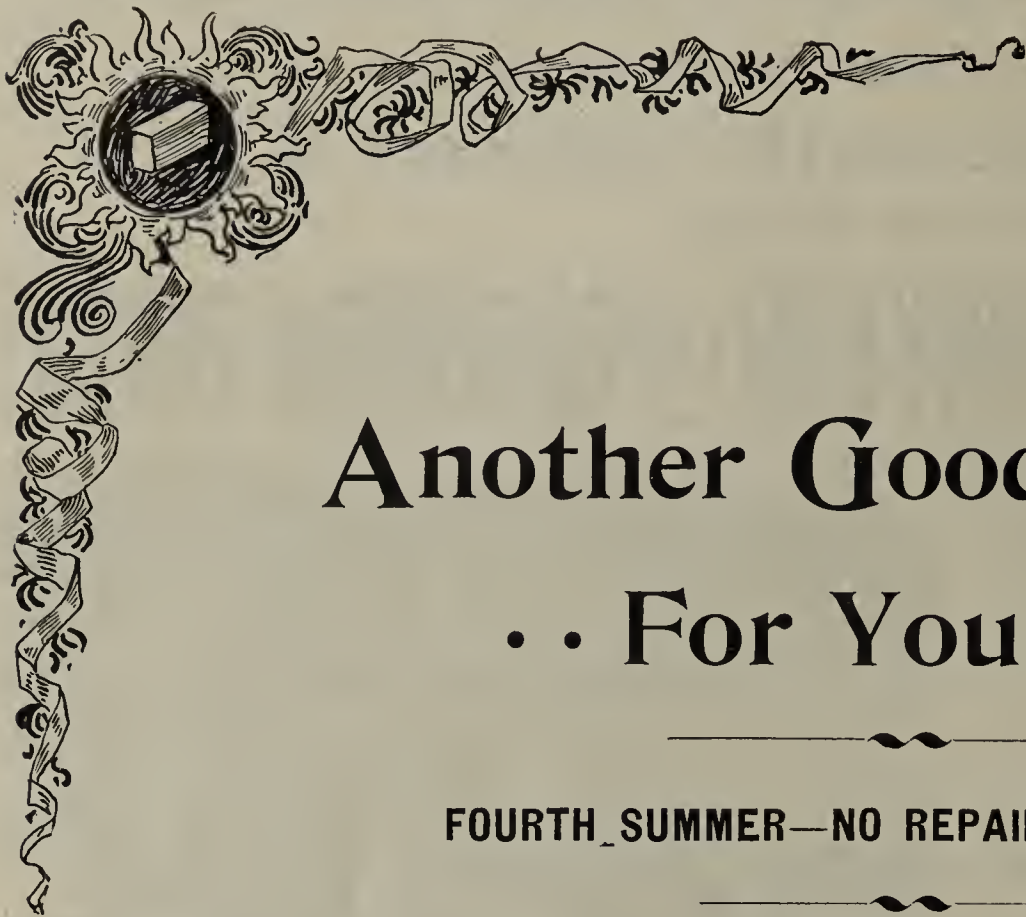
(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

See ad. on front cover page.

[Mention the Clay Worker





# Another Good Letter

## .. For Your Perusal.

---

**FOURTH SUMMER—NO REPAIRS THIS SUMMER.**

---

SALEM, VA., Oct. 25, 1893.

THE McLAGON FOUNDRY CO., New Haven, Conn.:

GENTLEMEN—Have finished making brick for the season. The "New Haven" Brick Machine continued its good work.

Has not cost a cent for repairs this Summer. With a few new mud knives the Machine will be ready for another season's work.

I still have the same opinion of the machine that I had when I bought it—that it is the best.

Yours truly,

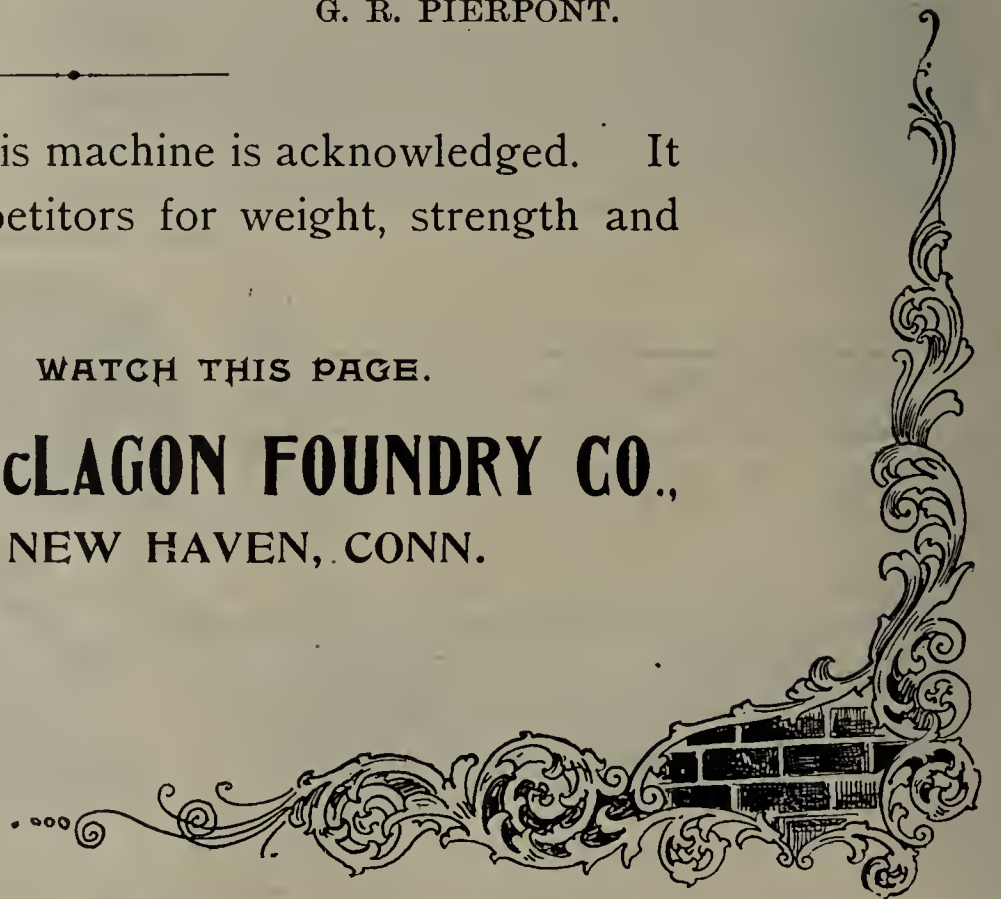
G. R. PIERPONT.

---

The superiority of this machine is acknowledged. It is in advance of all competitors for weight, strength and durability.

WATCH THIS PAGE.

**The McLAGON FOUNDRY CO.,**  
NEW HAVEN, CONN.





# HERE'S ..THE.. TO A WONDER-FUL

•❖ SUCCESS TO ALL WHO WILL ❖•

Follow the example of the Lexington Brick Co., and buy machinery that will work ten hours a day six days in the week.

TELEPHONE 413.

—OFFICE OF—

## Lexington Brick Company, 8½ East Main Street.

LEXINGTON, KY., March 2nd, 1894.

WALLACE MANUFACTURING Co., Frankfort, Ind.,

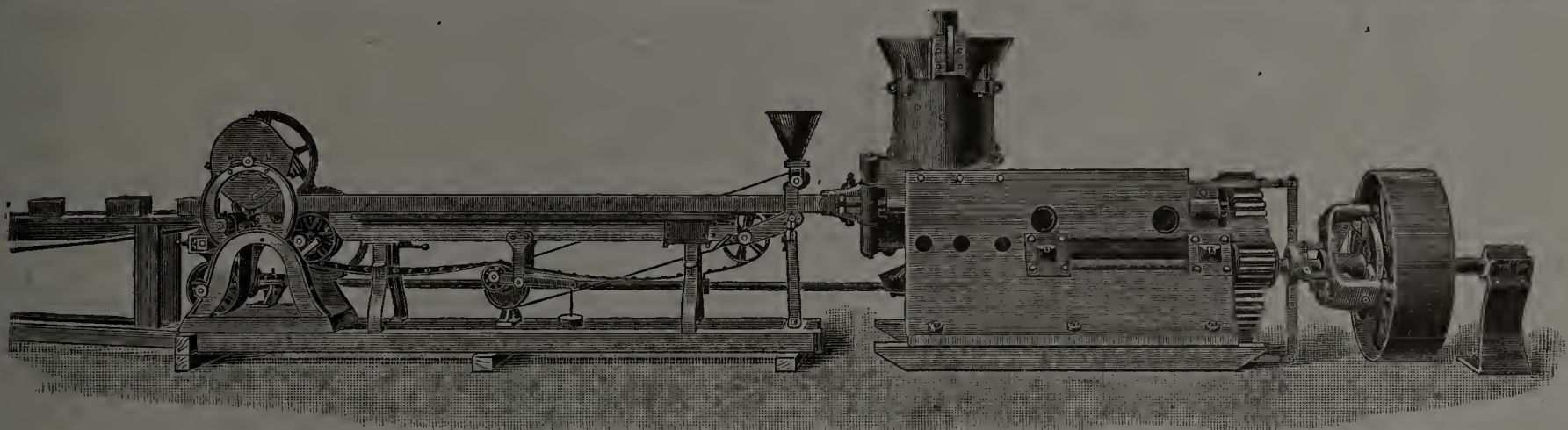
GENTLEMEN:—In reply to your favor of recent date, as to what the "Big Wonder" is doing for us, would say, that the "Big Wonder" is all right, notwithstanding your fears that it would not work our clay, and we thought so for a while.

There is no clay like it that brick are made from; but after your man got the die in shape it MADE BRICK, and still makes them for 10 hours a day without stopping to rest.

With the use of your splendid Pug Mill and the powerful "Big Wonder" we turn out a very good brick. We now make side cut brick, with side cut board delivery table. We do not drive the machine to its full capacity, as we are limited for power, our engine is only 10x20; but we are perfectly satisfied with the machine and it does the work where others have failed.

Yours very truly,

F. A. CRAMER, Supt.



Big Wonder, Cunningham's Automatic Cutting Table and Sander. Capacity 60 to 75 M. per day of 10 hours.

We also manufacture the Little Wonder brick and tile machine and a full line of Pug Mills, Clay Crushers and Stone Separators, Hoisting Drums, Friction Clutch Pulleys and Wheelbarrows. Illustrated and descriptive catalogue free.

## The Wallace Mfg Co.,

When You Send for Further Particulars  
Mention the CLAY-WORKER

FRANKFORT, IND.



# A Decree in Chancery Court

In favor of the WOLFF DRYER COMPANY, has been ordered by the Honorable

**JUDGE AUGUSTUS J. RICK,**

On 22nd Day of January 1894, at the City of Cleveland, Ohio.

IN CHANCERY, No. 5013

FINAL DECREE.

It is ordered, adjudged and decreed that the letters patent in said complainant's bill of complaint, mentioned, to-wit: No. 210,999 issued December 17th, 1878; No. 274,282, issued March 20th, 1883 and No. 336,511 issued February 10th, 1886, are in all respects good and valid letters patent of the United States; that the said complainant is the owner of and entitled to the exclusive right in, to and under said recited letters patent and in and to said inventions and improvements severally secured thereby as set forth in complainants bill of complaint.

It is further ordered, adjudged and decreed that a writ of injunction, according to the prayer of the bill of complaint, be issued from and under the seal of this Court perpetually restraining and enjoining the said defendants, their and each of their agents, employees, servants, attorneys and workmen, and all other persons acting by and under their authority, from any further infringement of the said letters patent or either of them, and of the exclusive right of the complainant thereunder.

[Signed] AUGUSTUS J. RICKS, U. S. Judge, etc.

THE LATEST IMPROVED

## IRON = CLAD DRYER

Contains the principles required to absorb the moisture from the clay just as nature does it. It has taken years of experiment, careful study and incessant hard work and great expenditure of money, to get there. The result shows progress unexcelled by any other brickmaking appliances. The ventilation, circulation and inlets of cold air, as well as the distribution of hot air, are better regulated by our system, than in any other dryer.

The wonderful attainments grouped together in this dryer are all covered by good sound patents, protecting patrons and ourselves in a thorough manner, enabling us to carry out a vital principle in drying, without being interfered with, and we are now prepared to furnish all materials needed for Dry Houses of any specified capacity for a small advance on original cost, without charging our patrons for any royalty whatever, and are protecting customers and ourselves, by bringing suit against all infringers, as rapidly as they can be reached.

Before placing your order, write us for Illustrated Catalogue and any other information required.

**WOLFF DRYER CO.,**

358 Dearborn Street, Room 304,

CHICAGO, ILL.





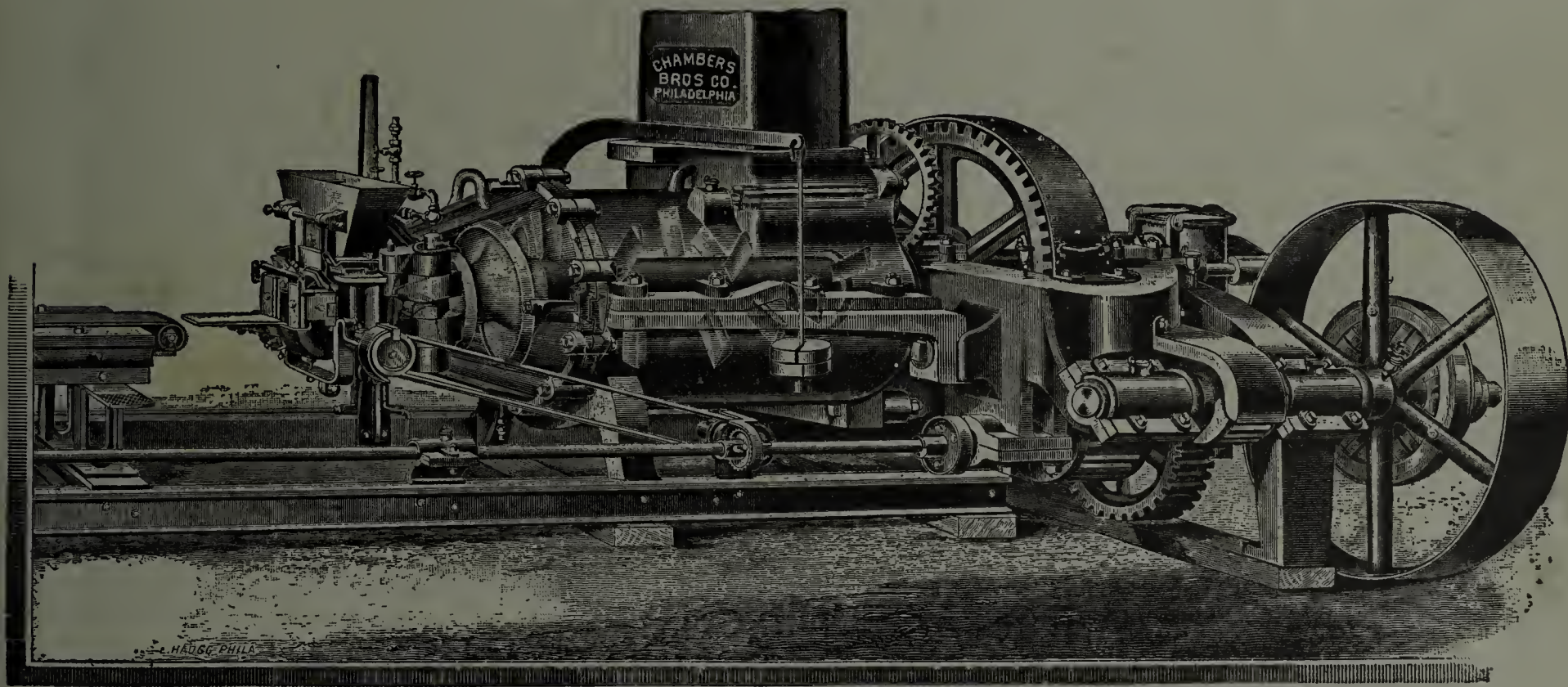
THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXI, No. 5.

INDIANAPOLIS, IND., MAY, 1894.

\$2.00 a Year in Advance.

# Brick Making Machinery,



## Chambers Brothers Company,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,

J. E. EASTES, Chicago Agent,

203 South Canal Street.

PHILADELPHIA, PA.

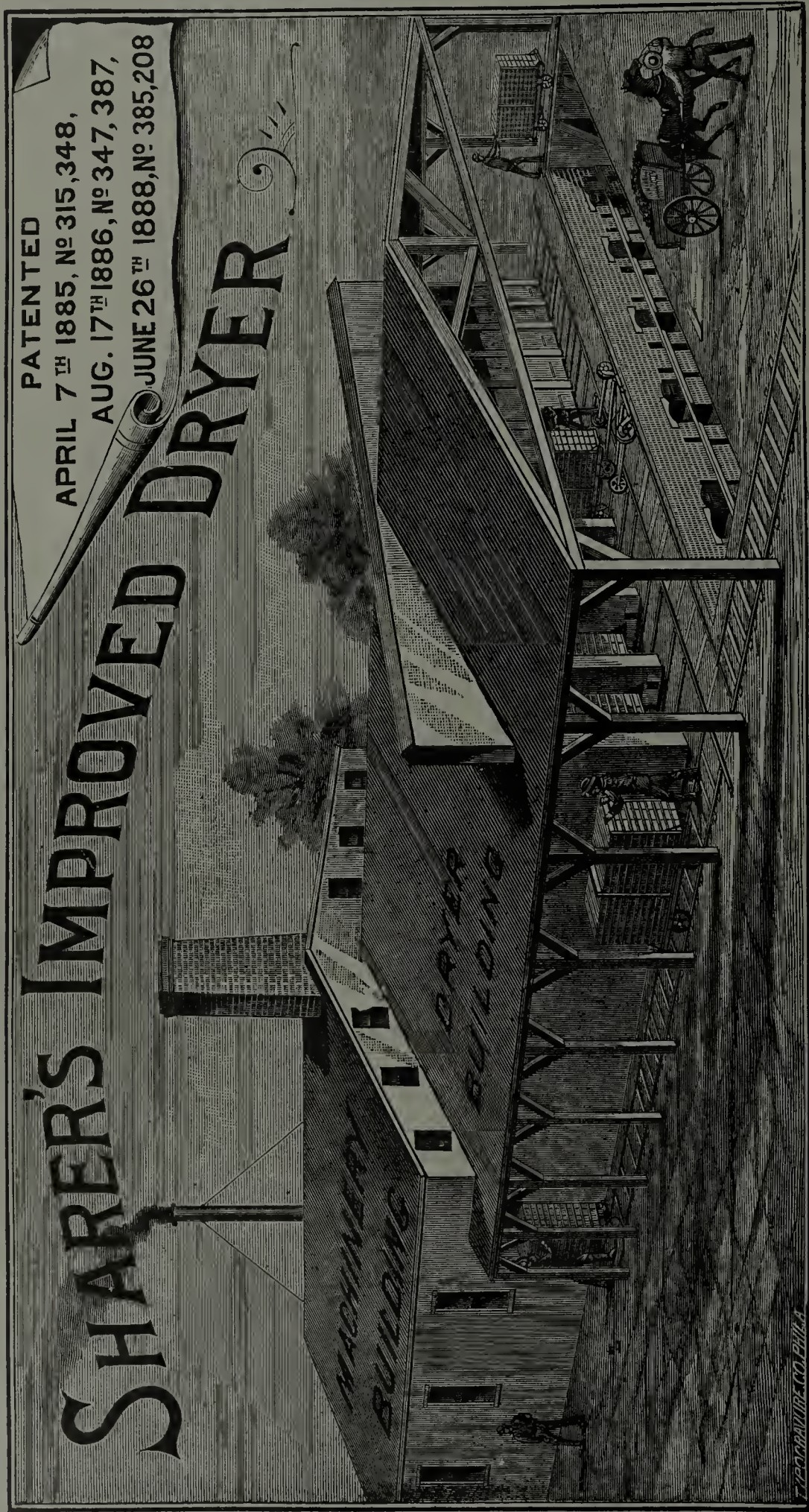
See ads. on pages 616 and 617.



# THE SHARER DRYER AND CONSTRUCTION CO.,

BRICK MANUFACTURING EXPERTS.  
CONSTRUCTING ENGINEERS.     ♦     CONTRACTORS AND BUILDERS.  
COMPLETE PLANTS A SPECIALTY.

Owners of SHARER'S IMPROVED DRYER;  
SHARER'S IMPROVED CALORIFIC KILN.



Builders of All Kinds of Dryers and Kilns for Drying and Burning any and all Kinds of Clay Products.

Manufacturers of Cars, Transfer Cars, Turn Tables, Furnace Castings and Complete Dryer and Kiln Equipments.  
.....Dealers in All Kinds of Clayworking Machinery, Engines, Boilers, Shafting, Pulleys, Etc.  
New plants built and equipped complete in every particular. Old plants remodeled and modernized. Clays tested and analyzed. Plans and estimates furnished. Information costs you nothing. Send for Catalogue "C."

SHARER DRYER & CONSTRUCTION CO.,  
TORONTO OFFICE: 71 Adelaide, East, Toronto, Ont., Canada,  
HUGH CAMERON, Manager.  
Rooms 506 and 507, The Mutual Life Building,  
N. W. Cor. 10th and Chestnut Streets,  
PHILADELPHIA, PA.



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS  
—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

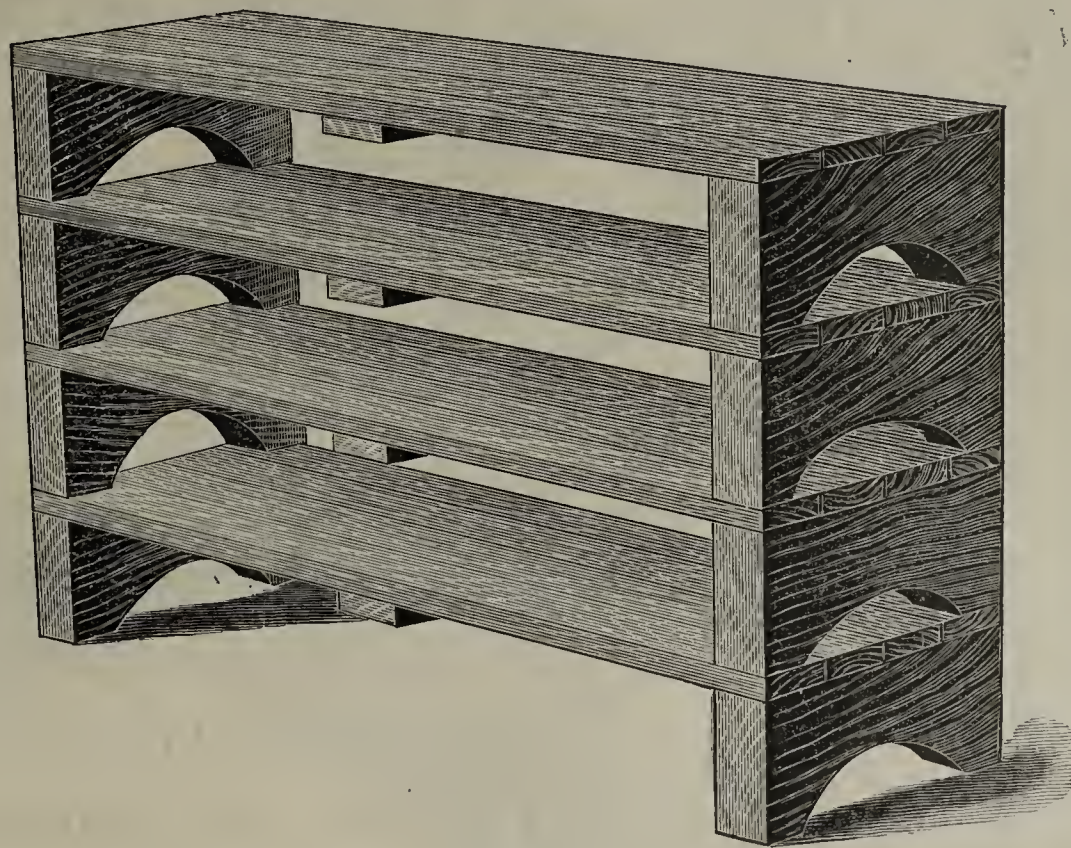
THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

## WOODEN BRICK PALLETS

WOODEN  
BRICK  
PALLETS



STYLE C.

WOODEN  
BRICK  
PALLETS

We manufacture all styles and sizes. Write to us direct for descriptive circulars and prices.

WM. B. MERSHON & CO., = Saginaw, East Side, Mich.



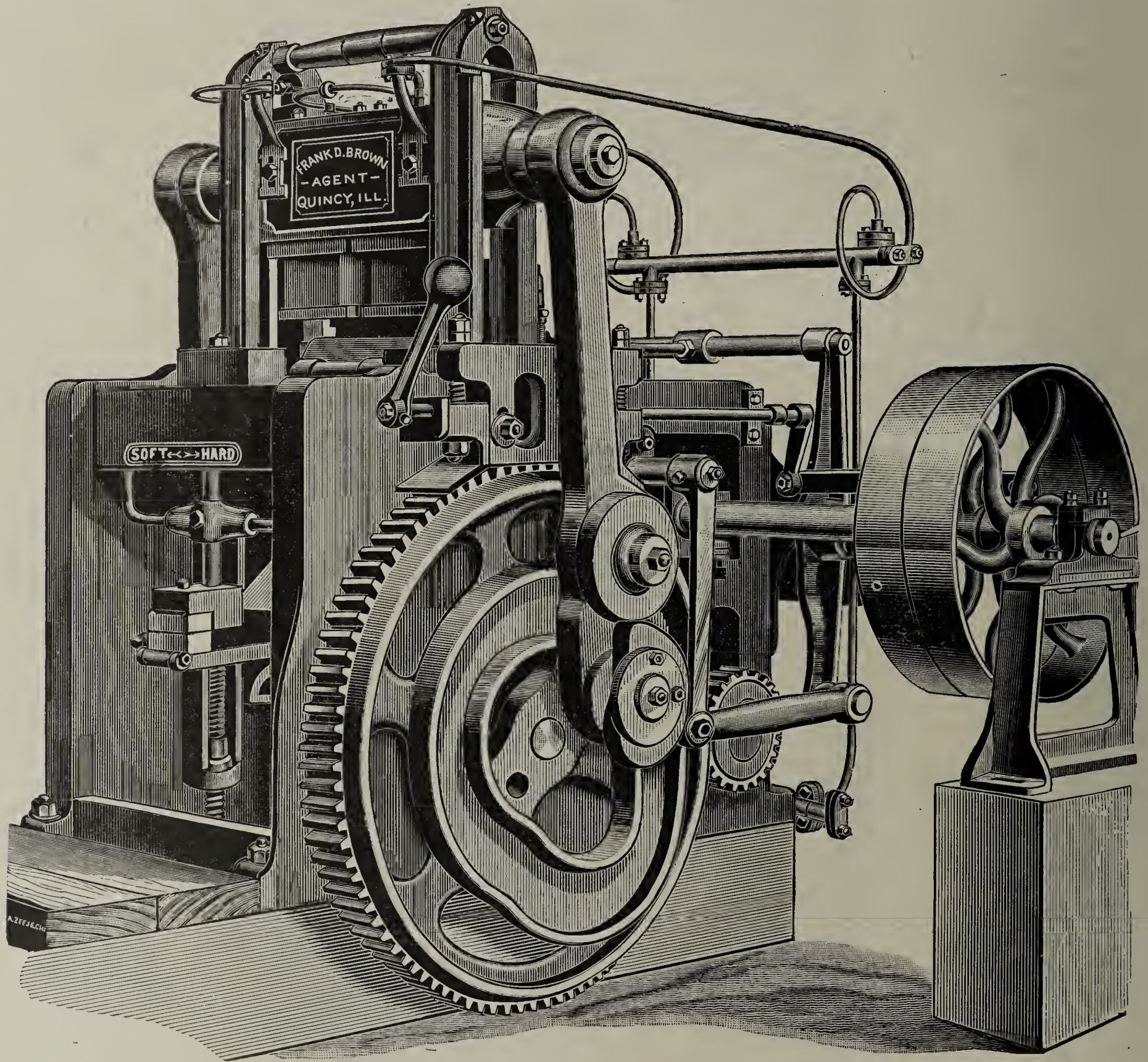
# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

•✦ HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. ✦•

Best, Cheapest and Most Durable Press in the World.

\* ————— One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

**FRANK D. BROWN,** Room 18 Major Block,  
Cor. La Salle & Madison Sts. **Chicago.**



# The Ross-Keller Brick Machine.

## (Triple Pressure)

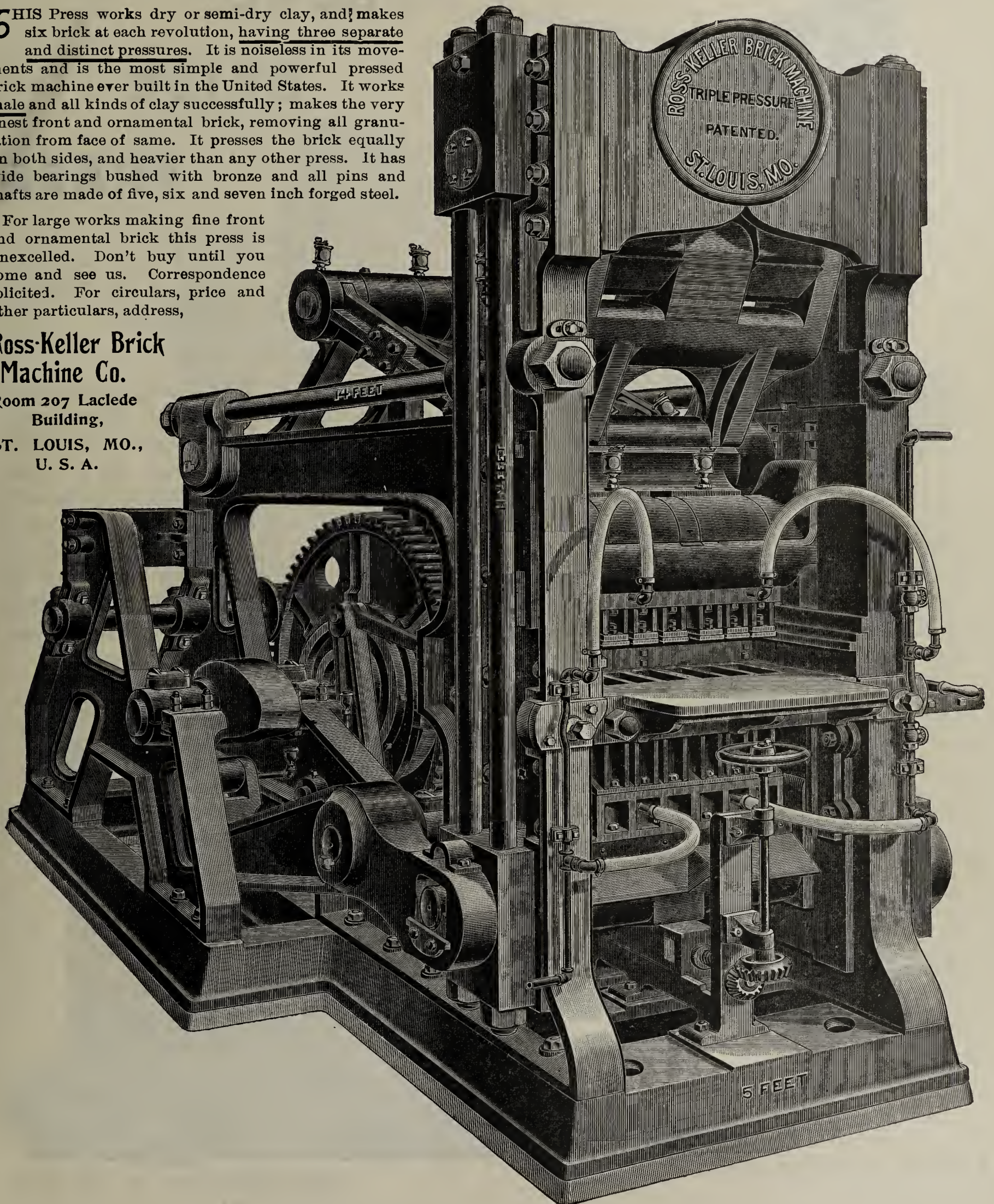
Weight 75,000 Pounds, Capacity 35,000 to 40,000 Brick Per Day.

**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five, six and seven inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address,

**Ross-Keller Brick  
Machine Co.**

Room 207 Laclede  
Building,  
ST. LOUIS, MO.,  
U. S. A.





# Fifty Thousand Dollars

For the **BOYD**

**BRICK**

**PRESS**

## A TRUE TALE.

The largest brick plant in the world is  
*The Jarden Brick Co.,*

—OF—

*Philadelphia.*

Not long ago they decided to put in a Dry Clay Plant. They traveled all over the country and inspected the various dry press machines at work. Then they put in a six-mold Boyd Press. They worked it for over seven months, and were so pleased with it

that they bought *five more* six-mold and *one* two-mold, Boyd Presses. They paid for all these presses. They knew what the Boyd Brick Press could do. They knew that no other press could compete with it. So in order to get the sole right to use the Boyd Brick Press in Philadelphia and for 50 miles around, besides the price of the seven presses, they paid us *Fifty Thousand Dollars* (\$50,000).

Their brick is acknowledged by builders to be "without competition" in their part of the country.

Need we say more?

Catalogue on application. Circular giving *fac simile* of medal awarded at the World's Fair to the Boyd Brick Press, free.

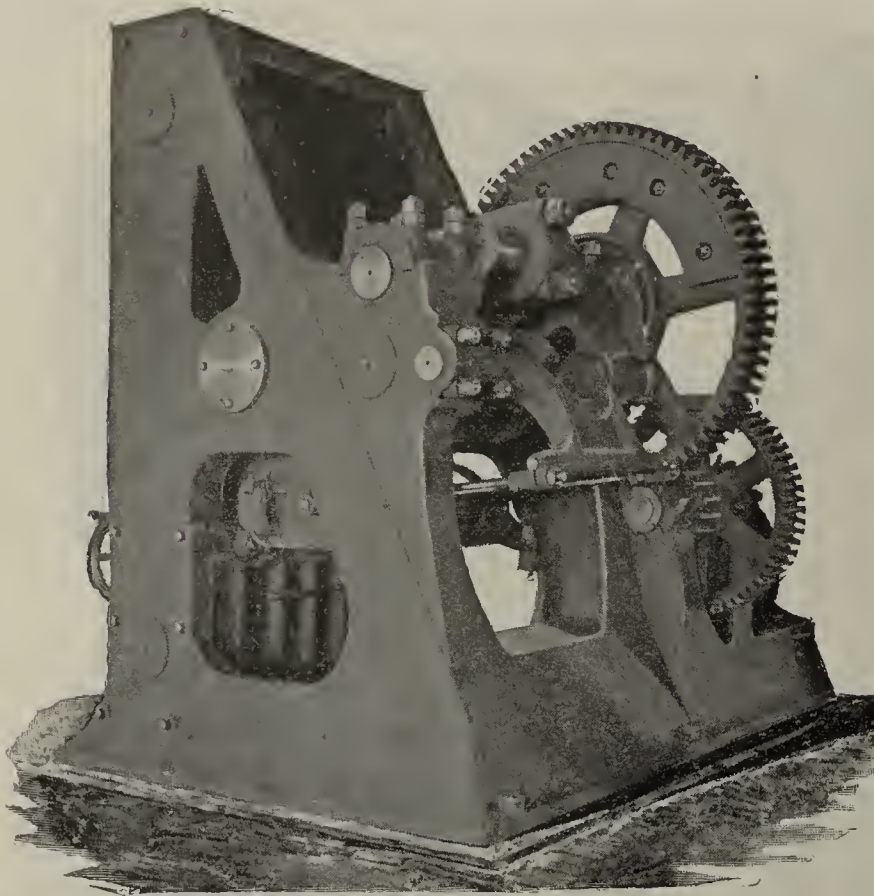
**Chisholm,**

**Boyd**

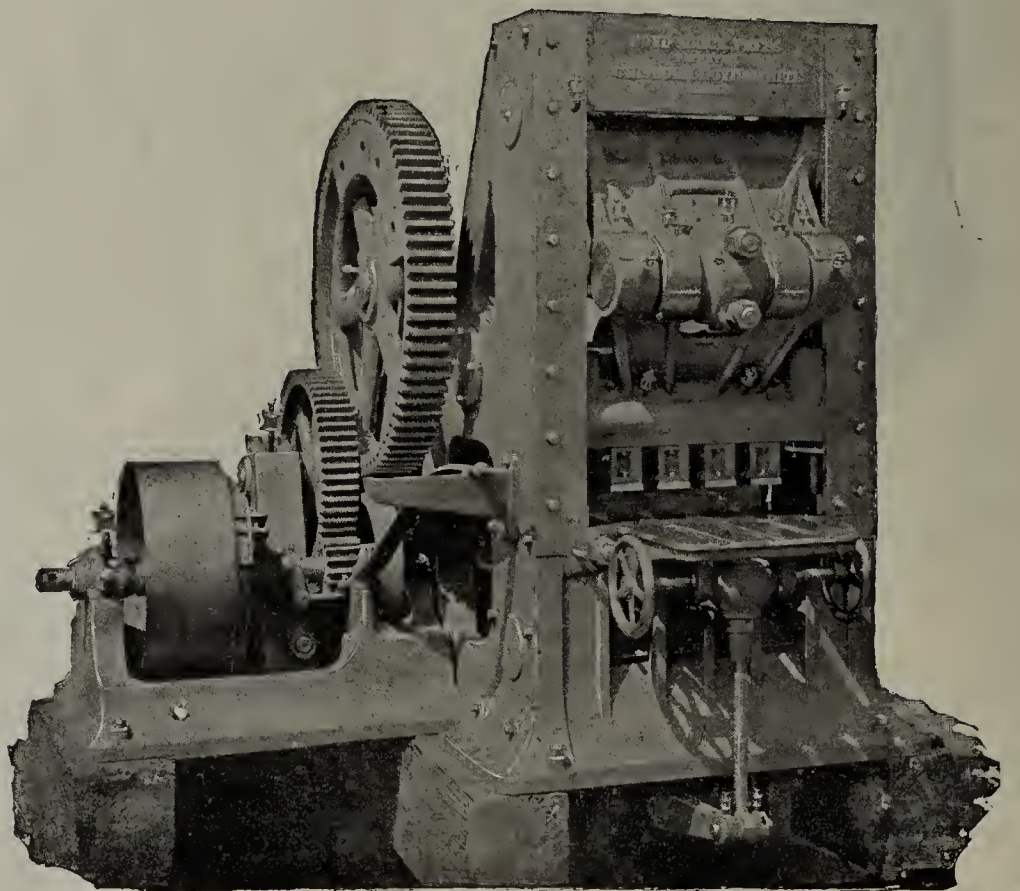
**and**

**White,**

324 Dearborn Street,  
CHICAGO.



FOUR-MOLD MACHINE.  
(REAR VIEW.)

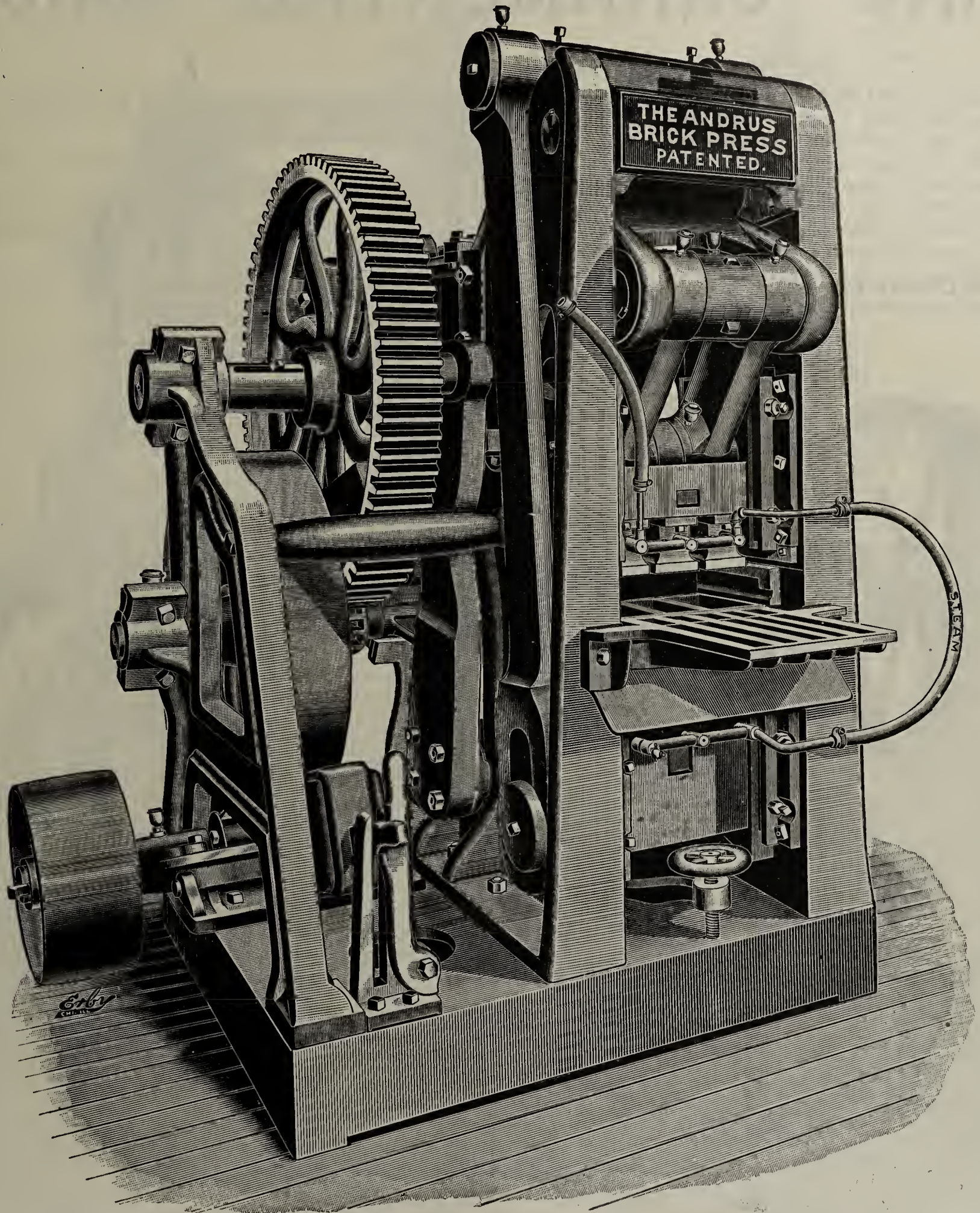


FOUR-MOLD MACHINE.  
(FRONT VIEW.)



# The NEW ANDRUS DOUBLE PRESS 3-MOLD BRICK PRESS

Within the Reach of Any Responsible Brick Manufacturer.



Write for new Catalogue of our 3 and 4 mold Presses and new terms to suit the times. Address

**H. O. WHITNEY, General Agent,**  
General Office and Factory, KEOKUK, IOWA.  
**KEOKUK, IOWA.**

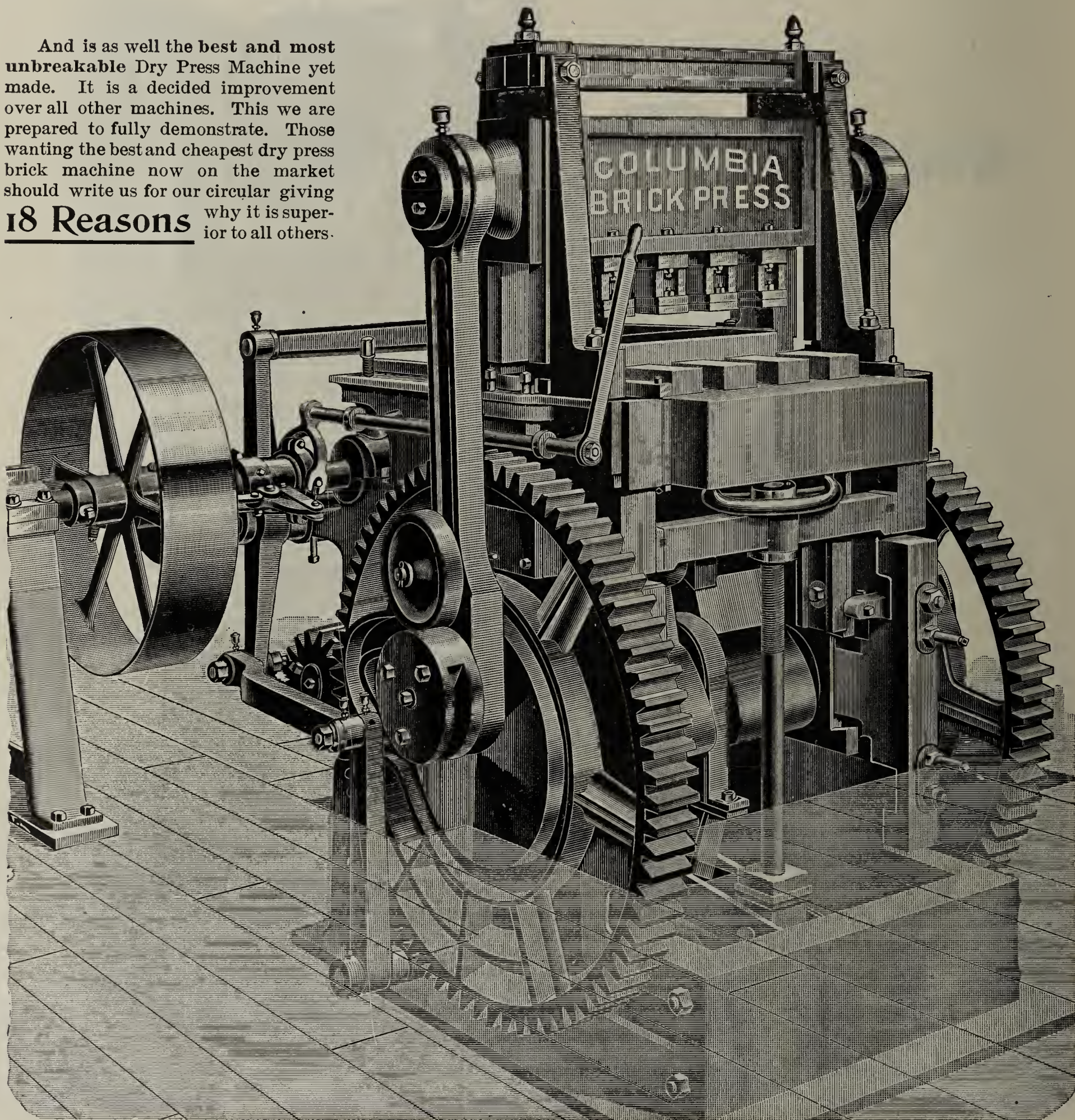


# ❖ THIS ❖ PRESS ❖

IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF

## FINE ORNAMENTAL BRICK

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

### COLUMBIA MANUFACTURING CO.,

Send your clay and we will test it and send you the results....

2119 N. Ninth St., ST. LOUIS, MO.



# THE SIMPSON BRICK PRESS.

It does not make SOME good brick ALL of the time, or ALL good brick SOME of the time, but it makes ALL good brick ALL of the time.

Received highest honors at the

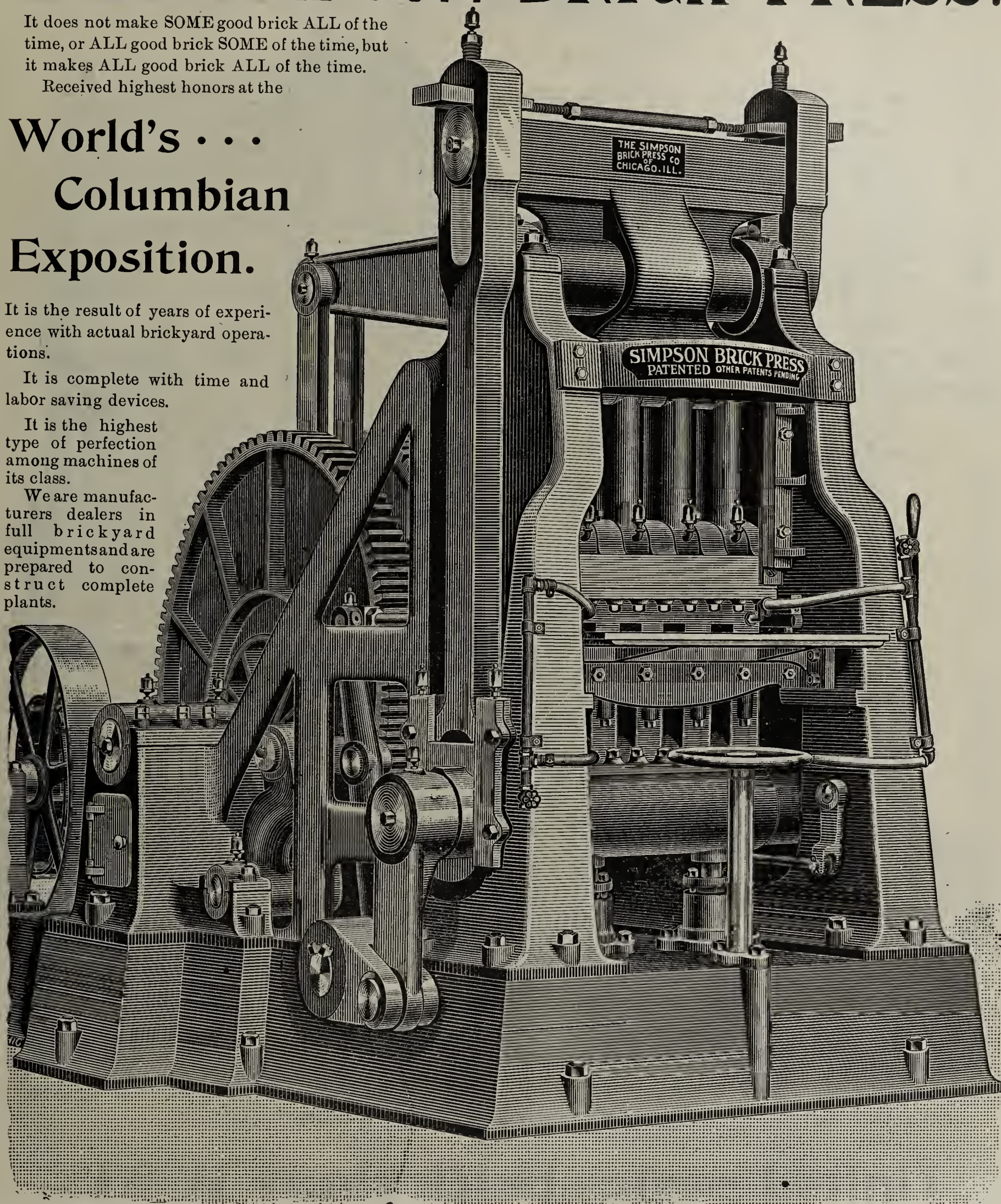
## World's . . . Columbian Exposition.

It is the result of years of experience with actual brickyard operations.

It is complete with time and labor saving devices.

It is the highest type of perfection among machines of its class.

We are manufacturers dealers in full brickyard equipments and are prepared to construct complete plants.



## THE SIMPSON BRICK PRESS CO.,

Agents for Canada:

WATEROUS ENGINE WORKS CO., Brantford, Ont.

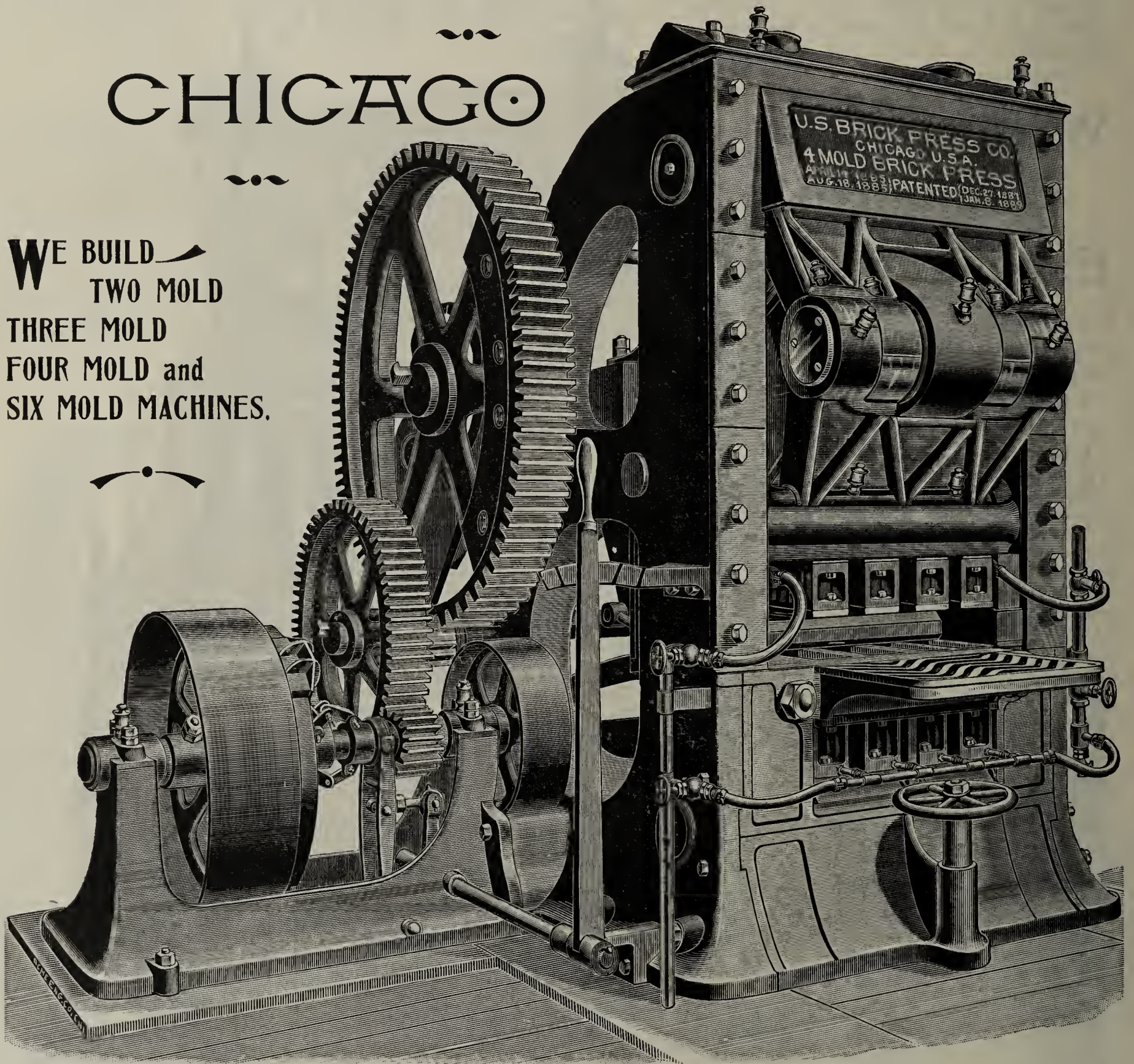
415 Chamber of Commerce Bldg, CHICAGO, ILL.



# U. S. BRICK PRESS

## CHICAGO

**WE BUILD**  
 TWO MOLD  
 THREE MOLD  
 FOUR MOLD and  
 SIX MOLD MACHINES.



The U. S. Brick Press embodies all the requirements demanded by Pressed Brick Manufacturers.

EFFICIENCY, DURABILITY, EASY OPERATION.

LEAST COST FOR REPAIRS, NOISELESS IN USE.

PERFECTION IN MECHANICAL CONSTRUCTION.

The record of the U. S. Brick Press is proof conclusive of its perfection as a Pressed Brickmaker.  
 For estimates and prices please address

## United States Brick Press Works,

OSWALD KUTSCHE, Proprietor,

OFFICE: Unity Bldg., Room 1111-1113, 79 Dearborn St.,

CHICAGO, ILL.



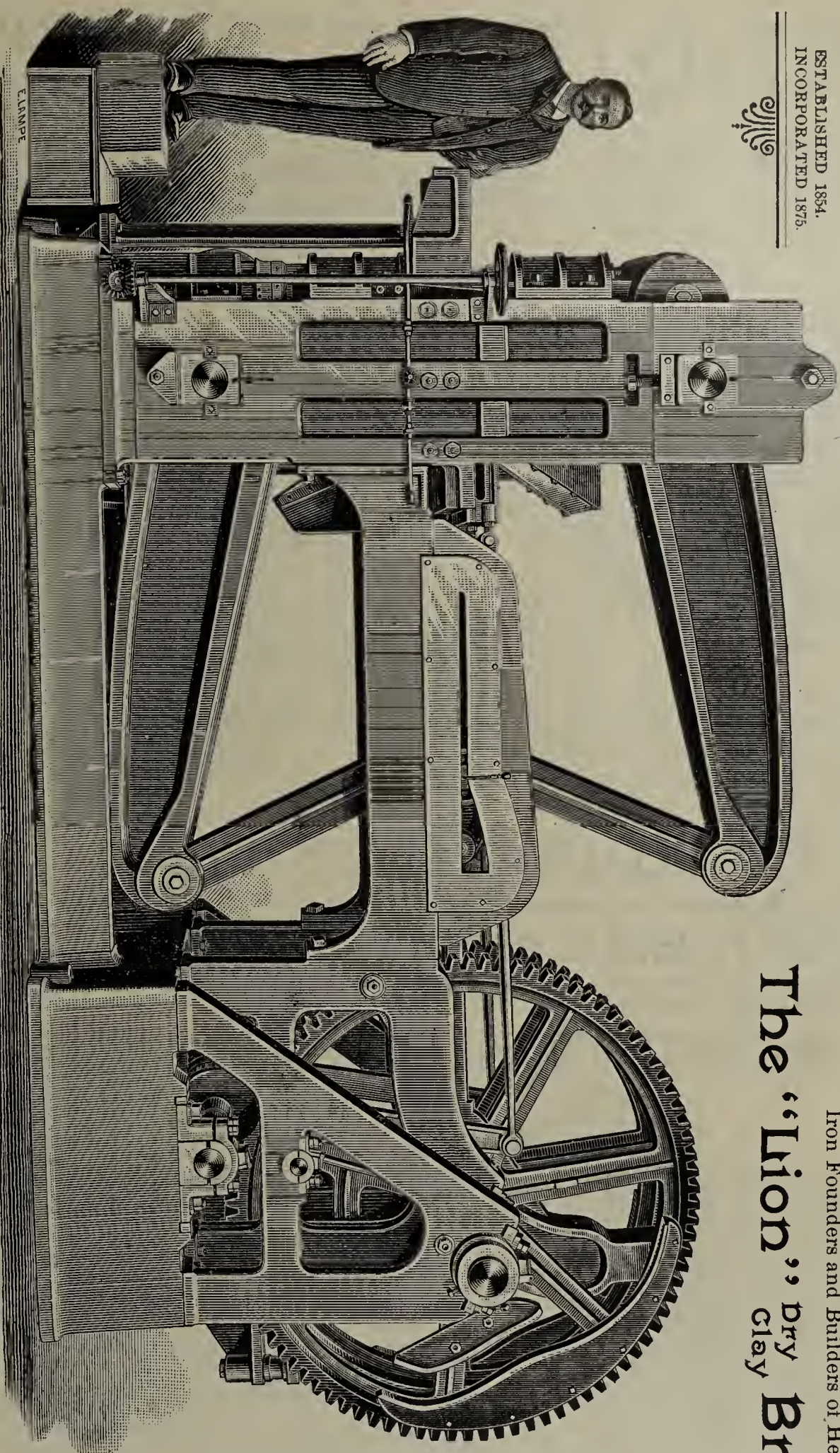
# ST. LOUIS IRON AND MACHINE WORKS.

ESTABLISHED 1834.  
INCORPORATED 1876.



Iron Founders and Builders of Heavy Machinery.

## The "Lion" Dry Clay Brick Press.



Weight, 44,000 pounds.

Capacity, 25,000 to  
30,000 pressed  
bricks per 10 hours

Pressure, 200 Tons on Five  
Bricks.



### WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain.
2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press, to a minimum.
3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do.
4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time.

Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given.

If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 good brick, with little or no cost for repairs. We make this press now in two sizes—25,000 to 30,000 capacity and 10,000 to 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepays the freight charges. For circulars, price and other particulars. Address

**ST. LOUIS IRON & MACHINE WORKS, Main Street and Chouteau Ave., St. Louis, Mo.**

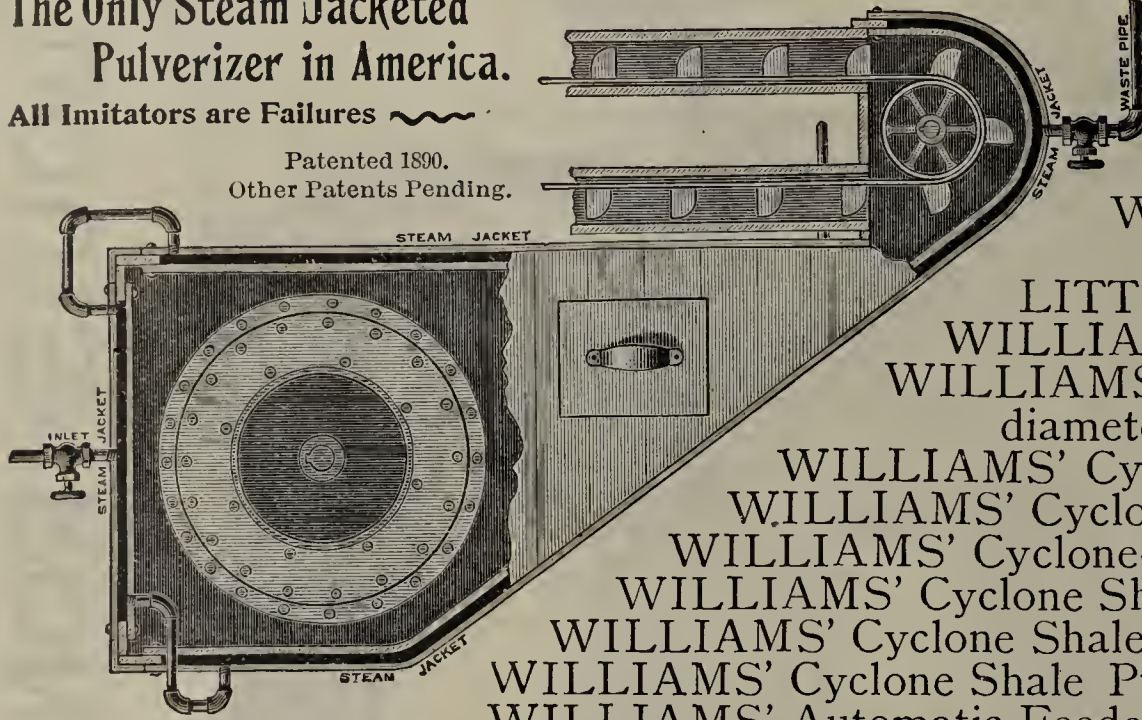


# WILLIAMS' CLAYWORKING MACHINERY.

The Only Steam Jacketed  
Pulverizer in America.

All Imitators are Failures

Patented 1890.  
Other Patents Pending.



WILLIAMS' Clay Elevators.  
WILLIAMS' Triple Roll Clay  
Crushers.

WILLIAMS' Brick Trucks,  
Three sizes.

WILLIAMS' Revolving Clay  
Screen.

LITTLE'S Steam Jacket for Pulverizers  
WILLIAMS' Clutch Pulleys and Couplings.

WILLIAMS' Cyclone Clay Pulverizer 30 in.  
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.

WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.

WILLIAMS' & LITTLE'S Patent Steam Clay Screen.

WILLIAMS' Pony Pulverizer for Testing Clay and Shale.

WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Clay Cultivators.

WILLIAMS' Clay Bunchers.

WILLIAMS' Brick Barrows.

WILLIAMS' Complete Outfits for Dry Press Brickmakers.

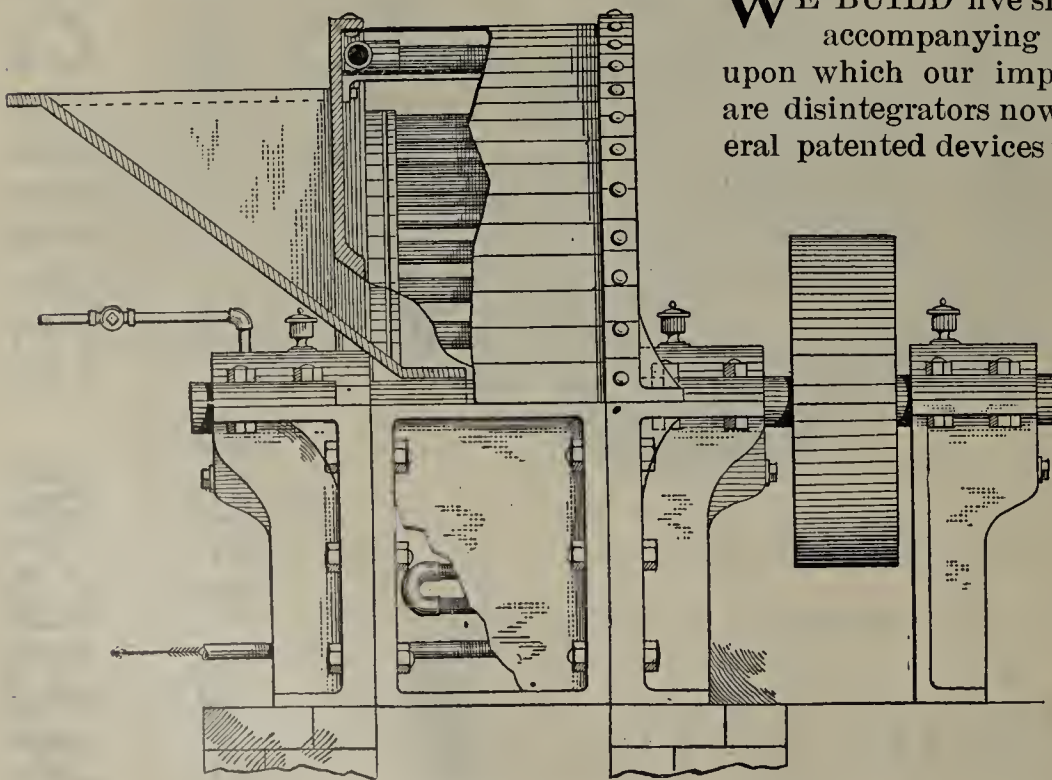
WRITE TO **M. F. WILLIAMS & CO.,** 2705 and 2707 N. Broadway. **ST. LOUIS, MO.**

## IMPROVED Clay Disintegrators

(OUR OWN PATENT.)

LARGE CAPACITY WITH LITTLE POWER

FOR PULVERIZING COMMON CLAY, FIRE CLAY, SLATE,  
PAINT, BONES, FLINT AND ORE OF ANY DESCRIPTION.



WE BUILD five sizes ranging from 30 to 60 inches in diameter. The accompanying cut will give the reader an idea of the principle upon which our improved pulverizers are constructed. While there are disintegrators now on the market somewhat similar, ours have several patented devices that makes them much more efficient and durable.

The steam jacket shown in the cut is an especially valuable feature and prevents any tendency to clogging when damp material is used, a great advantage, as all who have had any experience in handling moist clay will readily concede.

Another improvement (our own invention) consists of self-oiling, dust-proof journal boxes, which insure smooth, easy running, and reduces the strain and wear to the lowest possible degree.

Our Disintegrators are built for service. We have a large number of them in use on different materials and all are giving entire satisfaction.

We will be pleased to furnish full description of machines and testimonial letters from users.

IF YOU WANT THE BEST, WRITE US FOR PRICES, ETC.

**Schoellhorn-Albrecht Machine Co.,**

MANUFACTURERS,  
609-610 North Levee,  
ST. LOUIS, MO.



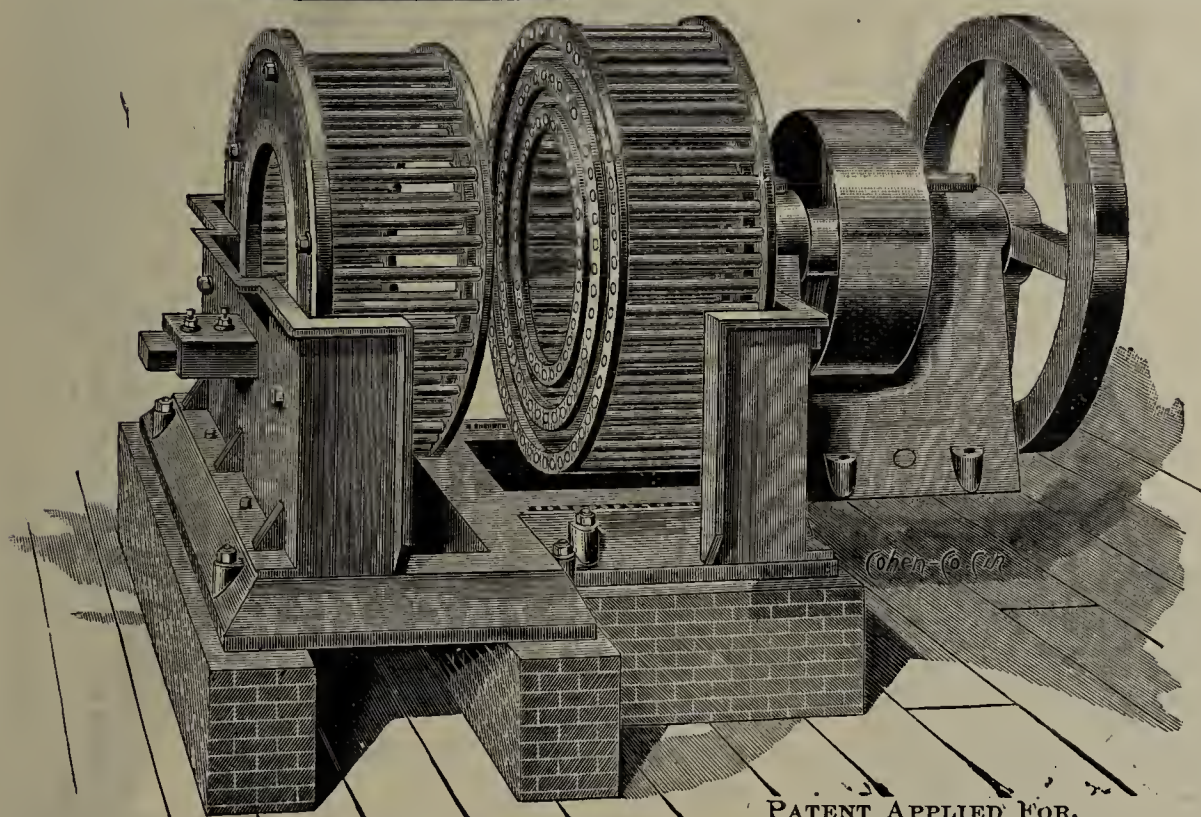
## Description.



This Disintegrator is especially designed for pulverizing clay for making **"FINE PRESSED BRICK."**

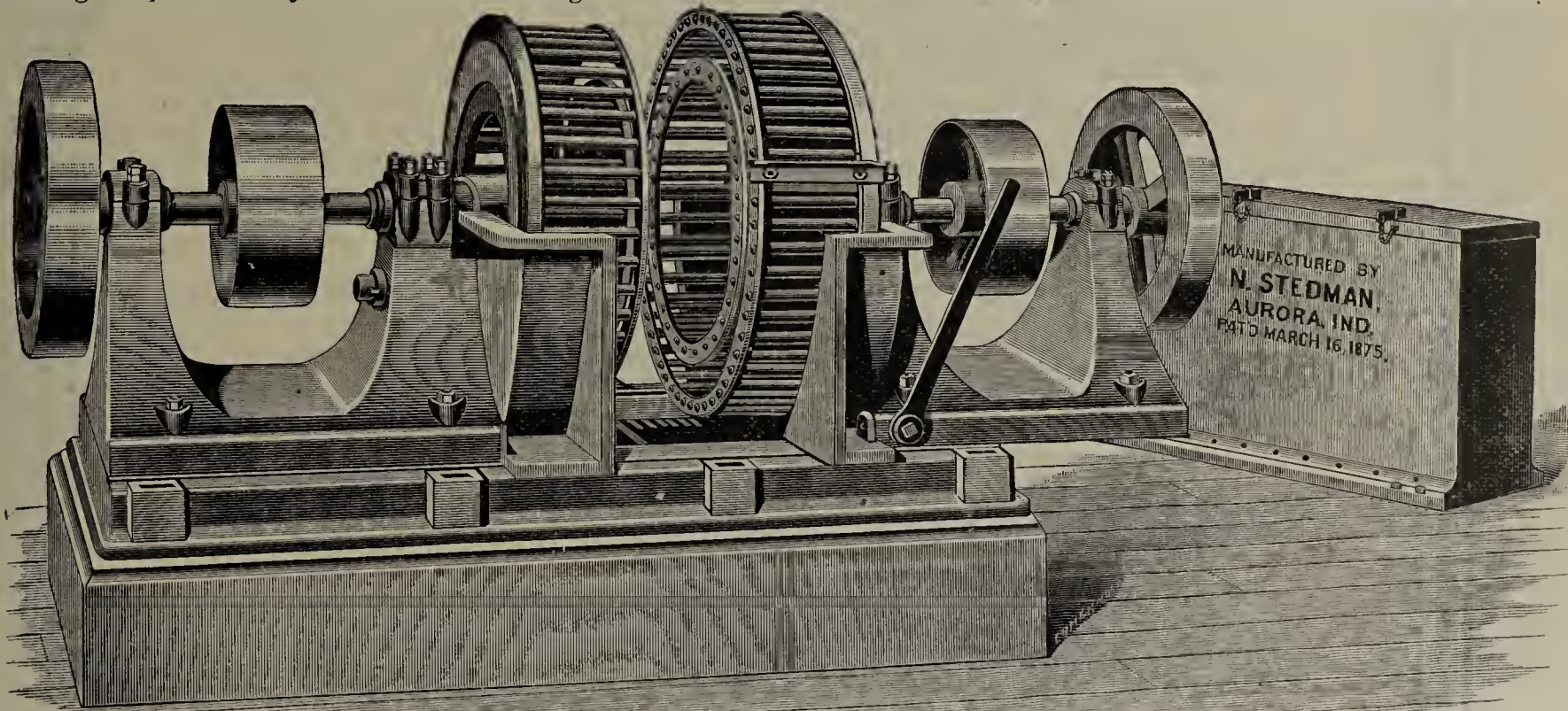
The stationary cage contains two rings of pins and the revolving cage three. The clay is fed to the machine through the hopper on the stationary side. The revolving cage is mounted in a housing; this housing slides on the iron base, so that the machine can be easily separated and cleaned. A balance wheel overhangs the outside journal and balances the overhanging weight of the revolving cage. The advantage in this construction is that the momentum in this balance wheel keeps the speed of the revolving cage regular, therefore preventing irregular feeding of the material causing the speed to slack. In other disintegrators this construction is not used and irregular feeding checks the speed of revolving parts, allowing a large portion of clay to pass through without being thoroughly pulverized, thus increasing the percentage of tailings and lessening the capacity. This balance wheel being near the same weight as the revolving cage makes the wear on the two journal bearings even, and the machine will never wear out of line. By this construction we can do away with revolving shaft continuing through the frame work and resting on a journal bearing on the hopper side, thus preventing the interferences of this shaft in the feed opening.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our **DOUBLE CAGE DISINTEGRATOR** which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



**NOTICE.**—The cage pins, or bars, which are the wearing parts of our machine, are removable and interchangeable on our **SINGLE REVOLVING CAGE DISINTEGRATOR**. The rings and pins are secured to the circular cast disks by means of nuts screwed on to the ends of a portion of the pins which extend through the disk. By unscrewing these nuts one ring of pins can be removed and another replaced in a very few moments. For working damp or plastic clay scrapers are fastened to the outside face of the revolving cage. This scraper cleans the casing and prevents any material from sticking to it.

Our practical experience of several years with different designs of Clay Disintegrators has been valuable to us in designing this machine, which we think the best principle for pulverizing loamy, plastic or tough clays for making fine brick. However, if you wish to pulverize shale clays or hard substances, we recommend the use of our **DOUBLE CAGE DISINTEGRATOR** which is well known to the clayworking trade, and is shown in the cut below, much improved in construction over the Disintegrator which we offered to the trade in the past.



For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

**STEDMAN'S FOUNDRY AND MACHINE WORKS, Aurora, Indiana.**

Mention the CLAY-WORKER



# — AN EXPLANATION OF — COLD FACTS!

## Draw Your Own Conclusions.

**I**N the discussion of kilns in the N. B. M. A. Convention at Chicago, for special purposes, it was noticeable when an up-draft kiln was referred to, some one would remark that an up-draft kiln would not answer the purpose for the reason that the cold air coming in contact with the bricks in the arches would damage the ware." We wish to call attention of brickmakers to this point,

The bricks in the arches or bottom of our up-draft kilns are as thoroughly protected from cold air, as are the top brick in a down-draft kiln.

So much for this; now we maintain that we can obtain a more uniform degree of heat from top to bottom with an upward draft which is natural, than can be obtained with a downward draft, which is forced and unnatural, and with an arch over an up-draft kiln a larger per cent. of hard building brick can be produced; without an arch two courses only on top are salmon.

Now as to comparative cost of putting in the down and the up-draft kilns.

|                                                                                                 |          |
|-------------------------------------------------------------------------------------------------|----------|
| The average cost of a first class up-draft kiln to hold 200,000 brick, is .....                 | \$ 1,500 |
| The average cost of a first class down-draft kiln to hold 200,000 brick, is.....                | 5,000    |
| Saving to the brickmaker in first cost on one kiln.....                                         | 3,500    |
| Saving to the brickmaker on three kilns this size, (which are necessary for a small plant)..... | 10,500   |

We are ready to verify these estimates.

For the best and cheapest kiln in use to-day for burning building bricks, the "Morrison Up-draft Kiln" with late improvements is unrivaled.

If you have any doubts about it, address

## R. B. MORRISON & CO.,

PROPRIETORS,

ROME, GA., U. S. A.

For further proof. —————



# The Eudaly Improved Down-Draft Kiln.

## THE IMPERIAL SHALE BRICK CO.

TO WHOM IT MAY CONCERN.—

CANTON OHIO. April 20th, 1894.

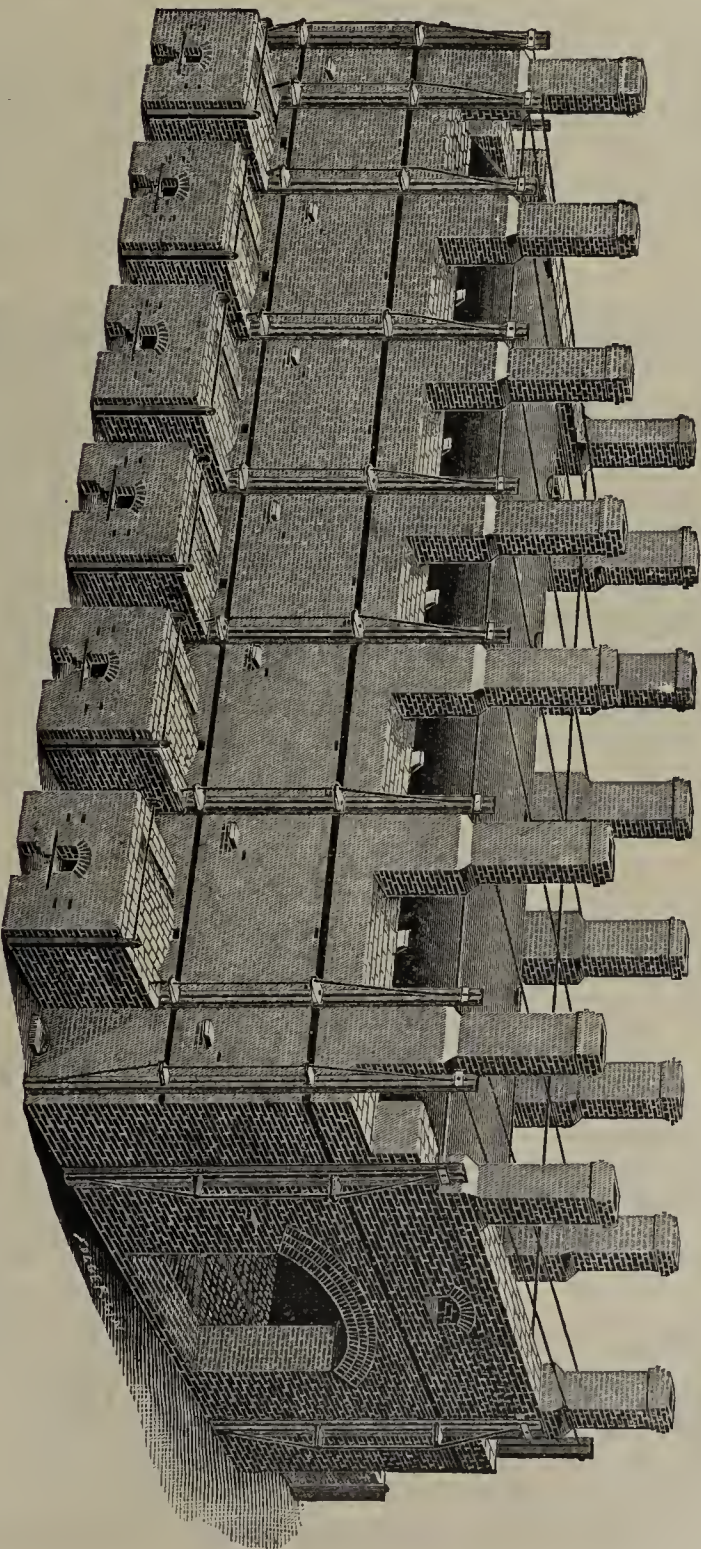
Unsolicited, we cheerfully bear testimony to the fact, that in the spring of 1892, we organized the Imperial Shale Brick Co., for the manufacture of shale paving brick. We at this time bought a yard right to build and use "The Eudaly Down Draft Kilns," at that time building three (3) large kilns 18x86. Since then, we have added many more.

In the fall of the same year, we commenced to burn brick, and from start to finish have had a continuation of good burns. As an economizer of fuel they are equal, if not better than any other kilns of which we have knowledge. Brick burned in the Eudaly Kilns are uniform in color from top to bottom—seldom have more than two courses of light burned, and frequently take street pavers from the bottom course. We are pleased with the Eudaly Kilns and cheerfully endorse them to the trade.

Very Respectfully,

THE IMPERIAL SHALE BRICK CO.,

E. D. KEPPLINGER, Sec'y & Treas.

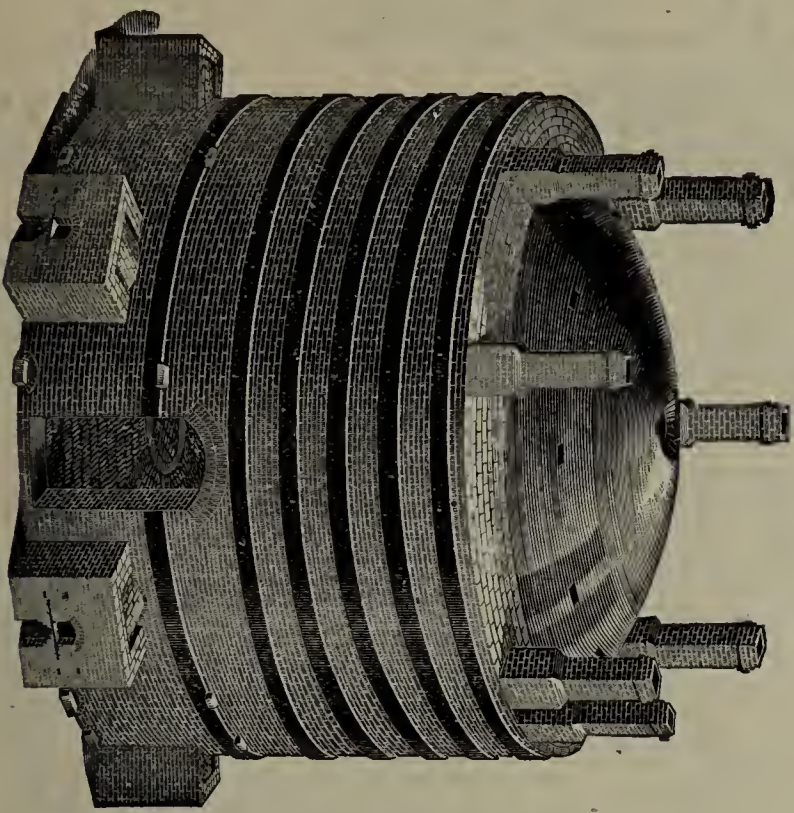


A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

## W. A. EUDALY,

64 Johnston Buildings,

Cincinnati, Ohio.





## THE · KILN · OF · THE · PERIOD.

## THE "PERFECT KILN."

*Sercombe's Patent.*

Designed on Economic and "Common Sense" Lines, for Burning Brick, &amp;c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

## NOTE WHAT THE USERS SAY.

Sample of English Testimonials.

From Messrs. W. T. WRIGHT &amp; CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

TO MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT &amp; CO.

Third kiln now ordered.

From Messrs. WILLIAM THOMAS &amp; COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN &amp; WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns.]

Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

## UNSOLICITED AMERICAN TESTIMONY.

*Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.*

## GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

## AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,  
Fulton Fire Brick and Mining Co.

## FROM CANADA.

TORONTO, February 28th, 1893.

MESSRS. SERCOMBE, OSMAN &amp; WARREN.

DEAR SIR:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular (Extract.)

Yours truly,

CARROLL, VICK &amp; CO.

N. B.—Messrs. Carroll & Co. are erecting one kiln, and contemplating erecting others.

References can be given to over Forty first-class firms already. For further particulars please apply to

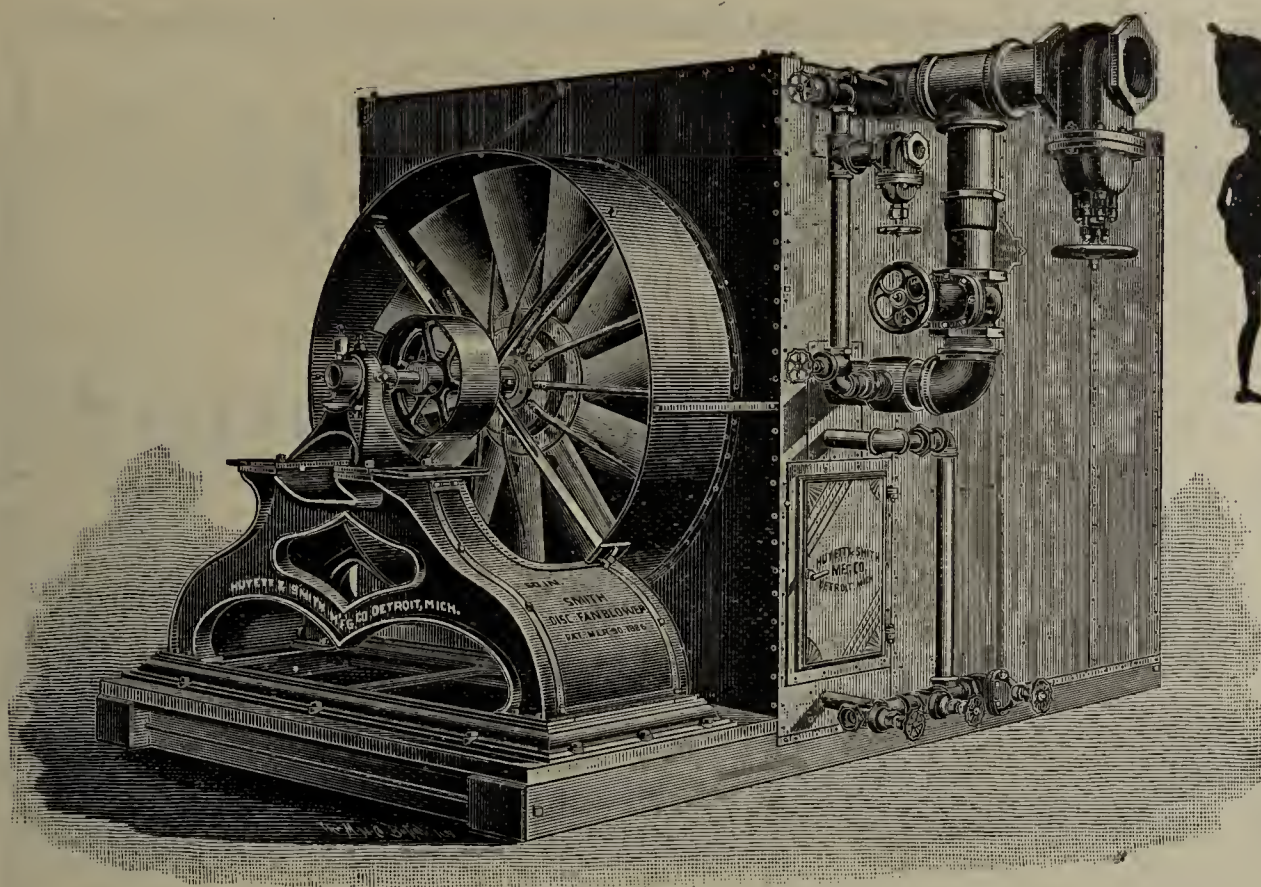
SERCOMBE, OSMAN &amp; WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER

AGENTS FOR CANADA R. H. PYNE &amp; CO., Yonge St., TORONTO.





## A Good Dryer

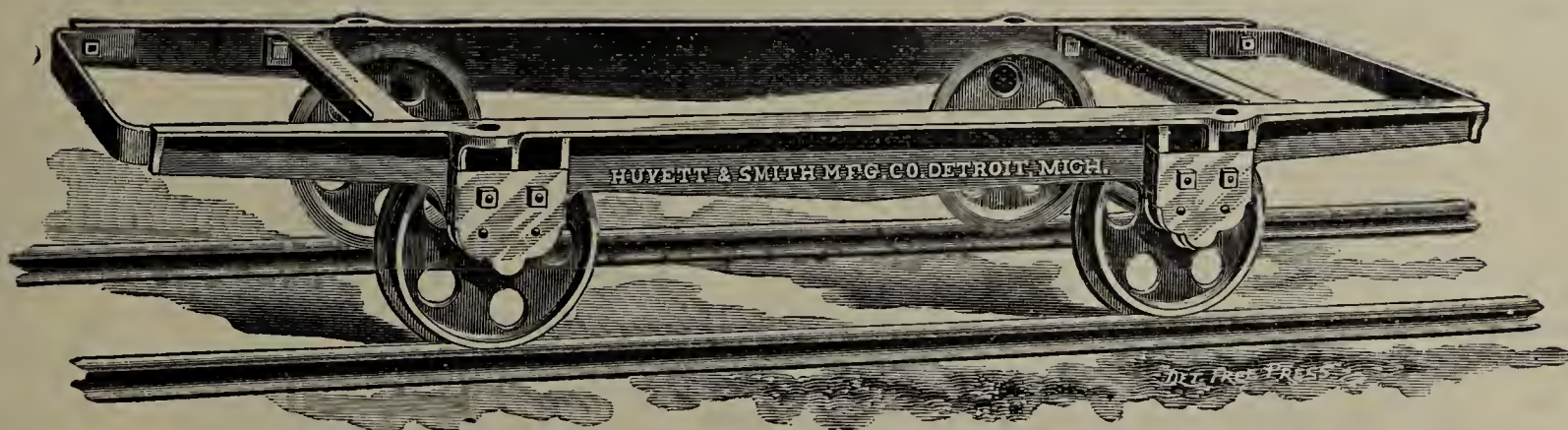
Is a cheap Dryer  
but a cheap Dryer  
is not always a  
Good Dryer.

We do not claim to have  
the cheapest Dryer as to  
first cost, but do claim it to be  
the cheapest to the purchaser when  
**EFFICIENCY,**  
**ECONOMY IN OPERATION**  
and **DURABILITY**  
are taken into consideration.  
Give us a chance to explain it  
to you.

The Huyett & Smith Mfg. Co.

— DETROIT, MICH. —

# SMITH HOT BLAST BRICK DRYER



Speaking of our **IMPROVED BRICK CAR** a prominent manufacturer says:

"I have used several other makes but never saw anything to compare with this. We only have a fall of one inch in eight feet in our tunnels; with the other cars we had to use a windlass and several men to move them down, but now one or two men alone handle them with ease."

WRITE FOR PRINTED MATTER.

## The Huyett & Smith M'f'g Co.,

Main Office and Works, 1,400 Russell St.,

DETROIT, MICH.

NEW YORK, 26 Cortlandt Street.  
CHICAGO, 31 South Canal Street.  
BOSTON, 48-54 Union Street.

.....BRANCHES.....

PHILADELPHIA, 118 Custom House Place.  
SAN FRANCISCO, 21 Fremont St.  
LONDON, ENG., 13 Little Trinity Lane, E. C



OFFICE OF  
**THE MONTELLO CLAY AND BRICK CO.**  
 Capacity. 30,000,000 Brick per annum.

WORKS AT MONTELLO, PA., ON R. & C. R. R.

M. HARBSTER, Pres.  
 G. B. STEVENS, Treas.  
 A. A. GERV, Gen'l Mgr.  
 H. L. BOAS, Sec'y and Asst. Treas.

*Reading, Pa., May 31/1894*

*Standard Dry Kiln Co.*

*Gentlemen: -*

*We are thoroughly satisfied that your reconstruction of our Drier has been a success. We have a 10 track Drier which heretofore gave no considerable trouble to get 25,000 brick per day; but since adding your improvements, we have no trouble in getting from 50,000 to 60,000 fully dried bricks every 24 hours. We are satisfied that your Drier will do more than you guarantee it to do and we have no hesitancy in recommending it to any one who may want a perfect Drier.*

*Wishing you success*

*We remain*

*Respectfully*

*Monello Clay & Brick Co.  
 H. L. Boas Secy*

## Who is To Blame?

Whose fault is it that your Drier does not yield expected results?

You maintain, no doubt, that it is the fault of the man who sold you, what he claimed was a good Drier, but actual tests proved it a POOR ONE.

His much praised rose turned out to be a thorn. However,

### Here's A Remedy:

We can turn poor Driers into good ones by changing them over to our system, and, too, at a comparatively nominal expense.

## Let Writings Speak!

Praise of one's self doesn't go as far as praise from others: Above is given, word for word, letter for letter, the statement of a company whose output was increased over 100 per cent. by changing their Drier over to our system.

We can do the same for you if your Drier isn't satisfactory.

A postal card costs but a penny; buy one and ask us to give you full particulars regarding our NEW IMPROVEMENTS.

### The Standard Dry Kiln Co.,

Builders of "Up-to-Date" Brick Driers,

INDIANAPOLIS, IND.

LOUISVILLE, KY.

Main Office Now 184 So. Meridian St., INDIANAPOLIS.

### THE BEST PLAN

Is to buy "THE STANDARD" PATENT DRIER in the first place; then a change will never be necessary.



# THE CLAYWORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXII.

INDIANAPOLIS, IND., MAY, 1894.

No. 5.

Written for the CLAY-WORKER.

## BRICK ARCHITECTURE.

BY LOUIS H. GIBSON.

IF our builders and architects were to work without the knowledge of the world's history in building, they would soon drift into a well worn groove, and the architecture of the various localities would become distinctly monotonous, and of a character which we cannot readily understand, excepting through examples.

In Western France, that section known as Brittany, is about three hundred years behind the rest of the world. To be sure there are the railroads which pass through it, but they merely make little streaks of light which but faintly diffuse the spirit of modern life. When one gets a little to one side, there is the old light only, and in passing through the

towns, it is with difficulty that one can tell whether a building was erected ten, thirty or three hundred years ago. Primarily, these people are not receptive to new impressions. Secondly, it is only during comparatively recent years that the railroad has come to them.

They have made little use of it so far as it concerns their own travel. People go to them, but for the most part, the Breton is a fixture.

The idea in this connection is well delineated in the picture here shown. It is typical of the work of Northern

France during the period of the 17th century. It is rather florid in its quality, made up of a large mass of detail, much of it suggestive of classic form, yet picturesque as the outgrowth of the earlier renaissance.

There was a great deal of this type of work done in this particular section of France during that time. By the aid of photography all of these things can be brought to us. There is no danger of the American people, who are made up of a conglomerate of all nations, and who are effected through photography and travel, by the art of the world, becoming stagnant



A BRICK BUILDING OF NORTHERN FRANCE.



or formal. Yet many of us are restive when advice is being poured in upon us as to what we could or should do, and especially when these doings are different from our customary work.

The bricklayer does not like to change his methods. The stone cutter prefers to go along in the same old way. The carpenter is measurably of the same mind. He resents change, but on the other hand, the people, as a mass, approve variety; and it is only in response to this demand that a change is to be expected. The architect is an agitator, and in the nature of things, is anxious to do something new, or to resurrect something which is old. Therefore, with the abundance of resource with which we are surrounded, with the portfolios or photographs, bringing the world's architecture to our table, it is not to be wondered at that our architecture is varied. A great deal of it is coarse, crude and unfinished, because it is designed by those who are without proper artistic education. But the refinement comes after the people have realized the mistake. They create a demand for a better thing and the better man appears to satisfy it.

We present a view of this bit of ancient brickwork, not with the expectation that it may be exactly copied, but rather that it should be studied, analyzed, and in that way influence the minds of those who are interested in decorative brickwork. Great successes in architectural work are never made through studied copies. They are always made by properly considering the practical requirements of the building and then clothing it naturally and properly with the best design which the world affords.

There is really very little to be expected of an original character in architecture. The only originality which we can really expect is a new way of doing an old thing. The thoughtful observer will look at a building like the one here presented and see much that is applicable to the everyday structures of our own towns and cities.

Our builders can add a great deal to the interest of American architecture by studying what the rest of the world has done. It is for this reason that we shall continue to present views of foreign structures of a character varying, as greatly as possible, hoping thereby to add to the material and artistic interest of the country at large.

Written for the CLAY-WORKER.

#### THE WORLD OF KERAMICS.

Milwaukee's Rich Inheritance—A Rare  
Potters Clay sent to the Dump—Mil-  
lions of Common Brick made of  
Clay Equal to Italy's Best—  
Specimens of Home Made  
Pottery.

#### Second Paper.

WHILE meditating in my studio one day recently, a tap at the door announced a visitor who proved to be a friend in deep tribulation; he had just received two magnificent vases from Italy, and on opening the package found them both broken.

Uncle Sam had his duty, the transportation companies their freight charges, and my friend the—too numerous—pieces.

Valued in Italy at many hundreds of American dollars, could they be repaired and made presentable?

A close examination of the edges of the broken pieces, showed a peculiarity not noticeable in the land of the sunny Italian, or in the show window of his *ami intime*, the American Shopkeeper, when exposed for sale over here. The writer has been "in it" for 25 years, importing, and knows whereof he writes.

Open confession is always said to be good for sin, you know, by the most reliable experts. The fact remains, that seen, not from behind the show window, but edgewise in the room of the china mender, our high priced objects of art and admiration from Italy, direct importation, *Ca va sans dire*, were made of one and the same common clay, as the articles here illustrated, with the addition of a very thin skin of white glaze, and a sketch over it, of Pan and his pipes, some kids at play, and shepherdesses as they never existed anywhere, etc. So far as the artistic merit of the work was concerned, not altogether beyond the efforts of the American decorator.

So much has appeared in the American shopkeepers' interest by Journals in their pay, that their American subscribers really were made to believe at one time, that to be enabled even to decorate at all in this country, it must be done on French china and be done with German colors and British gold, that is, if the climate allowed of its being fired.

Yet here are clays used for no other purpose than to build a city with, or to

make common machine made flower pots of, which will take a glaze equally well, and identical with the highest priced product of Italian art.

The little irregular shaped piece on the right upper line, decorated in underglaze color, is made of a clay which was dug out for the foundation for the cellar of a Polish beer saloon on the south side of Milwaukee; the writer was passing on the electric road, noticed it, took some home, and the accompanying illustration is an evidence of what can be done with it, without a pottery or plant.

The piece in the lower tier with a flower decoration, was made from a clay bed in the northwestern part of this city, now thickly settled.

Some years since a German Potter came here, bought the lots, and commenced the industry of making flower pots by hand; those were in the good old days when we could all afford flower pots, now we have to use discarded tomato cans, but the flowers we must have.

When our potter came, he settled at the top of the hill, the city cut streets through his purchase, and the Irish graders hauled away thousands of cart loads of just as good clay, as was used in the Italian vases I spoke of, and used it for no other purpose, than to fill swamp lots with, in their new found bog. You see, they thought this sort of thing was an infant industry and didn't need protection, besides they were improving the city.

In time the hill beneath our potter dwindled and disappeared, to the Irish level of the established grade, the German meanwhile converting it into hand made flower pots, and with the proceeds buying the neighboring lots, transforming them again by fire into good American dollars. When steam power came into the business, and the value of the clay was noticed, the clay bed was used up, and a steam laundry occupies the place.

I am sorry that my language, and photographic art do not convey to you the natural beauty of the body color of the ware, or how it will take color. Some of these pieces at once caught the attention of the well known expert and writer Mr. Binns, with the technical exhibit of the Royal Worcester, at the World's Fair, and although these pieces were in about the poorest light they could be in, in the Woman's Building, walled round with cases being



full of tidies and tapestry—still even there, there was light enough for them to receive an award from the technical jury in Ceramics and Mosaics. These pieces showed a palette of color over a white glaze as well as underglaze, on just such a body as the Italian ware but with no pretense at artistic effect beyond showing colors, glaze and clay, as Mr. Binns put it, "without gold decoration."

The two tiles shown are both from the Wauwatosa clay, now used for brickmaking. Both have a history, and were shown in the exhibit made by the State of Wisconsin of its native clays, in the Mines and Mining Building in the World's Fair, and were medalled there.

material for modelling purposes, and remember there was no admixture, or preparation beforehand of it any more than there was, with the two little flower holders on the upper row of the photograph, with the edges twisted in every conceivable direction. These were fired and treated in the same manner, the edges are as thin as a *gateau de plaisir*, or a holy wafer, whichever you are best acquainted with—the idea of the thickness, is what I wish to convey to your brain. These are undecorated and unglazed, and when struck, ring clear as copper. These pieces though made imperfectly as they are, still bearing the thumbball impress of their maker, like the banco tea pots

## MILWAUKEE BRICK THE BEST.

The Milwaukee brick manufacturers are protesting against the award by the Board of Public Works of the contract for the furnishing of brick for sewer purposes to the agents of Chicago concerns. They produce statements of tests which would seemingly show that the Milwaukee brick is more durable than that manufactured in Chicago, and claim that the difference in cost is due to the fact the Chicago product is of an inferior quality and can therefore be made for a cheaper price. One of the tests to which the Milwaukee men claim they subjected the brick, was soaking in water. A brick of each variety, it is said, was left in a tub for 12 hours, during which time the Milwaukee brick absorbed only nine ounces of water, while the Chicago brick absorbed seventeen ounces of water.

Like Dominie Sampson, simply stating, that the power of absorption of a Chicago brick, is "prodigious!"

The other tile, on the left upper cor-



SPECIMENS OF HOME-MADE AMERICAN POTTERY.

The one with the head modelled in relief, was done by an American Girl at the brickyard! At that time in Wisconsin, when we wanted to fire decorated china, we had to send it to New York City, there was no kiln big enough to fire such a tile as this west of there. That was before Rockwood and Cincinnati became famous, but the girl rolled out the tile, between two pieces of rag, and building an impromptu kiln, in the brick kiln, right over one of the arches, it received for ten days and nights, its *baptême de feu*, when the kiln of brick cooled, the tile came out as you see it in the photograph. This shows what can be done with the ma-

terial for modelling purposes, and remember there was no admixture, or preparation beforehand of it any more than there was, with the two little flower holders on the upper row of the photograph, with the edges twisted in every conceivable direction. These were fired and treated in the same manner, the edges are as thin as a *gateau de plaisir*, or a holy wafer, whichever you are best acquainted with—the idea of the thickness, is what I wish to convey to your brain. These are undecorated and unglazed, and when struck, ring clear as copper. These pieces though made imperfectly as they are, still bearing the thumbball impress of their maker, like the banco tea pots

The degree of heat which this clay will bear, its resisting force and power, was shown in the Chicago fire, while granite blocks, then melted away like glass, the buildings of this brick resisted for a long time, in many cases standing alone, after the fire had swept by. Now I am in no way interested in contracts for furnishing brick, or making it, but from the Milwaukee *Sentinel* of the 7th of March 1894, I copy the following:

ner in relief and underglaze, was made years ago. At one time in German Athens, the possibilities of this clay, was talked about, "*over zwei Morgen Schoppen*" and one careful capitalist, wanted to know "how long the clay, had to soak so he could figure interest on it?" So the clay was dug that afternoon, this tile made by hand, the relief and incised work done, decorated with color, glazed and fired that night, in an overglaze kiln, and at lunch next day the tile was produced, *twenty-four hours from the time the clay was in the bed*.

But there was money in those days in floating mining stocks, cornering the wheat market, iron syndicates, pine



land deals, and such little things, so fortunately the art tile and enameled brick business escaped the claws of the promoter, the manager, or a syndicate.

The two salt jars must be taken, the one with sgraffiti decoration, the other "*cum grano salis*" and the Heraldry *de'cor*, so popular in American trade, both are of native clay and design.

There is a "jug" shown in centre, between the tiles, scratched but unfired, in what is technically called "Greenware," or as it comes from the potter's and artist's hands. This is the condition, "The Frackelton Luck Jug" was kept in for 12 years before firing, which drew the attention of the public in the Mines and Mining Building, in the World's Fair. These jugs are true stoneware, that is, *produced by one firing*, and not as is done with much of the imported modern ware, visiting the decorating kiln after their salt glaze firing is accomplished, and be made to look more like cheap Majolica than salt glaze. The Flemish or "Flanders grey" was always produced with one fire, and mostly to order as this is, with the artists name, and for whom it was made, in the bottom of the piece, after the good old fashion of "*Thorson, Viking Son, for the Amal, made she Me.*"

No two of them can ever be quite, alike, in tone and color, the fire and salt fumes settle that, and those made here never have duplicate inscriptions, the one illustrated has the following:

#### DER SCHONSTE BECHER.

Ich trank aus der hohlen Hand am Born,  
Aus gold in des Königs Halle,  
Ich trank aus des Auerstleres Horn,  
Aus Silber und lichtem Krystalle,  
Aus Glas, aus Holz, aus irdnem Krug,  
Hab' ich gethan manch guten Zug.

Den schönsten Becher, von dem ich weiss,  
Den lass' ich nur errathen,  
Des Bechers Rand ist allzeit heiss  
Und roth wie Edelgranaten,  
Und wer den Becher am Munde halt,  
Der ist der seligste Mann der Welt.

Es wird am Ende hohl und leer  
Die grosste von allen Tonnen,  
Mein Becher aber halt ein Meer  
Von eitel Lust und Wonne,  
Und hab' ich den Becher vom Mund gethan,  
So fangt er zu lachen und plaudern an.

Round the neck it has the announcement for the benefit of the Antwerp public this year, "*Je suis Cruche, Mais pas Cruchon.*"

Used as these articles are sometimes by the laity, for what is known as, "rushing the growler," those who have enjoyed one on the table before you, in a quiet library, filled with "something good" the long stemmed pipe taken from its nail on the wall, with its hand-

somely decorated china bowl and socket appreciate what pipe, stein, and contemplative calm and comfort mean.

The good wife and daughter can have their enjoyment out of it also.

No more beautiful flower holder can be found for a bunch of old fashioned garden flowers than this grey ware, and the Lotus vase modeled after an antique Egyptian original, filled with Gladioli in the World's Fair, held and arrested the passers by. It interferes with neither the form or color of the flowers it contains, with objects or surroundings, and when each lily is supported in its separate hole in the vase, and a lily pad or two allowed to hang down the side—dreams or memories of the Nile will come, if you are only the least little bit of a modern Egyptian? The clay and weeds from the brickyard, "*au naturel*," of this continent, are something beautiful, and beyond the critique of a Carlisle.

RICHARD G. FRACKELTON.

Written for the CLAY-WORKER.

#### NEW CLAY PRODUCTS.

##### Pyrogranite.

THERE is very little in the above name to suggest clayworking. Granite from fire seems to be correct. Clay from granite is the orderly course in the geological laboratory, but granite from clay seems to indicate a revolution, or a reversal of the ordinary laws of nature.

Like many other facts which have come into recognition through practical experience, this one has forced itself upon the notice of the clayworkers of America by actual demonstration.

There is at South River, New Jersey, a factory, erected by the North American Pyrogranite Company, for the purpose of manufacturing this new material from New Jersey clays. The material is as hard and tough and strong as the very best grades of natural granite, having a crushing strength of 18,000 pounds per square inch. It is absolutely non-absorbent and fire proof, and can be polished as readily as granite or marble; therefore it is especially adapted to many uses, such as pilasters and columns, as well as many other architectural details, which have not been as yet perfectly supplied by burned clay work.

This new industry is surely destined to give a great impetus and extended usefulness to the art of clayworking, it will vastly increase the demand for clay and fuel and labor, thereby affording

opportunities for the profitable employment of capital.

As a paving material it is unequalled, being vitreous and acid proof, it absorbs no odors nor moisture, is constantly clean and affords a good foot hold.

A sample of paving was put down on two blocks or squares of Ninth Avenue, New York, nearly two years ago as a test of its merits. The success of this experiment has led the Broadway Cable Car Company to adopt its use. There is no reason to doubt but that it will soon become the popular paving material for New York and its vicinity.

The facility with which it can be made into many agreeable forms, together with its variety of colors, adapts it for furnishing very handsome floorings for costly stables, carriage rooms, railroad depots, etc., etc.

The simpler forms and colors are useful for carriage washing rooms, breweries, engine houses, warehouses, or any other place where wet and heavy work has to be done.

The use of Pyrogranite will open a new field of architectural design for brick work, because of its perfection of form, and its variety of color and surface, from rough to polished brick. This will probably cause as great an advance in the art of brickmaking in the future as the introduction of architectural terra cotta did in the past two decades, and help to fulfill the prophecy of the worthy President of the National Brick Manufacturers' Association, made at Chicago last January.

#### THE DIFFICULTY OF DETERMINING WHERE THERE IS PATENTABLE NOVELTY.

IT is a frequent and troublesome question, says the Supreme Court of the United States in the course of a recent decision, whether a given patented device evinces novelty or invention, within the meaning of the law of patents, or is merely an improvement, useful, perhaps, but so obviously a mere conclusion from what has gone before as not to be entitled to protection as an invention. In the history of most of the arts, the first invention is of a striking and undeniable character, and the earlier improvements likewise usually display an unmistakable power of invention. But, after the field of invention has been mainly occupied, it becomes difficult to distinguish between improvements that involve patentable invention and those that are the result of the exercise of ordinary mechanical knowledge and skill.



Written for the CLAY-WORKER.

## BURNING OIL.

BY D. W. STOOKEY.

AT THE WORLD'S FAIR.

THE ordinary use of the term burn means to unite with the oxygen of the air.

Petroleum is highly combustible but much difficulty has been encountered in attempting to burn it in furnaces for generating heat for industrial purposes. At present the methods adopted are fairly successful but not entirely satisfactory and there is yet much room for improvement in the methods employed.

The adoption of oil for generating steam at the World's Fair by those in authority will doubtless be taken as the verdict of those authorities that oil is the most satisfactory fuel known at present.

It must be admitted that there are several desirable features in the use of oil and that its application to this purpose is one of the triumphs of the closing years of this nineteenth century but it has not been acknowledged nor should it be accepted by the people that it is the most desirable and has the majority of the good points in its favor.

Probably one of the main reasons why those in charge selected oil for use at the Fair was because they found oil so convenient.

The pipe line from the Ohio oil fields to South Chicago decided the question of the selection of fuel.

Had the Exposition been located near one of the natural gas producing districts, doubtless gas would have been adopted and oil burning would have been one of the lesser exhibits, if exhibited at all.

The gentleman in charge of one set of boilers doing service at the Columbian Exposition, in conversation with the writer upon the subject of fuels, expressed a decided preference for coal over oil. This was in October, after at least five months experience with oil and with various styles of burners and under conditions where everything was on dress parade, as it were, and trying to appear at its best.

### OBJECTIONS.

Among the objections that are or may be urged against the use of oil may be mentioned the limited areas in which it

is found, the fact that it is largely controlled by a corporation, the difficulties in handling and storing and the expensive and complicated outfits essential to successfully burn it. These seem to be serious enough to justify the prediction that it will never displace coal in general use nor with the moderate consumer.

### NECESSARY CONDITIONS.

These are several conditions essential to the economical combustion of any fuel and it may be interesting to consider some of them in connection with the burning of oil and then compare the



FRANK O'BRIEN, Mgr. Monroe Brick Co., MONROE, LA.

most approved methods of oil burning with them. The modern oil burner which has been largely evolved from experiments guided by scientific knowledge, will be found to closely conform to these necessary conditions. No burner that does not operate in accordance with these principles will ever be successful. The one that most nearly satisfies all the conditions of perfect combustion, as discovered by the chemist and physicist, will be the one that will give the most satisfactory results.

In order that a fuel may burn readily it must be well supplied with air.

It should be finely divided so that it will present the greatest amount of surface to the air.

It should be heated, for heat is a very

active agent in producing chemical action and is the first change undergone by fuel in burning.

Now let us examine the methods followed in burning oil.

The burners that have given the best results introduce the oil into the furnace in connection with a jet of compressed air or steam. This method finely divides the oil into spray and thus fulfills one of the conditions of successful combustion, whether the jet be of steam or compressed air but here the similarity ends and the two vehicles must be considered separately. The use of com-

pressed air satisfies another requirement by supplying a quantity of air, while the steam jet does not, but when steam is used the air must be supplied by some other method.

The fact that any fuel must be heated preparatory to burning is one that has led to many difficulties in the burning of oil. Being a liquid it will not lie in the furnace until it becomes heated as solid fuels do. This difficulty is overcome in the atomizing of the oil by the jet in the improved burners. This subject of finely divided fuel is large and important enough to furnish material for an article by itself and will be treated more fully in another paper. It will suffice for the present purpose to say that by being finely divided it presents more surface to the air which unites more readily with it and being in small particles the oil becomes heated more quickly.

The necessity of heating the particles of oil as quickly as possible upon their introduction to the combustion chamber introduces a grave objection to the use of compressed air.

The molecules of air, and of all gases are in a constant state of repulsion and they are continually tending to occupy a greater space. The application of heat increases this tendency to expand and the extraction of heat reduces it.

On the other hand if a gas is compressed, heat is given off, and if a compressed gas is allowed to expand heat is absorbed. All students of Natural Philosophy are familiar with the experiment in which tinder is ignited in a glass tube by the heat evolved from the sudden compression of the contained air by a plunger. Ice machines based upon the absorption of heat by rapidly



expanding gases are also well known.

These principles obtain in connection with the use of air compressors and jets of compressed air for oil burning. When the air is compressed it imparts heat to surrounding objects and when liberated at the nozzle of the burner it expands rapidly and appropriates heat from its surroundings. Being in direct contact with the oil it absorbs heat from the oil and thus cools it just at the time that it should be heated. Another and very serious objection to the use of compressed air lies in the expense entailed in the establishing and operating the apparatus for compressing.

The use of the steam jet in oil burners has the advantage of the high temperature of the steam, and the simplicity of the outfit for generating and utilizing it. The expanding steam, when liberated at the burner takes up heat in the same manner as the air does but it has the advantage of being applied at a much higher temperature.

The compressed air has a temperature before liberation, very nearly that of the atmosphere and surrounding objects. This is not often above ninety or 100°, while that of steam at atmospheric pressure is 212° and rises higher as the pressure is greater. At twenty pounds pressure, steam has a temperature of about 260° and at fifty-five pounds the temperature is about 300°. The use of superheated steam, or steam heated to a temperature above the boiling point corresponding to its pressure, would add to the efficiency of oil burners by the introduction of the added heat with the jet and yet the expense and inconvenience of superheating the steam make its use of doubtful practicability. At all events the steam should be used as dry as possible and the apparatus should be arranged with much care given to this condition.

#### EXPRESS COMPANIES CANNOT BY CONTRACT AVOID LIABILITY FOR NEGLIGENCE.

**A**N express company cannot, according to a recent decision of the Supreme Court of Pennsylvania, secure exemption from liability for negligence by any contract it may undertake to make with the shipper. This is an application of the same doctrine which has been, on grounds of public policy, steadily enforced with reference to railway companies.

#### CONVENTION BRICK DUST.

##### Third Sifting.

**I**N the "Second Sifting," putting Bro. Snell through the riddle raised so much sand, that after a month the dust is still floating, making the picture gallery rather dim. But through the cloud breaks upon my vision the silent but handsome (I don't like to use the word, but no other expresses it,) face of Ex-President Eudaly of Cincinnati. He needs no introduction. The picture tells the story well and truly. No one would take him for a "down draft" man. "True 'tis a pity, and pity 'tis, 'tis true." He deserves a better fate.

Here comes Bro. Fairhall, of Grape Creek, Ills. Honesty and intelligence are the leading characteristics. His paper on "Brickmaking for Profit and Glory," was among the best; the same can be truthfully said of his paper read before the preceding Convention. He has already become one of the pillars of the Association.

As a gentle zephyr wafts the dust aside, I behold the clean cut Napoleonic features, waxed mustache and pompadour, of my friend Will. Purington, one of the best posted members on burning oil, which his lucid statements in his paper proves. He gives facts and figures in shape for practical analysis. Just take a good square look at his photo, and you will believe every word and a great deal more.

Next we meet Mr. Duffett, of Beatrice, Neb., whose paper on "Vitrified Paving Brick" was a model, and after which we should copy. It was practical, concise and covered the main points. Many a paper is spoiled by its length. Confine your paper, if possible, to matter for one page of the Convention Number.

As the procession moves on, the full beard and classic features of Bro. Miller, of Oaks, Pa., who gave us valuable information upon the subject of "Enamelled Brick"—a subject that American brickmakers ought to be interested in, and about which little is known. Such men as Mr. Miller are valuable accessions to our Association.

Here the dust becomes dense. Like the darkness of Egypt, it can be felt. I know something is agitating it to an unusual degree; now I see more clearly. "I might have known there was but one whose look could quell Lord Marmion." The hoary head of our gallant and revered Capt. Crafts, of New England, a leader in that galaxy of stars, ever

ready for a rough and tumble debate, quick at repartee, he has a nimble tongue and wields a sharp pen. The young members keep well out of reach of either in debate, but socially, he is a boy. Old and young alike, love the Captain. It is said that he visited the World's Fair grounds after the Convention had adjourned, and not having his compass with him he lost his bearings, and but for his friend Gray, who found him wandering in that vast wilderness of snow, and piloted him back to Chicago, we might not have seen him any more. Captain, keep your compass and log book with you hereafter.

Now I see a tall and dignified form taking shape as it draws nearer. It is the stalwart Vice-President Stiles, of New Haven, Conn. He would pass anywhere for an Episcopal clergyman, but he is not; he is a jolly brickmaker under his disguise. When he addresses the chair his strong, rich voice at once attracts attention of the whole crowd, and what he says, as well as his fine voice and delivery, carries weight. You will know him by his mustache, mutton-chop whiskers and pompadour.

Pass on, Bro. Stiles, and make room for Bro. Conrad Clippert, of Detroit, Mich. He is as good as his picture. You can see he is a solid business man and brickmaker. The writer had the pleasure of a "button hole" chat with him in the lobby of the Auditorium Hotel the last night, and if I lacked a few points on brickmaking they were cheerfully supplied through the "button hole."

Now comes a manly face and form—Mr. Bauman, of Wis. We have not the pleasure of his acquaintance, but judging from appearances, he is a good brickmaker and abundantly able to take care of himself.

Now another fine specimen of young manhood appears—an ideal brickmaker who combines scientific principles with practical facts—the first typical brickmaker, Edward Orton, Jr., of Columbus, Ohio, whose essay on "How to Secure Trained Help," has already borne fruit and will continue to do so.

Now here comes Flood (and) Gates. I must take a rest before I tackle them. It will take another sifting to do them justice. CHARTER MEMBER.

##### Envoi.

Old times, old ways: they fit full well, but  
stand while *Century flies*;  
And *Modern "Method"* yields her gold to those  
who advertise.

—*Fame.*



## DRYING CLAY.

\*BY F. D. CUMMER.

*Mr. President, and Gentlemen:*

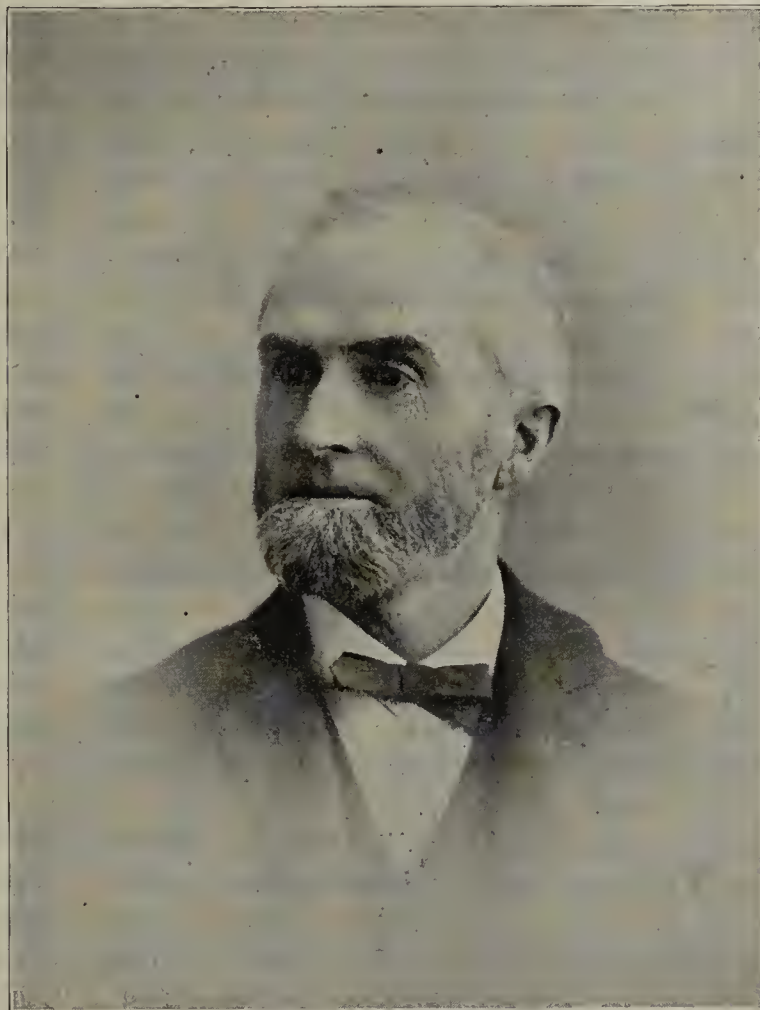
The allotment of five minute's time, which has been given to me for the discussion before you of the drying of bricks and clay, is inadequate to do the subject justice and I therefore feel compelled to confine myself almost entirely to reading to you the headings of the different divisions of this subject, which I have hastily written to form the basis of my talk before you.

Before going further I will, however, say that some remarks just made by Mr. Ittner have interested me. I refer to what he said with reference to his method of drying his bricks after they have been placed in the kiln before firing the kiln, and his remarks are substantially as follows; viz., that he had tried to dry the bricks in his green kiln by discharging the products of a coal fire among the bricks in the kiln, but he found that in a very short time the smoke from his fire filled up the spaces between the moist bricks so that this attempted method of drying, with him, proved to be a failure.

He further stated that he was now utilizing the waste heat from a burned kiln with which to dry the bricks in his green kiln, but he would very much prefer to use the heat from a fire direct if it could be done. I desire to say that this can be done, for with a properly constructed furnace the combustion may be so complete that there will be no unconsumed carbon or soot left, and the products of a completed combustion may be mingled with air and utilized exactly in the way that Mr. Ittner prefers to do. For I am thoroughly aware of the fact that such complete combustion is being obtained that the entire products of combustion mingled with air are being used in the drying of materials without discoloration, that are perfectly white, although the products of combustion are brought in direct contact with said materials while being dried.

At this point I desire to make the remark that in my opinion the brick-makers have not given the attention to

the economical production and application of heat that this subject deserves. For it is very apparent that everyone engaged in this business must of necessity be a *heat-maker* before he can be a *brickmaker*, and one of the most important items of cost in the making of bricks is the cost of fuel that is necessarily used in drying the clay and bricks and in burning the bricks. And while this subject of economically generating and applying heat has not been receiving from brickmakers the attention which in my opinion it deserves, it has been receiving attention in a broad way and the study as well, of many of the most scientific



F. D. CUMMER, PRESIDENT THE F. D. CUMMER & SON CO., CLEVELAND, OHIO.

minds that the the world has possessed during the last century, and which it now possesses.

During the lifetime of Watt, as you all know, the first successful attempts were made to utilize steam power, and during the early history of the use of steam for power purposes six, eight, ten pounds and even more of coal were necessary to make one horse power per hour. But as a result of the constant, thoughtful attention that has been given to this subject, the engines by which our best trans-Atlantic steamers are being propelled and by which many of our large factories are being driven, require less than one and a half

pounds of coal per horse power per hour. It is a surprising thing when thoughtfully considered, that through the invention of man, the energy stored up in a little lump of coal not much larger than a man's fist may be so utilized as to raise thirty-three thousand pounds sixty feet high, and yet this is just what the present modern engineering is accomplishing.

During the last two years I have visited a great many brickyards and in years gone by have made myself in a business way, quite familiar with cotton factories and other large industries, and in nearly every branch of industrial pursuit I notice a much greater desire shown to economize in the use of fuel than I have seen displayed in the brickyards and amongst the brickmakers. For instance, to-day nearly every brick manufacturer whose yards I have visited, if he has a dryer at all, dries his brick with air that has been heated by the use of steam, and when approached upon the subject he gives the reply that he uses the *exhaust steam* very largely for this purpose. But the fact is that his steam should be so utilized in the generating of his power that there would be very little heat left in the exhaust steam. He should do as is done in England and other countries where economies in this line in the brickyard seem to be more studied than they are here. Thus in England we notice that compound engines are very largely used, and wherever it is possible, the condenser is also attached, so in cases of this kind no exhaust steam whatever is discharged by the engine into the atmosphere;

it is *all used* in the making of power.

It is one thing to make heat, it is another thing to apply it. It is also one thing to make heat economically and quite another thing to apply it economically. What would be an economical method for generating and applying heat in making steam, would be a wasteful method for generating hot air, for the reason that in generating steam about eleven to twelve pounds of air should be used for the pound of combustible that is burned. If more air were used, more heat would be generated, but the economy would not be increased thereby, as this excess of air is apt, at the other end of the furnace, to carry

\*Read before the N. B. M. A., January 24th, 1894.



with it more heat up the stack than by its use was generated. And under the best management in the making of steam a very large share of the heat produced necessarily goes up the stack as waste, and as the combustion under a boiler for economy is necessarily incomplete, the boiler stack delivers smoke and unconsumed, unusable gases. Therefore it follows that steam is a very expensive agent to use for the making of hot air, because if a furnace is properly constructed, as stated before, coal may be so consumed that the products of combustion will be clean and the *entire heat of the furnace may be used* (no heat sent up the stack) and the furnace instead of being blackened by soot, will be white and clean in every part of it.

I will here remark that I would prefer to use a large amount of air in the consumption of fuel where the products of combustion are to be used in a direct way for the heating of air for drying or other similar purposes, for under these conditions the furnace temperature should reach at least three thousand to four thousand degrees or higher, and this would follow as the result of using the larger amount of air.

Now, as I have stated before, it is obvious to those skilled in these matters that the employment of such a large amount of air as would be necessary to give this intense heat in the furnace would be opposed to economy in connection with the generation of steam. While in the present case wherein the object sought is to produce hot air, to obtain as much heat as possible for a given amount of fuel, and to utilize all of the heat (not allow any of it to go up the stack, but use all of the products of combustion with all of the heat that they possess in heating our air) the result is otherwise. That is, the fuel in this way is most economically utilized.

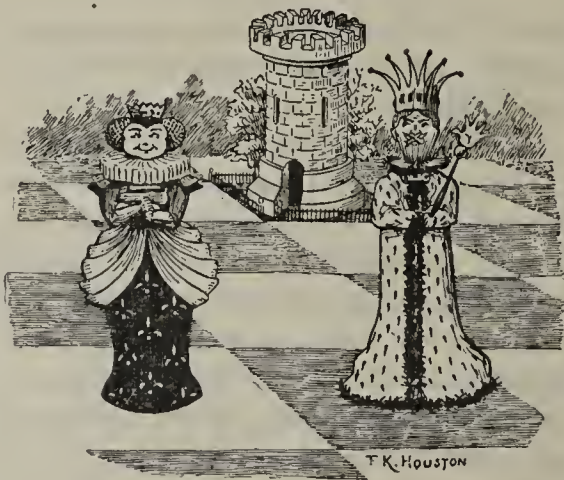
In making a comparison of this system for making hot air with the system of using steam for this purpose, it may be shown that nearly or quite four times as much heat is utilized by the direct system as is being utilized in the making of steam and in using it for the purpose of making hot air. Therefore, it plainly follows that the making of hot air by mingling it with the products of a completed combustion is well worthy the attention of those engaged in the making of bricks. Without going into the "ins and outs" of this system, as there is such a small amount of time at

my disposal, I will simply say that air may be heated in this direct way and be perfectly clean, so that it will not soil even light colored materials and the temperature may be so reliably modified that hot air made in this way can be as safely used as if the air had been heated with steam.

I will now touch upon another subject, and that is the drying of clay. Very wet clay may be handled mechanically (dispensing with all labor) from the cart or dumping car which brings it from the bank to a mechanical dryer, and from there on to the dried pile, and be spouted and elevated and conveyed, no matter in reason how wet or tough the clay may be, just as reliably and as easily almost as if it were dried grain or pebbles, and by generating the heat in the economical manner that I have described, and by applying it in a direct way; that is, by bringing the products of a complete combustion in direct contact with the clay, from five to six thousand pounds of moisture per hour may be driven off from wet clay by the use of about two tons of coal in ten hour's time. Or putting it in another way, clay taken from the bank carrying about fifteen to twenty per cent. of moisture may be dried without injuring its color or cohesion at the rate of about fifteen tons per hour, so that it will be in a proper condition for the dry pan or other pulverizing machine by the use of two tons or less of good coal in ten hours.

I am sorry that the time at my disposal at the present time is so short, otherwise I would be gladly willing to discuss with you the means by which some of these results are accomplished.

Gentlemen, I thank you for your attention.



Then They Moved.

THE QUEEN—What's the difference between the hard-up man and the chess-player?  
THE KING—Oh, give it up.  
THE QUEEN—One pawns his watch; the other watches his pawn.

Written for the CLAY-WORKER.

## THE CLAYWORKING INDUSTRIES OF OHIO.

### Fifth Paper.

BY EDWARD ORTON, JR., E. M.

#### ON PAVING BRICK CLAYS.

THE manufacture of vitrified clay paving material is a new industry in this state; in fact, in the scale of production and quality of material it is new to the world as well. Bricks have been used to pave streets and alleys in a small way for a long time past, but the construction of brick streets of vitrified, imperishable material, designed and guaranteed to bear the severest demands of traffic for periods of years, is a new and valuable accession to the clay-working industries of the country.

The rapidity with which the new business has developed, and the quick success which our manufacturers met in producing material able to endure the severe specifications of city engineers is admirable; it would be marvelous, if it were not for the fact that the manufacture of vitrified sewer pipes had been carried on so long and so successfully, that the knowledge and experience gained in that business proved of unlimited value in the new industry. Indeed without this experience, no such rapid success would have been possible.

The use of vitrified wares is steadily on the increase; it is not confined to sewer pipe and paving brick; building materials in the shape of foundation blocks, hollow tiles, roofing tiles, and even ordinary pressed brick are either required to be vitrified or become more valuable if they are vitrified.

In examining the subject, it is found that clays used for making vitrified brick are chemically different from those used in making any other form of vitrified wares. Hence the following statements may be applied to all clays in which vitrification is an essential quality.

Before taking up the consideration of the clays, it is proper to define somewhat more fully what is meant by the term *vitrified*.

In the third paper of this series, the term was defined as indicating the incipient fusion and fritting of the particles of the clay ware into a new chemical compound, not necessarily glassy, but indicating by its fracture that such



a chemical union has begun to take place.

The degree to which vitrification has taken place in a burnt clay is measured by its ability to absorb water, for as the chemical union progresses, the pores of the clay become more and more constricted and the appetite for water less and less. If the clay be a good vitrifying variety, it will absolutely cease to absorb water at a temperature some distance beneath its melting point. Other clays, burnt at something near the same temperature, may enter into combination to a certain extent, but still absorb water freely. Such clays are perhaps *somewhat vitrified*, after being burnt under such conditions, but under the classification proposed, they must not be included as vitrifying clays.

The physical peculiarities which mark vitrification in a burnt clay are the conchoidal fracture, absence of pores, and blending of the ingredients into one mass. Cracks, fissures and cavities may be found, but porosity must not exist in a well vitrified clay, and the original particles must have begun to cohere by the bond of heat instead of the bond of plasticity.

It is impossible to convey adequately by words, the peculiarities of fracture which indicate vitrification, but it is a quality which the natural sense of any observer readily teaches him to detect.

Vitrification is thus seen to be a physical state or condition which any clay may assume if it is heated to the requisite point. The qualities which a clay must have to be *profitably* made into vitrified product are as follows:

1st. There must be a balance between the vitrifying temperature and the fusing temperature. Some clays begin to vitrify at low heat and become perfectly non absorbent without ever approaching to a point where the clay becomes soft or bloated. Others stand heat well up to a certain limit and then fail rapidly. Obviously, the latter would not do for a vitrified product, for it would be impossible to burn a kiln of it, without overburning a large quantity in order to obtain a sufficient heat to cause the rest of the kiln to properly vitrify.

There must be a margin, or a tolerably broad range of temperatures, inside of which the vitrifying action takes place without approaching fusion; for if a burner is working between two extremes, too high absorption and porosity of his output on one side, and melted and

twisted ware on the other, it is plain that he could not pay Peter without borrowing from Paul.

If a clay have this first great condition, this happy balance between refractoriness and fusibility, it can be profitably worked, but its value will depend partly on two other factors. 2nd. Plasticity. 3rd. Color.

The importance of the requisite plasticity is easily seen, for if it is not possessed, it must be obtained by mixture which may interfere with the first and more important quality of vitrification. Again a balance of qualities is needed. Too great plasticity causes imperfect arrangement of the particles of the clay in passing through the die of the machinery. Too little causes surface imperfections, cracks, roughness, etc. The majority of the vitrifying clays are not naturally very plastic as they occur; they may have been once, but the quality is gone, and it is only by fine crushing and very thorough tempering that plasticity sufficient can be induced. However, the faults of plasticity can largely be conquered by the use of proper mechanical means, while the vitrification depends on inherent chemical properties which we cannot vary or alter.

3rd. The color of the ware is only important, in view of a singular prejudice which the public have cultivated against light colored materials. The popular idea is that vitrification is measured by the dark color of the product, and that light colors are prima

facie evidence of softness. This is by no means true. Many of the impure fire clay beds of the state make most excellent vitrified brick, but cannot be sold on account of their naturally light color. This difference is due more to the condition of the iron present than to its amount. In the light colored clays, the iron is largely present as grains, while in most shales it is in the state which effects equally every particle of the clay, whether chemically combined or not.

The proper qualities of vitrification, plasticity and color, being duly understood, the source of such materials remains to be considered. There are three sources in this state:

1st. The shale clays, coming largely from the coal measures, but represented in all of the older deposits as well.

2nd. The impure and low grade fire clays, coming from the coal measures.

3rd. River clays or sedimentary deposits of recent origin.

The drift clays, covering two-thirds of the state with surface deposits are unfortunately very seldom suitable for making vitrified wares. They usually fuse too suddenly, are too plastic alone, and nearly all contain lime stone gravel which spoils the surface of the ware after burning.

The shale clays are comparatively new in their use. Sewer pipe men at Akron and Columbus have used shales for a number of years, but the extended use of shale outside of these places began with the manufacture of paving brick.

The following table illustrates the

TABLE II.—ANALYSES OF SHALE CLAYS USED IN THE MANUFACTURE OF PAVING BRICK AND SEWER PIPE.

| ELEMENTS.                              | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9      | 10     | 11    |
|----------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|-------|
| Silica (total).....                    | 57.15 | 58.30 | 57.10 | 49.30 | 57.45 | 55.60 | 58.20 | 58.38 | 57.28  | 57.40  | 56.61 |
| Alumina.....                           | 20.26 | 19.67 | 21.29 | 24.00 | 21.06 | 24.34 | 22.47 | 20.89 | 21.13  | 21.20  | 21.63 |
| Water (combined).....                  | 5.50  | 5.15  | 6.00  | 9.40  | 5.90  | 6.75  | 6.15  | 7.53  | 5.22   | 7.75   | ..... |
| Clay and sandy impurities (total)..... | 82.91 | 83.12 | 84.39 | 82.70 | 84.41 | 86.69 | 86.82 | 86.80 | 83.86  | 86.35  | ..... |
| Oxide of iron.....                     | 7.54  | 7.43  | 7.31  | 8.40  | 7.54  | 6.11  | 5.63  | 5.78  | 8.52   | 6.57   | 7.08  |
| Lime.....                              | .90   | .84   | .29   | .56   | .29   | .43   | .62   | .44   | 5.79   | 1.00   | 1.11  |
| Magnesia.....                          | 1.62  | 1.35  | 1.53  | 1.60  | 1.22  | .77   | .98   | 1.57  | 2.13   | 1.40   | 1.41  |
| Potash.....                            | 3.05  | 3.04  | 3.44  | 3.91  | 3.27  | 3.00  | 3.08  | 4.68  | .....  | 4.10   | 3.51  |
| Soda.....                              | .58   | .73   | .61   | .19   | .39   | .09   | .42   | .34   | .....  | 1.00   | .48   |
| Fluxing impurities (total)...          | 13.69 | 13.39 | 13.18 | 14.63 | 12.71 | 10.40 | 10.73 | 12.81 | 16.44  | 14.07  | ..... |
| Moisture.....                          | 2.70  | 2.65  | 1.30  | 1.20  | 1.90  | 2.65  | 1.65  | ..... | .....  | .....  | ..... |
| Total.....                             | 99.30 | 99.16 | 98.87 | 98.54 | 99.02 | 99.74 | 99.20 | 99.61 | 100.07 | 100.42 | ..... |

1. Bucyrus Brick and Terra Cotta Co., Gloucester shale.

2. Bucyrus Brick and Terra Cotta Co., Shale and plastic clay mixed.

3. Royal Brick Co., Canton, O., Canton shale.

4. Waynesburg Brick and Clay Manufacturing Co., Waynesburg shales.

5. Ohio Paving Co., Columbus, Ohio, Darlington shales.

6. A. O. Jones Co., Zanesville, O., Shale and

fire clay mixture.

7. T. B. Townsend & Co., Zanesville, O., Shale and fire clay mixture.

8. Columbus Sewer Pipe Co., Columbus, Ohio, Huron shales.

9. Akron Vitrified Press Brick Co., Independence, Bedford shales.

10. Akron Vitrified Press Brick Co., Independence, another sample.

11. Average of preceding ten analyses.



character of the shale clays used among the makers of vitrified wares.

The results of this table show an agreement which is significant as well as wonderful. It tends to show two things. 1st. That the vitrified products of the state are drawn from no less than eight distinct geological horizons with surprising uniformity. 2nd. That the makers of vitrified wares have, in entire ignorance of the chemistry of the subject, selected materials of closely uniform chemical character.

The average composition shows a clay containing 84.78 per cent. of clay base and silicious matter, and 13.22 per cent of fluxes, and the variation from this mean in the 10 samples is only 4.1 per cent. in clay and sand and 6 per cent. in impurities. The oxygen ratio in being calculated shows:

Oxygen in silica: oxygen in base :: 2.19 : 1  
Oxygen in alumina: oxygen in flux :: 2.72 : 1  
or, the average shale clay is nearly a Bisilicate with over a quarter of its basic oxygen derived from fluxes.

This formula represents a fusible material, in practice none of these shales require a high temperature to vitrify them, and while none of them actually melt they all are decomposed or bloated at low temperatures. The special points to observe are the uniformly high quantities of the alkalis present, and in the Bedford shales, the lime and magnesia. These shales vitrify so easily that they are still clear beautiful red in color when they refuse to absorb water, which tends to show that their iron does not act as a flux, for it would not remain in its red form if it were combined as ferrous silicate.

The fire clays of the state are the oldest and best known source of material fit for making vitrified wares. It is rather a contradiction of terms to talk of fusible fire-clays. A fire clay in the sense used here and elsewhere in Ohio, means a stratified clay which burns light colored; its refractoriness is not considered in this connection. The table of Analysis No. 3, shows the composition of the standard fire clay vein of Columbiana and Jefferson counties, which support the enormous industries of that section and also several analysis of other well known veins.

Part of these analyses were made by the Geological Survey of Ohio, but the chemist who made the last half of the series is not known.

The average vitrifying fire clay as computed from this table shows 93.41 per cent. clay and sand, with 5.65 of iron and fluxes, and the oxygen ratio shows, oxygen in silica: oxygen in bases :: 2.40:1  
oxygen in alumina: oxygen in flux :: 7.7:1  
which indicates a clay much more refractory than the shales, but still of comparatively fusible nature.

These indications are borne out by the results; the clays are nearly all used either for paving material or for sewer pipe and frequently for both. The thin sections of the latter vitrify comparatively well, while bricks being of larger bulk vitrify only very imperfectly. They become hard and strong, but still absorb water too freely to indicate a proper degree of vitrification.

The third class of clays, the sedimentary deposits which cover our alluvial river bottoms, have so far found but limited use in producing vitrified wares.

But the value and the importance of the deposits are now being discovered and three or more factories are in successful operation on these clays now. The extent of the beds in the aggregate is enormous; but it is irregular, as the clay has been deposited in eddies of the river and alternate with sand and gravel. Along the Ohio river they are found, however, 20 or 30 feet thick without pebbles.

An analysis was made of such a bed of clay at Columbia, a suburb of Cincinnati, which has been tested for paving material with very flattering results. The figures are as follows:

|                       |       |       |
|-----------------------|-------|-------|
| Silica, total.....    | 63.73 |       |
| Alumina.....          | 17.17 |       |
| Water (combined)..... | 4.90  |       |
| <hr/>                 |       |       |
| Clay and sand.....    | 85.80 | 85.80 |
| Oxide of iron .....   | 5.85  |       |
| Lime.....             | .58   |       |
| Magnesia.....         | .97   |       |
| Potash .....          | 2.33  |       |
| Soda.....             | .67   |       |
| <hr/>                 |       |       |
| Fluxes.....           | 10.40 | 10.40 |
| Moisture .....        | 2.96  | 2.96  |
| <hr/>                 |       |       |
| Total .....           | 99.16 | 99.16 |

The oxygen ratio of this clay shows: Oxygen in silica: oxygen in base :: 3.12 : 1  
oxygen in alumina: oxygen in flux :: 2.77: 1; which indicates a clay more sandy than either fire clay or shales, but whose fire resisting qualities are reduced by the large amount of fluxes to a low point.

The trial of the clay, which was on a large scale, 10 or 12 car loads being made and burnt, showed that the fire qualities were somewhat above the shale clays as

TABLE III.—ANALYSES OF FIRE CLAYS USED IN PAVING BRICK AND SEWER PIPE.

| ELEMENTS.                              | 1      | 2      | 3      | 4      | 5      | 6     | 7      | 8      | 9     | 10     | 11     | 12    | 13     | 14     |
|----------------------------------------|--------|--------|--------|--------|--------|-------|--------|--------|-------|--------|--------|-------|--------|--------|
| Silica, (total) .....                  | 54.53  | 51.72  | 51.82  | 62.81  | 57.80  | 64.10 | 70.00  | 57.75  | 59.75 | 65.90  | 77.65  | 59.20 | 58.10  | 56.71  |
| Alumina.....                           | 27.88  | 30.10  | 28.69  | 21.41  | 25.54  | 21.79 | 19.35  | 28.66  | 27.45 | 24.20  | 12.78  | 26.10 | 29.60  | 33.72  |
| Water (combined) .....                 | 8.87   | 9.95   | 9.67   | 6.52   | 8.35   | 6.05  | 5.39   | 8.35   | 5.45  | 4.80   | 4.10   | 8.55  | 8.70   | 6.89   |
| Clay and sandy impurities (total)..... | 91.78  | 91.77  | 90.18  | 90.74  | 91.69  | 91.94 | 94.65  | 95.76  | 92.65 | 94.90  | 94.53  | 93.85 | 96.40  | 97.32  |
| Titanic acid.....                      | 1.26   | 1.35   | .72    | 1.26   |        |       |        |        |       |        |        |       |        |        |
| Oxide of iron.....                     | 2.41   | 1.94   | 2.77   | 2.65   | 2.51   | 2.51  | 2.22   | 1.94   |       | 2.00   | 3.32   | 2.70  | 1.20   |        |
| Lime.....                              | .42    | .62    | .77    | .58    | .25    | .10   | .15    | .15    | .75   | .80    | .55    | 1.05  | .40    | .29    |
| Magnesia .....                         | .68    | .53    | 1.41   | .85    | .61    | .58   | .34    | .24    | .65   | .54    | .45    | .75   | .54    | 1.58   |
| Potash .....                           | 3.31   | 2.74   | 2.57   | 2.89   | 2.51   | 2.62  | 2.90   | 2.55   | 3.58  | 2.30   | 1.30   | 1.53  | 1.75   | 1.01   |
| Soda.....                              | .12    |        | .25    | .21    | .18    | .03   |        |        |       |        |        |       |        |        |
| Fluxing impurities (total).....        | 6.94   | 5.83   | 7.77   | 7.18   | 6.06   | 5.84  | 5.61   | 4.88   | 4.98  | 5.64   | 5.62   | 6.03  | 3.89   | 2.88   |
| Moisture.....                          | .76    | 1.05   | 1.72   | 1.47   | 2.25   | 1.10  |        |        |       |        |        |       |        |        |
| Total.....                             | 100.24 | 100.00 | 100.39 | 100.65 | 100.00 | 98.88 | 100.26 | 100.64 | 97.63 | 100.54 | 100.15 | 99.88 | 100.29 | 100.20 |

1. N. U. Walker's Sewer Pipe Co., Columbiana Co., Ohio, Sewer pipe.
2. Freeman's Sewer Pipe Co., Jefferson Co., Ohio, Sewer pipe.
3. Island Siding, Jefferson Co., suitable for sewer pipe.
4. Island Siding, Jefferson Co., suitable for sewer pipe, second sample.
5. State Line Paving Brick Co., East Palestine, Ohio, Paving brick and sewer pipe.
6. Massilon Fire Brick Co., Massilon, Ohio, Shale and fire clay mixture, mostly fire clay.
7. Toronto, Jefferson Co., Sewer pipe clay.
8. " " " " " "
9. " " " average top and bottom.
10. Empire, Jefferson Co., Ohio, Sewer pipe clay.
11. Elliottsville, Jefferson Co., Sewer pipe clay.
12. " " " " " "
13. Croxton Run, Sewer pipe clay.
14. N. U. Walkers, Columbia, Sewer pipe clay.



a class, but distinctly below the vitrifying fire clays of the third table.

These tabulated analyses of the three classes of vitrifying clays of Ohio, while they are very incomplete, still throw a flood of light on a subject previously in the dark. A comparison of their oxygen ratios still further aids in obtaining a clear impression of their relative qualities.

TABLE IV.

| Kind of Clay.     | Oxygen in Silica. | Oxygen in Bases. | Oxygen in Alumina. | Oxygen in Flux. |
|-------------------|-------------------|------------------|--------------------|-----------------|
| Shale clays.....  | 2.19              | 1                | 2.72               | 1               |
| Sedimentary ..... | 3.12              | 1                | 2.77               | 1               |
| Fire clays.....   | 2.40              | 1                | 7.70               | 1               |

Stated in words, the oxygen ratios indicate that the shales are the most easily fusible on account of low ratios in both columns. The sedimentary clays are a less fusible silicate than either of the others but the base ratio more than counteracts this influence, leaving a compound slightly more refractory than than the shales.

The fire clays, more refractory than shales as to silicate composition, and far more free from fluxing impurities than either of the others, make a compound of a distinctly higher refractory power than either of the others.

Such are the facts which a hasty examination of the vitrifying clays of Ohio discloses. Subsequent and more complete investigations may modify the conclusions thus far obtained; but one fact seems to be indicated quite strongly by these results: viz, that no one of these clays is in itself a perfect material for the purpose to which it is applied. The shales are too fusible and lose their shape at too low a heat, but vitrify perfectly. The river clays also are too fusible and also vitrify perfectly. The fire clays are more refractory and keep their shape well but at the expense of their vitrification. On this account either of the former would be improved by mixture with the latter.

Also in regard to plasticity, the shales are, as a class, too little plastic to work alone. The river clays are too plastic. The fire clays are about right to work alone. Here again, no two ingredients but what make an improvement by mixture.

As to color, the shales all burn dark, also the river clays. The fire clays burn light colored. By mixture, in proportion of one-half and one-third fire clay, the color is still dark and the popular

prejudice for dark material is satisfied.

This mixture of clays seems by theory to present many advantages. In practice three or four instances can be cited in Ohio where this plan is carried out with the production of material of the very best quality.

There are instances in each class of clays of materials found naturally which just fill the wants of manufacturers without mixing.

But it can hardly fail, that as the industry gets older and the requirements of the public become more sharp and severe, the advantages of mixture will be used to bring up the grade of material that is now allowed to be used without protest.

Fortunately, the geographical distribution of the clay deposits will allow of this being easily and cheaply done, as the shales and fire clays are, in the largest part of their areas, found in close proximity. Also the sedimentary clays along the Ohio and Muskingum rivers are found within short distances of the fire clays and shales of the hills on either side.

Written for the CLAY-WORKER.

## BRICKLAYING.

### Sixth Paper.



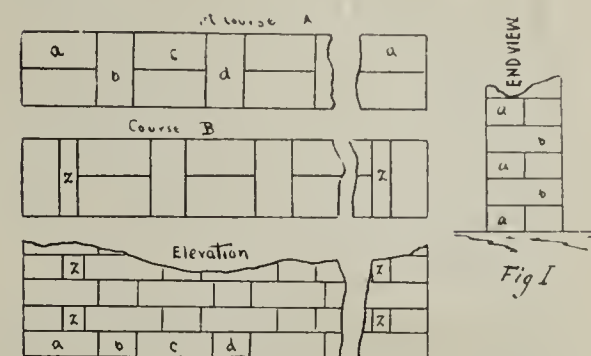
AS HAS already been intimated, there are a variety of arrangements into which bricks are placed in juxtaposition; that is, in position with each other, so as to form walls of various widths, and preserve, at the same time, the greatest strength and exterior finish. Some of these will be shown by diagram, which is at once the quickest and easiest method of showing the manners of laying.

Two courses of a nine-inch wall will be shown. It will be remembered that a nine-inch wall is one of the thickness of a single brick, and which is only used in the construction of low houses and walls that support little weight. Such walls may have square ends or be provided with a "return," both of which forms will be shown.

Fig. 1 shows first course A of a nine-inch wall in Flemish Bond, both ends of which are square; the second course B of the same wall, both being the ground plans. In the same figure are shown an elevation and end view of the same wall. The first course as shown

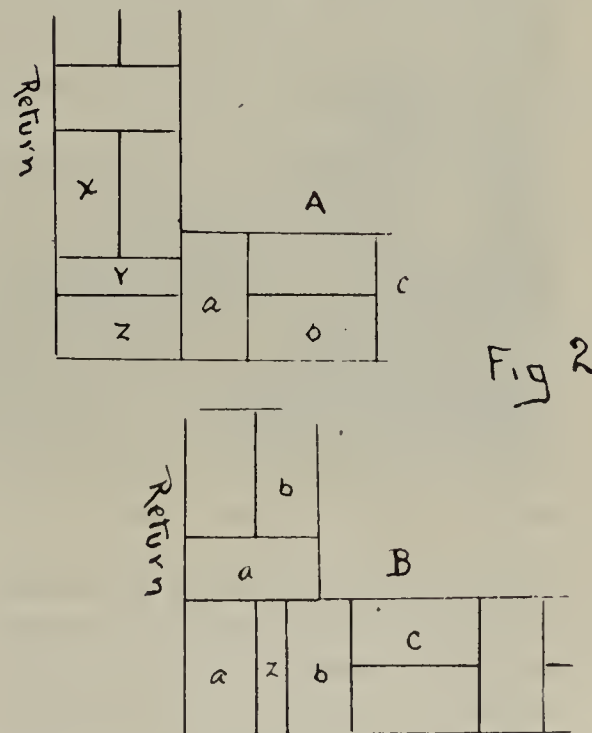
is composed of two stretchers *a* followed by a header *b*, two stretchers *c*, a header *d*, *a* and so on, the alternation being continued.

The second course commencing with a header *a*, is followed by a half closer *z*, another header, and then follow two stretchers.



The result is, as is easily seen in the elevation and end view, that a strong wall is made in which there is an almost perfect overlapping or bonding of every element of brick. This is a very desirable feature and is seldom accomplished more perfectly than in the wall that is being described.

Fig. 2 illustrates two courses A and B of a nine-inch wall with a return at its end. In this the first course is composed of header *a*, two stretchers *b*, header *c*, two stretchers *d*, and so on alternately. The return wall begins with stretcher *z*, half closer *y*, two stretchers *x*, followed by alternations of headers and pairs of stretchers. The



second course begins with header *a*, half closer, *z*, header *b*, two stretchers *c*, and alternation of headers and stretchers. The return wall commences with a header and the stretchers and headers are alternated as in the usual Flemish Bond.

"NIMBUS."



Written for the CLAY-WORKER

## HINTS ON BRICKMAKING.

No. 87.

BY R. BRICK.

UP OR DOWN, OR UP AND DOWN.

THESE has been some interesting and profitable discussions of late in the CLAY-WORKER on the subject of kilns. The importance of the subject calls for exhaustive discussion, that we may learn something we need to know. It has been shown that each of the different kilns have their advantages, as well as some defects. There are many points to consider—their first cost and their durability, and their economic features, and the quality of the ware they turn out.

The down draft kilns have one important point in their favor, which has been mentioned. The bricks that are exposed to most intense heat have least weight or strain on them, the heat being diffused and tempered before coming in contact with bottom bricks that carry the greatest weight. There is much greater loss of heat by radiation in down draft kilns, as the live heat is radiated before coming in contact with the ware, while in an up draft all radiating heat first passes through the ware.

In this discussion it must be borne in mind that up draft kilns can have crowns as well as down draft kilns, and that improved up draft kilns protect the bottom courses or arches of kiln as thoroughly from sudden change of temperature as does the down draft protect top of kiln.

Another point should be considered in down draft kilns; about 28 to 32 courses in height are set, while in up draft kilns they are set from 40 courses to 50 courses high. This adds fully 50 per cent. to the weight that must be sustained by bottom courses.

As to uniformity of heat from bottom to top; as sure as the sparks fly upward, a more uniform heat can be sustained by an upward moving volume of heat, than the reverse, each being protected from atmospheric influence by a brick arch. Where there is no crown, two or three top courses will be affected by the atmosphere, reducing the temperature at that point. A good substitute is a layer of three inches of fine slack at the finish. This acts as a blanket and makes it possible to maintain uniform heat to top, burning bricks red under the platting.

There are some rules, however, that

apply alike to either process. First, a brick should be heated uniformly through its entire bulk before the shrinking or finishing heat is applied. If this be true of one brick, it applies with equal force to all the bricks in the kiln. A brick burned in this way will show uniform color and hardness throughout when broken. If heat is applied too rapidly and shrinkage begins on the surface before center is sufficiently heated, the brick near surface will be of different color from the center.

The same result will be noticed in the kiln as a whole, if shrinking heat is applied to a kiln of bricks before it is uniformly heated in every part. There will be a marginal stripe in the kiln—black in one part, red in another, and yellow margined stripe or border which is quite deep in some cases. By whatever process they are burned (coal in clay excepted) the whole mass of ware should be as near as practicable uniformly heated to a point near that of shrinking before the finishing heat is applied; then it should be maintained at that degree until finished. A kiln should be so constructed that the burner can see how his heat is operating at all times, and not only this, but he should be able to control not only the degree, but the distribution of the heat as well. He should know whether the kiln is shrinking alike in every part, and how much. If he cannot see or know these things, he is in shoal waters and needs the help of a pilot familiar with the location of the breakers.

To carry out these rules, time is a prime factor, as time is required to bring the ware to the condition required. Heaving fuel into a kiln faster than it can be consumed, and before it is ready for it, is like firing all your cartridges at the enemy before he is within bullet range. It may be amusing but it is unprofitable.

I believe the claim of superiority of up draft in watersmoking has not been disputed. In a down draft, the bricks that are subjected to the most moisture or steam, have most weight on them. In an up draft the bricks thus exposed have least weight upon them.

Here then comes in the up and down draft kiln, up draft for watersmoking and down draft for burning. Theoretically this kiln is the best, combining the good points of both. Whether the up and down draft principle can be made a success in practice, has not

been fully demonstrated. When we undertake to use dampers within a hot kiln, there are many difficulties in the way. They must be made of fine clay and are liable to warp with intense heat on one side and refuse to move into position to change drafts.

One of the largest brick manufacturers in the West spent several thousand dollars incorporating the up draft into his down draft kilns, but after a thorough, practical test, abandoned the combination. Heat is exceedingly sensitive and hard to control, and to change your ascending volume of heat, to a decending volume by the turn of a damper is hardly practicable in a kiln of ordinary dimensions.

This discussion applies particularly to building bricks, and to burn them economically they must be burned in large quantities, from two hundred thousand to five hundred thousand in each kiln. Many brickmakers think that dry press brick can be burned successfully only in down draft kilns. One plant in St. Louis that makes 30 millions dry press brick by hydraulic process, and ten millions by the plastic process, burn their entire output in up draft open top kilns, and do good burning, too. The writer has been informed by men interested in brickmaking in St. Louis, that by far the larger portion of dry press bricks, including hydraulic brick, are burned in up draft open top kilns. As fine kilns of fire brick as the writer ever saw were burned in open up draft kilns, the top being covered with fine coal at the finish.

Now we come to vitrified paving bricks. Here the down draft kilns seem to have it all their own way, and are probably better adapted to the burning or vitrifying of bricks than any other. And yet it seems that, on even the most successful paving brick plants, the bricks that are not hard enough, added to those that are unfit for market because of having been too hot, make up a large per centage of the whole output. So the up draft folks may yet divide even the burning of street pavers with their down draft friends.

Let the discussion go on. Bro. Crary seems to have drawn the fire of many down draft batteries on his devoted head. This article is simply a diversion in his favor. We only want to help "hold up Aaron's hands."

THE man who is so busy he has not time to read about his own business, is too busy to be a good business man.—*Ex.*



## THE GREAT NORTHWEST.

I have received the January and February numbers of the CLAY-WORKER as subscribed for by the Board of Trade. I am very much pleased with them, especially the Convention number.

Thinking that a short letter from the West would be of interest to yourself and readers. I will give you a few items regarding this section of the country.

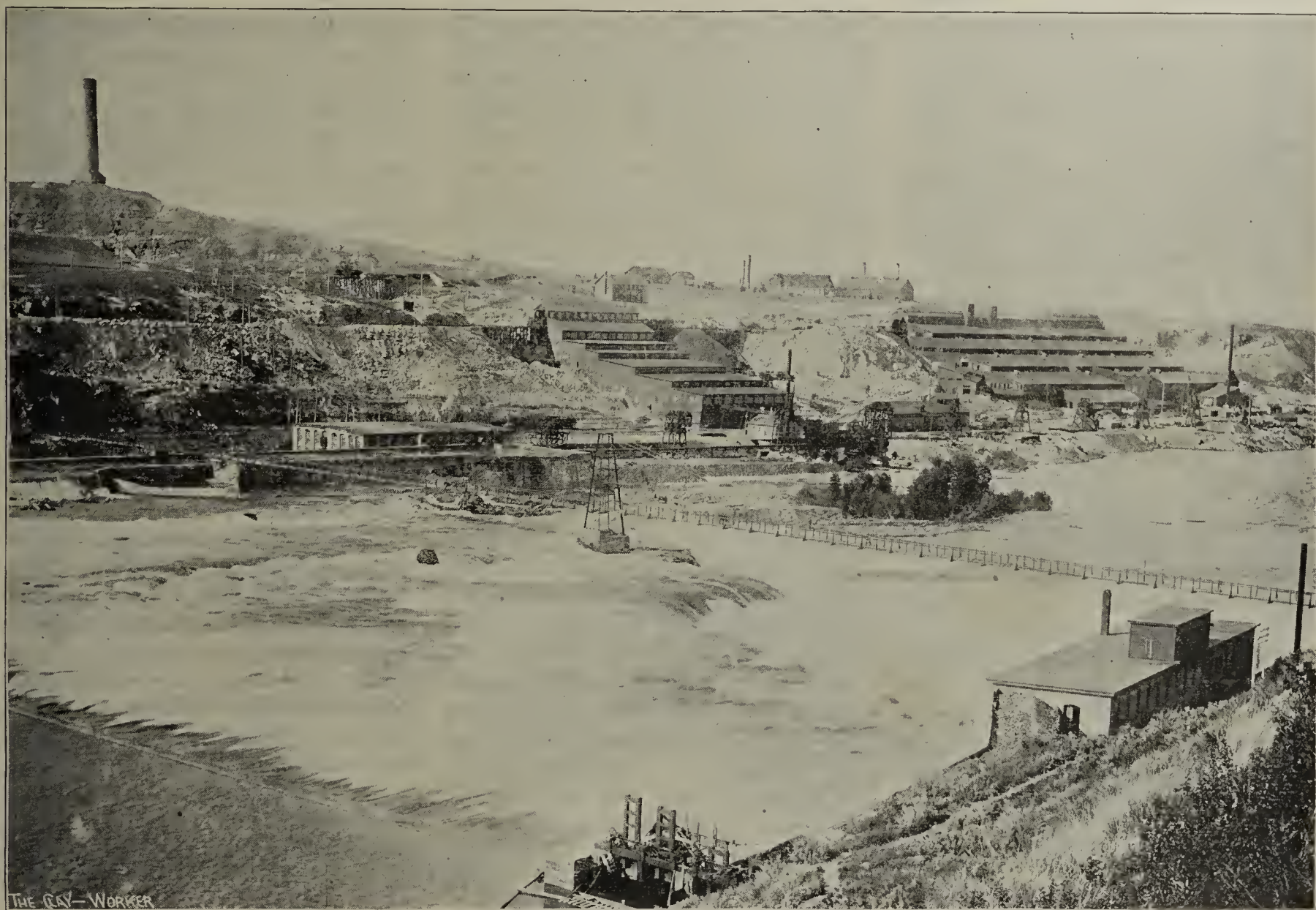
The low price of lead, silver and wool and prevailing hard times has been quite a draw back to Montana for the past several months, but there has been

paying careful attention to the management and breeding of their flocks, the wool industry will continue to thrive. The past winter has been very mild and the stock on the ranges are in splendid condition. The copper industry in Montana has grown to enormous proportions. Our copper industry output is now far in excess of any other state in the Union, and with the improved methods of smelting and refining the product is of the best. The electrical refined copper of Great Falls has been adopted as the standard of the world.

The brick business in this city is well

The output from the Sand Coulee Coal Mine, 12 miles from here, continues to increase. They are now shipping over 3,000 tons per day, and within 60 days the Belt coal mines will be shipping at least 1,500 tons per day.

The building of the large flouring mill by the Washburn, Crosby Company of Minneapolis and the erection of a large brewery and malting works by the Montana Brewing Company will make a home market for a large amount of grain. There has been already several thousand acres of land plowed ready



THE LARGEST ELECTROLYTIC REFINING PLANT IN THE WORLD, GREAT FALLS, MONTANA.

no suffering or real need as there has been in many sections of the East, especially in overcrowded cities. A great many of the lead and silver mines here have started up again regardless of the low price of the white metal. The miner has started work again in the most economical way and is adapting himself to the existing circumstances. The wool men are likewise cutting off expenses at every possible point and by scouring wool here at home and saving the freight on the grease and dirt and by

represented. We have five yards making common brick and two yards making fire brick. One of the fire brick companies has a fine body of clay suitable for making sewer pipe, and has put in machinery for that purpose. The protection afforded by freight on the goods of eastern competitors, makes the manufacture of fire brick and sewer pipe a very desirable one here. There is a large home market for fire brick the year round, owing to the quantity used by the various smelters.

for crop this spring, within a short distance of Great Falls.

Every indication points to a busy and prosperous season here during the coming summer.

Thanking you for your kind indulgence and wishing you the success which your paper deserves, I am,

Yours very truly,  
Great Falls, Mont. E. W. KING.

THE death of an ossified man in Tennessee is reported. The *Chicago Tribune* says he died hard.



Written for the CLAY-WORKER.

## PROPERTY RIGHTS.

### No. 3.

#### JUDGMENT OF OTHER STATES.

THE article of the Constitution which provides that the judgements of one State, shall have full faith and credit in every other, may be well construed, as intended to apply only where the persons against whom they are sought to be enforced, came within the operation, either of the general law, or of the particular proceedings on which they were founded. Where such has not been the case, the judgment is obviously void, and a plea alleging that it is so, does not take effect by denying the merits of a previous judicial determination of the controversy, but by establishing that so far as the defendant is concerned, it was never made the subject of an authoritative adjudication.

In other words, as a judgment rendered against a party who is not within the sovereignty in which it is pronounced, and he has not voluntarily submitted himself to its authority, by appearing in the action, is a mere nullity so far as relates to him personally. It may be presumed to be without the scope and meaning of the Constitution, which may be held to have intended to give force of an absolute conclusion to acts really judicial in their nature, and not to such as are simply void in point of positive law, and moral and international obligation.

The judgment of another State is put, by the Constitution, on the same footing as a domestic judgment. But this does not prevent an inquiry into the jurisdiction of the court in which the original judgment was given, to pronounce it, or the right of the State itself to exercise authority over the persons or the subject matter. The Constitution did not mean to confer a new power or jurisdiction, but simply regulate the effect of the acknowledged jurisdiction over persons and things within the territory.

This view was adopted by the Supreme Court of Massachusetts, in an action of debt, brought on a judgment obtained in the State of Georgia; to which the defendants pleaded, that neither of them was served with process, or appeared personally or by attorney in the original action. And also that, one of the defendants, never was an inhabitant or resident of Georgia, was not served with process, and never appeared in the action. The plaintiff replied, setting

forth the record of the proceedings in Georgia as an estoppel; upon which the defendants demurred. The record thus set forth, contained an allegation that the defendant, against whom the suit was brought, came by their attorney before the chosen to try the issue in the cause; but it also appeared from the return to the writ, and the recital of the defense taken, that but one of them had been served with process, and that the other had not joined in taking defence to the action. Under these circumstances it was held, that the mere conclusion of the judgment, would not preclude the parties from contesting the fact of jurisdiction; and that the recital in the record was not sufficiently certain to act by way of estoppel; for although there was an allegation from which it might be inferred that both the defendants had appeared before the jury, there were others which more conclusively showed, that only one had been served or taken defence. It was therefore decided, that as the plea was good in itself, and the replication not sustained by the record produced for its support, the judgment which constituted the cause of action was invalid as to one of the parties, and being joint in its character, must be held to have failed as to both.

In support of this view of the law, it was pointed out, that a judgment could only take effect by virtue of the laws of the country or sovereignty in which it was rendered, and that where a party neither subject to those laws by residence nor allegiance, nor made answerable to them by the service of process or appearance, the judgment was without any original effect, and could not be supposed to come within the scope of the constitutional provision.

"The laws of a State," it was said, "do not operate except upon its own citizens; nor does a decree or judgment of its judicial tribunals, except—so far as is allowed by country, or required by the Constitution of the United States, and neither of these can be held to sanction so unjust a principle." If the States were merely foreign to each other, a judgment in one would not be received in another as a report, but merely as evidence of debt controvertible by the party sued upon it. By the Constitution, such a judgment is to have the same effect it would have in the State where it was rendered; that is, it is to conclude as to everything over which the court which rendered it had jurisdiction. If

the property of a citizen of another State within its lawful jurisdiction, is condemned by lawful process there, the decree is final and conclusive. If the citizen himself is there, and served with process, he is bound to appear and make his defence, or submit to the consequences. But if never there, there is no jurisdiction over his person, and a judgment cannot follow him beyond the territories of the State; and if it does, he may treat it as a nullity. And the courts here will so treat it, when it is made to appear in a legal way, that he was never a proper subject of the adjudication.

It is held in most of the courts of this country, that the judgments of other States are only prima facie evidence of jurisdiction, although conclusive upon the merits in controversy, when the fact of jurisdiction is admitted. And if successfully impeached on the latter point, necessarily fall as to the former.

The question was fully examined in a case in Rhode Island which decides that, although the judgment of a sister State should be regarded a prima facie evidence of the jurisdiction of the court by which it was rendered, it is still not conclusive and will, if successfully impeached on this point lose its rank as a judgment, and be wholly void on all others. And this course of decision has now received the sanction of the Supreme Court of the United States, which holds that the judgment of one State will not be conclusive in another, unless the court had jurisdiction of the parties, and that a State cannot give to the proceedings of its tribunal a greater or more extensive operation, than that of the laws from which they derive their whole force and virtue, and which are necessarily confined to those persons who reside within the State itself, or are in some other way justly amenable to its jurisdiction.

[TO BE CONTINUED.]

## INVENTORS OF IMPROVEMENTS CANNOT EVEN PARTIALLY USE PATENTED ELEMENTS.

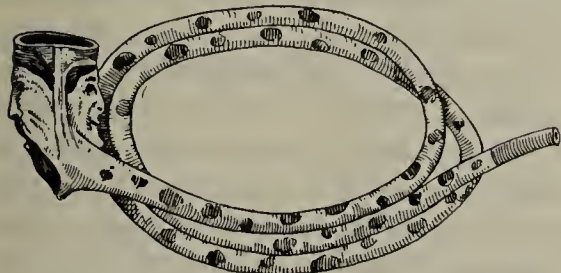
THE inventor of an improvement upon a previously patented combination cannot, as the United States Circuit Court holds, use one of the patented elements in a dwarfed and incomplete way, but by its use receive the old resultant benefit, and escape the charge of infringement by reason of the low percentage of such use.





ENGLAND, France and Holland the tobacco pipe industry has reached extensive proportions, and the American trade has been almost entirely supplied from those countries.

England was the first civilized country to produce smoking pipes, in the latter part of the sixteenth century, soon after Sir Walter Raleigh had introduced the custom, after his visit to America where he found the Indians enjoying the luxury of tobacco. Before the commencement of the seventeenth century, Holland had taken up the manufacture of tobacco pipes, the main centre of the industry being at Gouda. These early pipes were made of white clay and possessed diminutive bowls and long stems. The manufacture is still carried on extensively at Gouda, and at the Centennial Exposition in 1876 some remarkably fine examples from there



Early Staffordshire Pipe (Glaze Pottery) Collection of J. B. Gray.

were exhibited, with stems four feet in length, elaborately decorated over the entire surface with raised designs. Of such lengths were these fragile objects that a smoker could not reach the bowl to light it, with his extended arm, but was obliged to secure the services of a second person.

Regular smokers of clay pipes usually prefer those with long stems, in the belief that the smoke has an opportunity to cool before reaching the mouth and at Broseley, in England, long-stemmed pipes, either straight or slightly curved, have been made for three centuries and are still manufactured, and have become noted the civilized world over as "Broseley's" or "Church Wardens."

In some parts of Staffordshire elaborately modeled clay pipes were made in the seventeenth and eighteenth centuries, of grotesque forms, and generally colored with tinted glazes. Some of these were coiled in the form of a

trumpet, thus securing the desired length of stem in a compact form as in the example here figured, from the collection of the late Mr. William Bragge, of Birmingham, England, and now in the possession of Mr. Jerome B. Gray, of West Chester, Pa. This is a Janus-faced pipe which measures six inches from tip of nose to end of stem, which if straightened out, would extend to twenty-six inches. The Bragge collection of smoking paraphernalia numbered, before it was dispersed, twenty thousand specimens, and was the most extensive of its kind ever gathered together.

Pipe sculpture in clay has perhaps been carried to greater perfection in France than anywhere else, some single manufacturers having produced as many as several hundreds of different designs of heads, finely modeled and often enameled in colors. These, while revealing a high degree of artistic workmanship, are produced from moulds in large numbers and at a very low cost. Wedgwood, the greatest of English potters, did not consider the manufacture of tobacco pipes unworthy of his best art, for we find among his productions many pipe-bowls which have been decorated with exquisite cameos, reliefs of classic subjects.

In the United States we know that clay pipes were made fully as early as 1690, and in 1712 a pipemaker was producing long-stemmed pipes in Philadelphia, after the pattern of the Broseley article. The industry, however, has never, until quite recently, gained any considerable foothold in this country, on account of the difficulty in securing suitable clays. But pipe clay deposits, of excellent quality, both white and red, have been discovered in various parts of the United States, and a number of manufactories have sprung up within the past twenty years. Thus far, however, few attempts have been made to produce, on this side of the Atlantic, pipes of elaborate form or decoration.

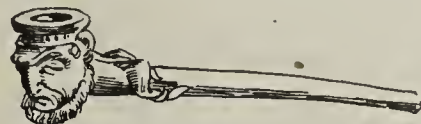
During the the first half of the present century pipe-bowls made here were either plain or modeled in the form of the human head, usually in the semblance of an Indian. In 1856 John Gible was making, in Lancaster County, Pa., a pipe-bowl of this description, but the production ceased many years ago. It is quite likely that some of our earlier American pipemakers



Red Clay Pipe-Bowl, By John Gible, 1856.

may have carried the art to a higher degree and produced actual portraits of public men.

Some years ago a portion of a red clay pipe-bowl was found in the bed of a creek, on Vancouver's Island, which was evidently intended as a portrait of Henry Clay, produced probably during the presidential campaign of 1844. On one side, in raised letters, was the word Henry, while on the opposite was the word Clay, while around the neck were thirteen stars, alternating with the same



"Dick Deadeye," by A. Peyrau, About 1880.

numbers of arrow-points or barbs, in relief.

This was in all probability made in the United States and dropped by some explorer.

Previous to 1880 Mr. Peyrau, a Frenchman, came to New York and for some years made hand-modeled pipe-bowls of red terra cotta, some of which were excellent portraits and caricatures of prominent Americans of the day, while others were character designs, such as a Negro's head, an Irish woman, the girl of the period and Dick Deadeye, in Pinafore. A miniature pipe, probably designed as a cigarette, which is above shown, is characteristic example of Mr. Peyrau's work.

Cheap English pipes of white clay, were brought to this country in large quantities two centuries or more ago for trade with the Indians, and many examples have been turned up in the shell-heaps of the Atlantic Coast, in Indian graves in Pennsylvania and New York, and some of a later date have been found on



the sites of Revolutionary camping grounds in the vicinity of New York City, where the British were quartered. These often bear marks and initials of the makers, and some of them can be identified as having been made by particular potters of the seventeenth and eighteenth centuries.

Dr. Charles C. Abbott has recently discovered, on an island in the Delaware river, opposite Burlington, N. J., a large quantity of fragments of ancient clay pipes of British and Dutch manufacture, ranging in date from the latter part of the seventeenth century to the middle of this. It is known that an Indian



trading post was situated there at one time and the variety and quantity of these relics which Dr. Abbott has exhumed indicate an extensive traffic in these imported objects.

Although we have heretofore depended largely upon foreign countries for clay tobacco-pipes consumed in this country, there seems to be no good reason for continuing the importation to such an extent. With an abundance of suitable clays at our own doors and a sufficiency of skilled labor at command, the time has come when we should be able to produce an article as good and as low-priced as can be brought from abroad. There is only lacking the proper enterprise and artistic application to insure commercial success in the production of these objects. We would suggest the reproduction in a modified form of early foreign examples, which combine artistic modeling and coloring with the application of scientific principles, such, for example, as the twisted pipe figured above. Let our pipemakers produce some original patterns of artistic or grotesque design and finished workmanship, and they will find a ready market for their wares at home, for the field is broad and the demand is constantly increasing.

Written for the CLAY-WORKER.

### THE MANUFACTURE, SETTING AND BURNING DRY PRESSED BRICK.

BY J. W. CRARY, SR.

IN former writings in CLAY-WORKER, I have given the theory upon which brick may be made of clay pressed in a dry condition, but in order to do this all the necessary conditions must be complied with. First, the clay must be homogeneous. A stratum of strong clay, then one of weak clay, then one of sandy clay, will not do for making dry pressed brick with profit.

A clay bed for dry pressed brick should be nearly alike from bottom to top. It should not be wet or tough like potter's clay, but comparatively dry and pulverulent. Then it should be hauled to a shed and lay under cover for at least two weeks before taken to the machine. The moisture thus becomes equalized, and the clay is easily pulverized. The pulverizing and incorporation should be as complete and perfect as possible. Second, the dies or molds of the machine must be evenly filled with the same weight of clay in every mold. Then a certain maximum press-

ure must be had, in order to insure a perfect compact of all the particles of clay, and thus perfect their co-hesive attraction — the only force that unites the particles of clay in one solid body.

These two conditions being fulfilled, the next in order is to dry the brick, if it be necessary, and set them in a kiln. But the cost of drying may be avoided by the proper manipulation of the clay, and the brick set directly from the machine into kilns for burning.

#### THE BEST KILN FOR BURNING DRY PRESSED BRICK.

A slow, steady, well diffused heat is best to watersmoke any kiln of brick, but it is absolutely essential in the safe and effective watersmoking of dry pressed brick. If air, heated to about 180 degrees F., could be distributed equally under the entire bottom of a "green" brick kiln, it would be the very best way to watersmoke it and save time and fuel. A kiln is described and shown by diagram in my book, "Brickmaking and Burning," that is well adapted to the burning of dry pressed brick, but if a larger kiln be needed, the same result can be had by building a kiln about 25 feet wide and any length desirable for a large quantity of brick.

#### THE CHIEF OBJECT IS ATTAINED BY THE "SETTING" BRICK AND THE FURNACE.

Setting brick is of the first importance. No kind of a kiln can be built that will insure well burned brick, unless the brick are "set" right. To do this, the setter must know and understand the true theory as well as the art of setting. To get a good draft for the combustion of fuel, to the best advantage, the inlet of cold air must not exceed one-third of the outlet of hot air with the gases; so that as a rule, if there be three feet of cold air entrance into the furnace, there must be six feet (superficial) outlet. This would require the brick to be set in a brick kiln, about three-fourths inches apart, and dry pressed brick should never be set less than three-fourths of an inch apart.

The benches, overhangers and binding courses should all be set skintling, diagonally across, so that there would be a free passage of the hot gases up through the kiln. After the binding courses over the closing overhangers are on a running course across the kiln, set fire brick on the length of two, (about an inch apart) should be put on; then the regular setting of the body of kiln is started. The brick may be set skintling all the way to top of kiln, or, if the

usual way of setting is preferred, five brick instead of six should be set across the length of two, all the way to the top of kiln. Then the top should be platted so as to be as open as the setting, thus giving a free escape for smoke and gases. A kiln thus set, will create a draft that will cause ready and clear, rapid combustion of fuel and the unobstructed escape of the watersmoke.

It is a common practice to set brick in kilns too close, especially in the arches, and then put the platting on too tight, so that the escape of the watersmoke is sluggish, and much of the water in it is absorbed by the brick.

#### WITH FREE COMBUSTION OF FUEL AND STRONG DRAFT UP,

Very little of the watersmoke is retained by the brick, and if the heat in the furnaces and arches is not above steam heat, there is no danger of softening the kiln to a "water settle," and the drying off process is accomplished with a saving of time and fuel, and the kiln is in fine order for the heating up and second stage of burning.

#### FURNACES BEST FOR THE KILN I HAVE DESCRIBED.

The furnace should extend out from the kiln five feet. Of course, this includes thickness of the kiln wall. The proper construction and working of the furnaces of a kiln is of like importance with the setting of it, and a fault in either will certainly prevent success in burning however skillful the one in charge of the kiln may be.

#### THE REAL VALUE AND QUALITY OF DRY PRESSED BRICK ARE THINGS THAT HAVE BEEN OVERLOOKED.

As I have said, the two conditions of clay and the manufacture of it into raw brick are of the first importance, where a perfect good brick is wanted. But however perfect the raw brick, it is no more a brick than bullion is a coined dollar, unless it be perfectly burned.

A brick made of soft, well tempered clay may pass inspection, and be classed as a good brick, without perfect burning. But clay pressed dry must be vitrified to a certain extent, in order to maintain the perfect cohesion of its particles. Gold dust is not solid gold until melted, and clay dust not fused, though made compact by pressure, cannot become a solid, tenacious body. If we take a salmon, dry pressed brick and cut it with a tool, we find that its molecules are detached as we cut it, but if we take a well made dry pressed brick that is perfectly burned, we can



cut it to a fine, sharp edge without showing the least fracture or granulation. This shows conclusively that the perfect burning of dry pressed brick is absolutely essential, in order for the manufacturer to fairly compete with the soft mud process.

A dry pressed brick must be heated slow, then when the maximum heat is reached, the heat must be kept up until it passes clear through the brick, then it must be retained at least ten hours before the kiln be closed, and after the kiln is closed, the top of it must be covered with clay (where not already covered), and the kiln must be allowed to cool by the natural radiation of heat or absorption by the atmosphere. Any attempt to force the cooling of a brick kiln is damaging, and especially so with a kiln of dry pressed brick.

#### THE DRY PRESS BRICK MACHINE MEN MAY NOT LIKE MY TALK,

Yet if they will examine my writings they will see that I am about the best friend they ever had. I advised brick machine men generally, to send out expert brickmakers to inspect the clay beds they expected their machines to work in, and if the clay was suitable for their machine, offer to put it up and make at least one good kiln of brick and burn it successfully, and that would guarantee the price and pay for the machine and recommend it to others. Some of my good friends, and especially "Tim Tinker," in the April CLAY-WORKER, very kindly volunteers to show me the fallacy of my advice to brick machine men. He wants to know why brick machine men should be called upon to inspect clay beds, and then put up their machines and guarantee their success by making and burning a kiln or two of brick? Then he asks, "Where would you get the expert brickmakers to send out to take care of and sell brick machines?"

This is the substance of his argument. I answer: No brick machine man is obliged to do as I suggest, nor do I charge anything for advice, but brick machines are not hot cakes or beer, and they will not sell in the shop until they have been taken out and tested, and if that is so, why should a wise brick machine man refuse to prove his machine by a proper competent test?

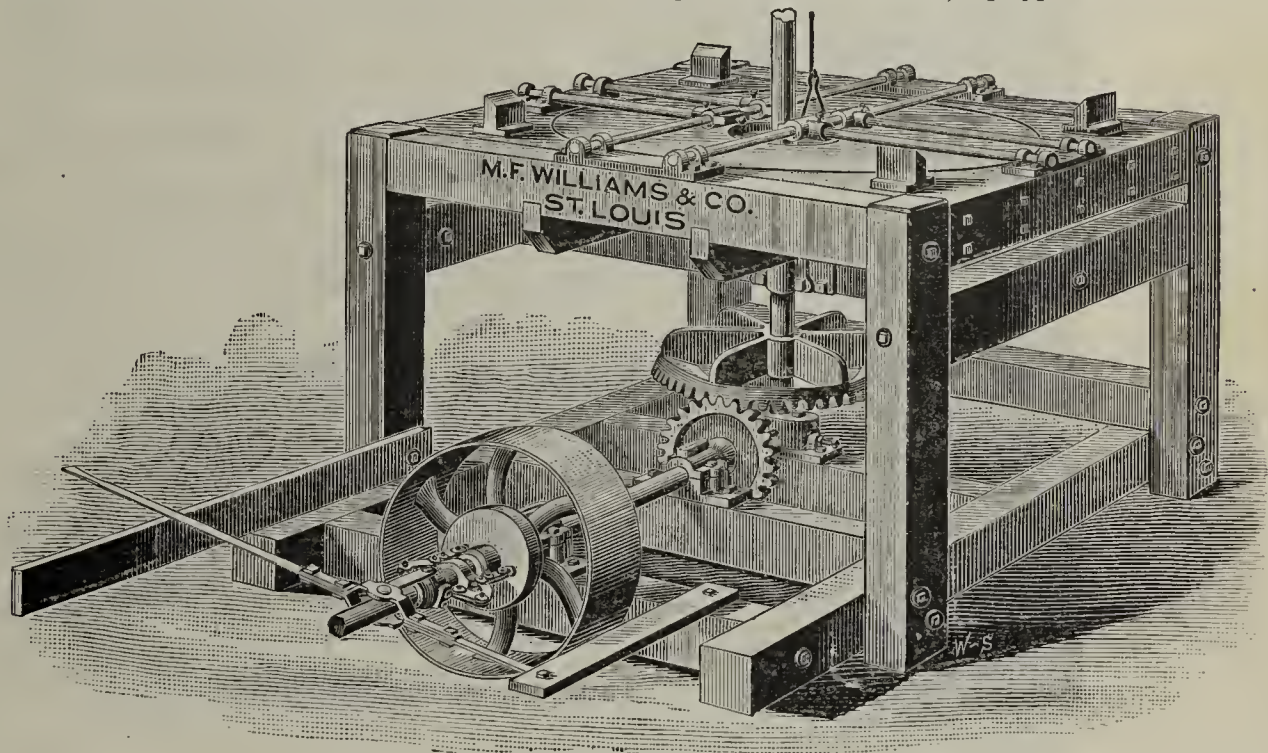
Bro. "Tinker" wants to know where I would find and get the experts to put up machines and burn a kiln of brick? I would get the expert brickmaker by

offering to pay him for his skill, provided he would do what I wanted done. A demand will always bring a supply in any fair thing, and until the character of a machine is generally known to be excellent, it would pay the owners of it to hire a first-class man to go round and prove the merit of the machine by a fair test. The buyer of the machine would be glad to see that his clay bed was good as well as the machine.

#### WILLIAMS'S SIZING MACHINE.

##### For Dry Press Brickmakers.

THE accompanying illustration represents *Williams's Sizing Machine* for shaping brick that cannot be shaped upon the dry press—such as *arch brick, triangular brick*, and brick for *obtuse and acute angles*. This machine is operated by 4 boys; the grinding medium being sand and water, which is fed onto the wheel through a sluice-box



not shown. The clamps will accommodate the above shapes, or clamps can be made to grind any other angle. The bottom of clamp being hinged, and adjustable to different angles, the putting in and taking out of the brick requires but a moment—only one thumb-screw to operate. The clamps, guides and rests are all adjustable and very simple and durable. The upright shaft is adjusted by the tallow-pot below, which keeps the wheels always in tram. The wheels are made thick enough to admit of refacing, which should be done every season in order to insure even work. These machines are now in successful operation in many large works. The manufacturers, Milton F. Williams & Co., 2705 and 2707 N. Broadway, St. Louis, Mo., will be pleased to give further information and quote prices.

#### A SCHOOL FOR CLAYWORKERS.

BELOW we give the full text of the bill recently passed by the Ohio Legislature, establishing a branch for clayworkers in the University of that State. It is not a perfect document but may serve as a guide for the law makers of other states who may wisely follow the good example of the Buckeye state. The bill has been signed by the Governor and is now a law. The thanks of clayworkers, not only of Ohio but of the entire nation, is due to our able contributor Mr. Edward Orton, Jr., to whose masterly efforts is mainly due the introduction and final passage of the measure.

##### A BILL

To provide for the establishment of a course of practical and scientific instruction in the art of clayworking and ceramics in the Ohio State University.

SECTION 1. Be it enacted by the General Assembly of the State of Ohio, That the trustees of the Ohio State University be and they are hereby required to establish in said university a department of ceramics, equipped and de-

signed for the technical education of clay, cement and glass workers, in all branches of the art which exist in this state, or which can be profitably introduced and maintained in this state, from the mineral resources thereof, including the manufacture of earthenwares, stonewares, yellowwares, white-ware, china, porcelain and ornamental pottery, also the manufacture of sewer pipe, fire proofing, terra cotta, sanitary claywares, electric conduits and specialties, fire bricks and all refractory materials, glazed and enameled brick, pressed brick, vitrified paving material, as well as the most economic methods in the production of the coarser forms of brick used for building purposes; also the manufacture of tiles used for paving, flooring, decorative wall paneling, roofing and draining purposes, also the manufacture of cement, artificial stone and all kinds of glass products and all other clay industries represented in our limits.

SECTION 2. Said department shall offer special instruction to clayworkers on the origin, composition, properties and testing of clays, the selection of materials for different purposes, the mechanical and chemical preparation of clays, the laws of burning clays, the



theory and practice of the formation of clay bodies, slips and glazes, and the laws which control the formation and fusion of silicates.

SECTION 3. Said department shall be provided with an efficient laboratory designed especially for the practical instruction of clayworkers in the list of subjects enumerated in the second section of this act, and also equipped to investigate into the various troubles and defects incident to every form of clayworking, which cannot be understood or avoided except by use of such scientific investigation. Said laboratory shall be equipped with apparatus for chemical analysis, with furnaces and kilns for pyrometric and practical trials, with such machinery for the grinding, washing and preparation of clays for manufacture as is consistent with the character of the department.

SECTION 4. Said trustees shall employ to conduct this department of ceramics a compe-

#### MAKING BRICK IN CANADA.

THE names "Don Valley" and "Taylor Brothers" have been before the public for over half a century, and are household words wherever paper is used in the Dominion of Canada, Taylor Brothers, the predecessors of the present firm, being the pioneers of the paper trade in that section, the Don Paper mills having been established in 1845.

In connection with their mills on the Don, they have over 1,100 acres of land under cultivation and grazing. In 1891

It would be impossible to even attempt to describe the variety, color and design of them, so will not try; but will say just here that the firm have a "new catalogue" just completed, which gives a detailed description and illustration of each of them.

In plain and ornamental bricks, they have them in red, buff, browns, drab, old gold, obsidian, olives and mottled.

Mr. Tasker called attention to the fact that their red bricks were all shaded, and that they are the only company in Canada that can supply any quantity of one even shade or uniform color



VIEW OF DON VALLEY PRESSED BRICK WORKS FROM THE EAST.

tent expert, who shall unite to the necessary education and scientific requirements, a thorough practical knowledge of clayworking, and not less than two years actual experience in some branch of the art. It shall be his duty to teach the theoretical part of the subject and to conduct the laboratory for the instruction of students, and also to prosecute such scientific investigations into the technology of the various clay industries as may be practicable, and from time to time to publish the results of his investigations in such form that they will be accessible to the clayworkers of the state for the advancement of the art.

SECTION 5. There shall be appropriated out of the general revenues of the state the sum of five thousand dollars, to be expended in the organization, equipment and maintenance of said department, as provided for in the first four sections of this act, for the current year, and there shall be appropriated from the same fund the sum of two thousand and five hundred dollars annually hereafter for two years, for the salary, supplies and all other expenses of maintenance of said department.

SECTION 6. This act shall take effect and be in force from and after its passage.

while excavating, a rich bed of shale was discovered suitable for the manufacture of pressed bricks. Upon investigation, it was found to be in paying quantities, and the Don Valley Pressed Brick works were established.

Accepting the invitation of the firm to visit these, the writer took advantage of an off-day last week and spent a few hours in the valley with his pencil and camera.

Calling at the head office, 60 Adelaide St., East, Toronto, Mr. Tasker the business manager, kindly showed us the multitude of samples of their pressed bricks, which he has artistically displayed and neatly arranged on shelves around the walls.

throughout. In special colored brick, they make a full line of cream, light and dark-buff, gray, brown and trojan.

Their samples of terra cotta are particularly attractive, and include ridges, finials, panels, arches, chimney tops, string courses, tiles, etc., etc.

A specialty of which too much could hardly be said is their enameled brick for hearths, porticos, bathrooms, and such like, which are made in a large variety of colors and shades—browns, greens, blues, reds, creams, whites, blacks and fancy mixed shades.

A smile of satisfaction passed over Mr. Tasker's face when the question, "Where have you shipped your brick to and have they been used in any important buildings?" was asked.



Taking down his order book, it was found that they had been shipped to the following places: St. John, N. B., Halifax, N. S., Quebec, Que.; Montreal, Three Rivers, Ottawa, Cornwall, Belleville, Kingston, Port Hope, Cobourg, Peterboro', Lindsay, Orilla, Barrie, Collingwood, Hamilton, Brantford, Guelph, Galt, London, Stratford, Paris, St. Thomas, Windsor, Sarnia, Petrolea, Port Arthur, Winnipeg, Calgary Vancouver and many other places in Canada.

Among the many United States points to which their brick have been shipped we found Chicago, Detroit, West Superior, Wis., Belding, Grand Rapids, Mich.; Buffalo, Syracuse, Rochester, Watertown, N. Y., South Bend, Ind., and many other places.

Tower building (over 280 feet high); the Gluck office building, in Niagara Falls, N. Y.; Turkish bath building, and the Gold Dollar building, Buffalo, N. Y. The Gold Dollar building is the only one in the state of New York faced throughout with enameled brick. Home Savings bank, Chamber of Commerce and the Masonic temple, in Detroit; Fleming block, Windsor, Ont.; Paris Presbyterian church (700,000 brick over 125 carloads in that order); Belleville Hotel Co., limited, Belleville, Ont., Harry Crosby, M. P., president—(this is one of the finest hotels between Toronto and Montreal)—Commercial hotel, Berlin; postoffice and custom house, Petrolea; Bell Telephone Co's buildings, Ottawa; Montreal Presbyterian church (this building is to be of buff colored bricks),

by using these bricks, which can be procured at such a trifling advance of cost over that of the common bricks. The price of pressed bricks now is not half of that which had to be paid for imported bricks before these works were established.

Builders in this city and others have not been slow to appreciate this enterprise, and, as a result the firm have had to continually increase their facilities for supplying the demand.

Mr. Tasker having had his horse hitched to his buggy and brought around to the office door, he kindly offered to take us out to the works, an invitation which was gladly accepted. The trip up Jarvis street, with its beautiful lawns decked in a profusion of bright colored flowers and rare tropical plants; along



VIEW OF DON VALLEY PRESSED BRICK WORKS FROM THE WEST.

They also expect to ship a large consignment to England, and will be the only firm in America that have been able to do a satisfactory business in this line in Europe.

Among the many scores of buildings in the construction of which Don Valley pressed bricks have been and will be used might be mentioned: The new Athletic club building on College street, Bank of Commerce, corner of King and Jarvis St.; Massey Mission hall, Massey Music hall; City hotel, corner Simcoe and Front St.; St. Johns, Portland St., in Toronto. The Medical university, Buffalo, N. Y.; the Sibley & Holmwood building; the

and a score of others could be enumerated.

Toronto has always been considered one of the most beautiful cities on the continent from an architectural standpoint, as well as location. The architectural beauty of the city is being made still more attractive by the use of the Don Valley pressed brick in their manifold designs and colors, and the Taylor Bros., are to be highly commended for their enterprise in making this business the success it is, and putting it within the reach of every man who is building to add to the beauty and finish of his structure, and enhance its value

Bloor, over the Sherbourne street bridge and then along the winding roads, down the steep hills and under the rich profusion of foliage that canopy the beautiful drives through Rosedale, to the valley of the Don, the fresh air redolent with the fragrance of the sweet-scented clover, the new hay and the wild flowers, the wild picturesqueness of the surroundings and the grandeur of Dame Nature in her rugged wildness, led us to wonder why more was not done to make this part of the city better known, or if Torontonians realized what a health giving, beautiful spot this was, within five minutes' wa





"QUARRY," SHOWING UPPER OR BUFF BRICK CLAY BED.

from the street cars. But here we are at the brick works, which are most conveniently located, and the G. T. R., and C. P. R., both pass directly through the yard. Sidings are laid past the stock sheds, and cars are loaded with the minimum of labor and expense.

In the illustrations given of the works, one was taken from the west, and another from the east, conveying a good idea of their extent and the convenience of their position. The views of the quarry will give some conception of how the shale is taken out.

There are two beds of this material, the top being used for buff colored brick and the lower for the red. The latter is of a bluish gray color in its natural state, and is turned red by the heat in burning.

This bed has been found upon investigation to extend to the depth of 440 feet, and to cover an area of about half a mile wide and two miles long, so that the supply can be said to be almost inexhaustible.

The brick material is found in alternate stratas, with a very fine quality of building stone, which is carefully quarried and sold to builders. There is also an extensive bed of sand and gravel which is supplied to contractors and others.

The material is so hard and solid that dynamite has to be used for blasting it out. From the quarry it is conveyed to the crushing mills, where it is put

through the grinding pans, which are provided with a pair of rollers weighing over three tons each, furnished by Frost Engine Co., of Galesburg, Ill., reducing it to a fine dry powder; from here it passes through the screening room, and on to the presses, three of which bear the name of The Simpson Brick Press Co., Chicago. They also have one 3-mold Andrus Press made at Keokuk, Ia. The dry dust falls automatically into the presses, and is submitted to a pressure

of over 100 tons for each brick, the presses making four bricks at each revolution. The result of this terrible pressure and the tenacity of the material is that the brick come out so hard that they are handled separately, and taken to the kilns to be burned. These kilns are constructed on a new principle, and are especially adapted for the burning of dry pressed brick, and have a capacity of 200,000 to 400,000 each. The firm have ten of these kilns, and are prepared in this respect to meet almost any demand, ensuring promptness in filling orders. The percentage of No. 1 brick taken from the kilns after each burning is nearly 95, and nearly the full 100 per cent. has been taken out.

The process of burning changes the color of the red brick from a dull, bluish gray to an exceedingly rich, bright cherry, none of them having that dead red appearance, so common in other pressed brick. This point of excellency is sustained by the bright, lively appearance of all the buildings in which Don Valley pressed brick have been used. They use no coloring or foreign matter in the manufacture of them. They are all made from the natural shale.

As the brick are taken from the kilns to the stock sheds, they are carefully sorted by men who are experts in the business, and do nothing else, securing a uniformity of color unequalled in America.



"QUARRY," SHOWING LOWER OR RED BRICK CLAY BED.



When shipping these brick, they are all carefully packed in straw, securing their safe passage and preventing the chipping of the corners.

#### THE TERRA COTTA DEPARTMENT.

After having followed the material from the quarry to the finished brick in the car, a visit was made to the modeling room. Here the moulds for the numerous designs for stock and those especially ordered by architects are carefully prepared by skilled mechanics.

The many beautiful designs for terra cotta work are also all executed here, under the supervision of an artist.

Their variety of stock designs is very large, but they make a specialty of furnishing this ware in any desired form or color from original designs by architects.

As soon as such contracts are completed the moulds are destroyed, so that there are no repeats. A set of exquisite moulds were just being destroyed at the time of our visit, and it seemed like a deliberate waste to do it, but this is one of the rules that the firm insist upon being rigidly adhered to. Several very fine specimens of terra cotta in string courses, caps, panels and arches were just being completed for Toronto, Belleville and Windsor contracts, and two beautifully decorated chaptrels for

the Belleville hotel, which weigh over 900 pounds each, were ready to go into the furnace.

The number of designs, as shown in their new catalogue is the largest variety but one that is made in America. This fact shows how rapidly the Taylor Brothers are being pushed into the foremost place among the brickmakers of America by the unequalled excellency of their goods.

They are the only firm in Canada who have been successful in turning out a perfect enameled brick. Their new furnace, recently erected, enables them to supply a perfect article, and, as a result, the demand is almost beyond their capacity to supply, but this is being rapidly remedied, and promptness in filling orders will characterize this department, as well as that of all others.



DON VALLEY PRESSED BRICK COMPANY'S WORLD'S FAIR DISPLAY WHICH WAS AWARDED TWO MEDALS.



The possibility of getting uniformity in any color has made pressed brick the most popular material for mantels and interior decorations. For the lining of churches and public buildings their light trojan bricks are the correct thing, and are having a large sale.

The first cost is a trifle higher than plastering, but, taking the durability and beautiful effects into consideration, they are by far the cheapest.

Another feature recently added is arch grinding machines, with which they can supply arches made to order on a very few days' notice. This is a great saving to builders, as it avoids all breakage in cutting, and makes a perfect job when completed, each brick being numbered, saving time in building them in. These arches are shipped in boxes, and this firm is the only one in Canada using these machines.

The plant is the largest in Canada, the firm having already expended over \$75,000 in erecting and completing the present works, and with the additions at present proposed, will expend during the next year as much more, and the output exceeds that of all the other makers in the Dominion put together.

They employ 65 hands all the year around, as pressed brick can be made as well in winter as in summer, and all their buildings are so constructed that they can be closed in, giving protection from the weather.

The motive power is a 175-horse-power Wheelock engine, supplied with steam by two 100-horse-power boilers.

The members of the firm are, John F. Taylor, who devotes his attention to the paper business, does the financing for the different branches of the firm's interests and is the recognized head of the entire business; Geo. A. Taylor, who looks after their immense farming interests, having over 1,100 acres under cultivation and grazing; and William T. Taylor who looks after the mechanical department of the paper mills and brick works.

The constitution of the firm is about as perfect as it could be, each department having a responsible head.

The different works have their own special superintendents, that of the brick works being Mr. John Millar, who seems to be especially adapted for this work, and gives his untiring and watchful care to the details of this immense business.

The business manager is W. F. Tasker, who can nearly be found at the head office, 60 Adelaide Street, East, Toronto.

Mr. Tasker has mastered the technique of this business, and has shown great adaptability for it, having to make out the orders for the different kinds of material as specified in the architects' plans, which are often anything but plain, necessitating a great deal of correspondence, at which he is an adept.

Judging by the amount of energy put into the business by the Taylor Brothers, the plant they have already constructed, the almost inexhaustible supply of this rich material, and the excellent quality of the brick as a result, the unlimited market and the great demand already created for the brick, with the registered trade mark "Don" on each of them, all point to this as the nucleus of the largest pressed brick works in America, if not in the world, in the very near future.

#### A NEW DEPARTURE.

The rapidly increasing use of brick for paving purposes, induced this enterprising firm to take up that branch of the business. During the past winter they purchased a complete paving brick equipment from the Wallace Manufacturing Co., Frankfort, Ind., including a Big Wonder Brick Machine and Cunningham's Automatic Cutting Table and Side Board delivery table and are now turning out a fine quality of paving brick.

Written for the CLAY-WORKER.

#### CHEMISTRY FOR CLAYWORKERS.

##### No. 22.

IN the last issue of the CLAY-WORKER I referred incidentally to the mistakes made in the attempts to economize fuel. Every laudable attempt in this direction—the economy of fuel—ought to be aided and encouraged by every brickmaker, potter and clayworker in the country, and for that matter by every manufacturer using fuel.

The scientific investigation of heat renders us familiar with the laws governing it, and this is a course which all intelligent people consider indispensable, but this however, is not sufficient of itself to enable us to economize fuel. We must acquire a knowledge of *how much* heat our fuel contains, and a further knowledge of how to extract *the whole* of it, also a good quota of good, hard common sense to enable us to *utilize* as much of it as is practicable, not forgetting the impossibility of utilizing it all. This precaution will only be necessary to the uninitiated, the unfortunates who

imagine that the science of heat is comprehended in the skillful handling of the shovel, the slicebar, and the rake, supplemented by a clean grate and ash pit.

Now it must be admitted that there are stokers or firemen who are very successful in their vocation who are very deficient in book knowledge. On the other hand, there are very indifferent stokers who can *talk* very intelligently about it. From these, or similar examples, it would manifestly be erroneous to conclude that education will diminish the ability of the one, or illiteracy increase the ability of the other. Conscientiousness and common sense, are very large factors in all operations demanding physical energy, and a due consideration of these two elements will very often dispel such illusions, or false deductions.

The mistakes of scientific men who have occasionally offered the severely practical man suggestions, have been paraded in the yard and the workshop as delicious tid bits of fun, and the ease with which ignorance floored intelligence has often been vividly portrayed and enjoyed by the *camille*.

Now supposing we invest hard common sense and scientific intelligence with equal shares of importance; this we think would be an equitable assignment, and the interchange of ideas between the unscientific practical man, and the unpractical scientific man would be mutually advantageous.

Peter Pindar (Dr. Wolcott) thus advises:

"There is a knack in doing many a thing,  
Which labor cannot to perfection bring;  
Therefore however great in your own eyes,  
Pray do not hints from other folks despise.

A fool on something great, at times, may stumble,

And consequently be a good adviser;  
On which, forever, your wise men may fumble  
And never be a whit the wiser.

Yes! I advise you, for there's wisdom in't,  
Never be superior to a hint—

The genius of each man, with keenness view  
A spark from this, or t'other, caught,  
May kindle, quick as thought,  
A glorious bonfire up in you."

As I have said above, the blunders of scientific men have been held up to ridicule by the *very* practical men. I propose to record some of the mistakes which have been perpetrated by practical men, and which, a little scientific knowledge would have prevented.

The generation of steam has been a prolific source of scientific enquiry, having for its object the saving of fuel. Many of these have been eminently



successful while others have been of questionable utility, and some absolute failures.

A gentleman of my acquaintance in the State of Illinois used to boast to me of his feat of abstracting *all the heat* from the waste gases of his steam boilers. This he accomplished—so he said—by double return flues at the sides of tubular boilers, he also claimed that this device *superheated his steam!* This deluded gentleman is the general manager of a manufacturing concern which consumes 52 tons of coal under its steam boilers every 24 hours. The boilers are a good type of tubulars, this alone determines the uselessness of additional side flues, to say nothing of the serious drawback attendant on any attempt to *superheat steam with cold waste gases!*

What vast sums of money have been expended and what immense periods of time have been wasted on that beautiful but delusive theory of returning the waste gases and smoke to the furnace to be reburnt, and the almost numberless devices and patents for the consumption of smoke, which might all have been saved had the inventors but possessed a knowledge of the *elementary* laws of combustion, and the composition of waste gases and smoke.

Chemists have for years been aware that steam passed through a red hot iron tube, would suffer decomposition and be resolved into the elements of water, they also knew that steam passing through red hot charcoal or red hot coke was similarly decomposed and in both cases hydrogen set free. In the first case the oxygen is taken up by the red hot iron, and iron oxide is formed; in the other case, the red hot carbon takes up the oxygen and carbonic acid, or carbon dioxide is formed, which may be formulated thus: first,  $3\text{H}_2\text{O} + 2\text{Fe} = \text{Fe}_2\text{O}_3 + 6\text{H}$  and next  $2\text{H}_2\text{O} + \text{C} = \text{CO}_2 + 4\text{H}$ .

This last equation, carries with it—to many—a fascination that has led to the useless expenditure of millions, for it is the basis of every system, or device for the generation of *water gas*.

This enchanting delusion has for years charmed the minds of men of genius who were lacking in chemical and physical knowledge, and it exerts the same influence to-day on this same class of people.

My young friends and readers—and some old ones too maybe—will no doubt be unprepared for any attack on such a popular fuel as water gas, but any delusion, no matter how popular, or what prestige it may have, should not be per-

mitted to prevail unquestioned. Fortunately water-gas is curbed by the expensiveness of the plant required for its production; its most attractive feature appears to be the great abundance and ridiculously low price of the water to be decomposed; this dazzles its patrons to such an extent that they fail to observe the quantity of fuel required to decompose water, or steam.

One of the axioms in physics is, that "*No machine can create power.*" "It is merely an inert instrument for the advantageous application of power." Water-gas is subject to similar conditions, and performs like functions; it can only transmit such heat as it receives from the fire that generates it; in other words, the heat given out by water-gas never can exceed the amount required to decompose the water or steam from which it is made. In practice the quantity of heat developed is much less when thus transformed. It has been nicely stated in physics that. "Every conversion of other forms of energy into heat puts it in a form from which it can be only partially recovered."

The same objections apply to mongrel water-gas, or, to such gas as is generated in the type of producers known as the Wilson type, this is a producer with closed ash-pit, and is supplied with a mixture of air and steam by means of a steam jet. This is another of those dazzling frauds so misleading to the uninitiated, and so appealing to unlettered common sense. No machine, or producer, has yet been devised for generating water-gas that will burn a kiln of ware at less than twice the cost incurred by using coal, wood, or oil; in fact, the *real fuel* of water-gas is *coal*, or something more expensive; therefore in all considerations having in view the economy of fuel, water-gas must be abandoned.

Another popular idea entertained by men in charge of engine and boilers, is, that great benefit and economy of fuel is obtained by having checker work of fire brick placed in the chamber just beyond the fire bridge. This they say, "holds the heat" which no one, I think, will dispute, but beyond being convenient when cleaning the grate, or some such emergency, the economy or usefulness of such a device fails to appear, and in case of cooling off for repairs they are a great inconvenience, and it is when they are most inconvenient that their apparent advantage intrudes itself, "they hold the heat so long."

Now it requires little or no science to enable us to burst this bubble. A little

reflection and a grain or two of common sense will show us, that the accumulated heat in the checker work was derived from the fire on the grate; and, if the boiler was properly set and supplied with the usual modern appliances, that accumulation in the checker-work would certainly have been absorbed by the boiler if the checker-work had not been there. Therefore we may consistently conclude that the checker-work derives its heat indirectly from the boiler, or that the boiler is robbed of that amount of heat until from some cause cooling down ensues. Then, a portion of that heat reaches the boiler by radiation, the balance, practically, is conveyed into the flue and up the chimney.

Viewing the subject from a scientific standpoint; filling a combustion chamber with checker-work, is just the thing to do to prevent complete combustion, and is admirably designed to thwart the functions of such a chamber.

From a careful observance of several such fuel saving contrivances, I cannot record one that saved fuel at all, while several were actually wasters of fuel. They all held steam as well after firing ceased from any cause, but when steam got down it went up again very slowly, as might be expected from a careful consideration of the subject.

Before treating of the radiation, conduction, convection, etc., of heat, let me again urge the consideration of sufficient room in the combustion chamber as the initial step in obtaining from fuel its maximum amount of heat. This applies equally to the kiln furnace, the boiler furnace, and to every other furnace, where heat is the primary object sought.

WM. WAPLINGTON.



Curiosities of Fiction.

"A lovely flush rose to Lady Isabel's cheek."  
—Extract from recent novel.

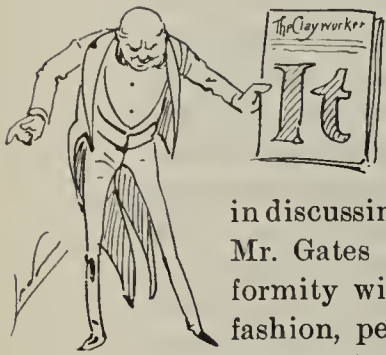
—Truth.



Written for the CLAY-WORKER.

## NOW WILL THEY KEEP QUIET?

The True Inwardness of the Dress Suit and Their Wearers Exposed to the Public Gaze.

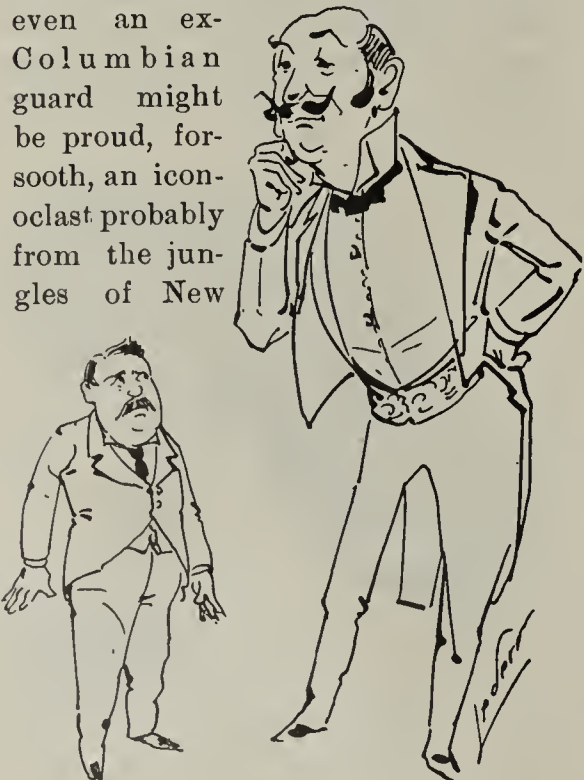


GIVES me unutterable pain to note the envious spirit of the denizens of the effete East in discussing swallow-tails. Because Mr. Gates prefers to dress in conformity with the latest dictates of fashion, perforce he must be attacked by some hoodlum from Flatbush, L. I., or thereabout, who



Even a Colored Water Makes him Feel Small.

hides behind the pen name of "Ambitious Brickmaker:" and because the amiable and accomplished Secretary of the N. B. M. A. finds time between meals to cultivate a mustache, of which even an ex-Columbian guard might be proud, forsooth, an iconoclast probably from the jungles of New



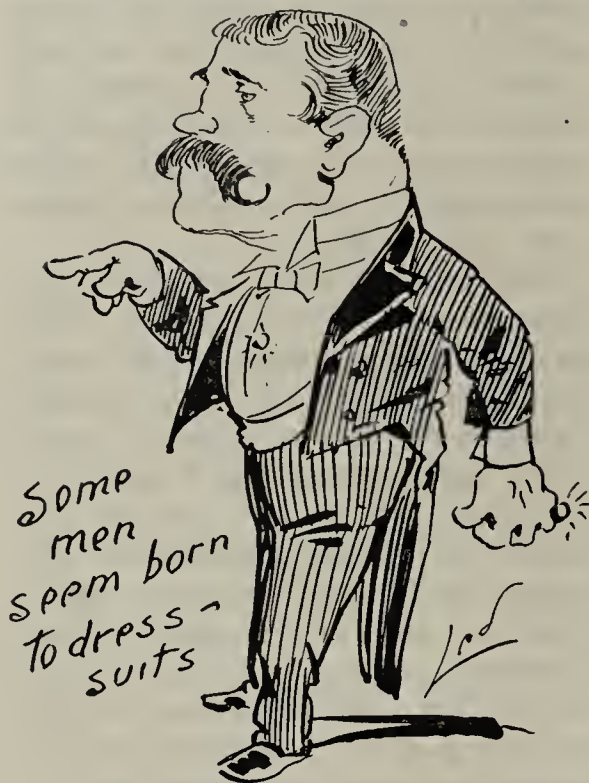
Seems as Big as a House.

Jersey, jumps out and under a thin veneer of praise holds up to scorn the

wearer of the hirsute appendage.

It is a sad spectacle.

We people west of the Youghiogemy



do know how and when to wear both dress suits and whiskers.

We need no lessons at any rate from the effeminate dwellers of the Atlantic Coast.

Bah!

Who eats soup and pie for breakfast?

Not we Westerners!  
Not we that set the pace!

There's a center shot!

But to our clothes—our dress suits—besides I fear if I keep on in this strain the CLAYWORKER'S Composing Room will be shy on exclamation points. Why should there be so much discussion about dress suits. There

"While others acquire them by Hiring."

is nothing particularly humiliating about them. In fact, the claw-hammer coat doesn't stand for anything except respectability. To some people there is something over-awing in the appearance of a man in a swallow-tail coat—even a

colored waiter makes them feel small by comparison.

And, if you happen to be the only man in an assemblage who has failed to adorn himself in the polite uniform of society, the humblest man present seems to you as big as a house—he does to me, anyway.

Some men seem born to dress suits, while others acquire them at so much an hour.

Fat men look much better in spike-tails than in any other garment, and it would be a hardship for them to have fashion or "Ambitious Brickmaker" de-



They are Becoming to Fat Men.

prive them of the opportunity of wearing them even at the interesting and harmonious Conventions of the N. B. M. A.

However, even in Chicago, it is not considered the correct thing to wear a dress suit for an early morning promenade—unless you are just going home and the last car has gone, the hackman won't trust you and, worst of all, the man in the checkroom has given your overcoat to some other fellow and there isn't another one left.

In conclusion let me say that while Chicago policemen no longer gaze with suspicious eye on the man with a dress suit, the wearing of one doesn't imply





that the wearer is wealthy or that he doesn't eat with a knife.

I'm willing to bet that the moths have got "Ambitious Brickmaker's" dress suit.

CHARLES LEDERER.

*Very much Chicago, May, 1894.*

Written for the CLAY-WORKER.

### ENAMELING BRICK.

#### No. 3.

I HAVE previously written a short resume of the principal difficulties to be met with in the enameling process and their prevention, from a semi-scientific standpoint, and will follow with strictly practical suggestions, giving my experience, with the exception of actual receipts. The receipts for slip and glaze, each one will have to adapt to his own clay. The only method with which I propose to deal practically, is the slip and glaze, single fire method, for it is the only one in which I consider myself thoroughly posted.

#### CHARACTER OF CLAY TO BE USED.

My experience has led me to believe that only high heat clays are adapted to the single fire method; this implies, of course, the use of high heat slips and glazes. I do not mean to state that low heat clays cannot be worked, but I have never found them so reliable. My theory on this point is, that in low heat clays there is too little difference in temperature between the point at which the combined water leaves the clay and the point of thorough burning, at this point of thorough burning the glaze must, of course, be thoroughly fused, at some point below complete fusion, fusion commences. If this fusion of the glaze commences before the combined water has left the clay, all sorts of troubles may be looked for; such as bad color, drawing up of glaze into spots, and sometimes the glaze will completely leave the surface of the brick, molten glaze on unburned clay being like water on a dusty floor.

With high heat clays and consequently high heat glazes, there is no danger of fusion of glaze commencing before the combined water has been all driven out of the clay. My investigations in this line, have not covered the earth, and I do not even claim they have been very complete, but they have been complete enough to convince me that I had better not try to glaze low heat clays without first burning them. If some one is bright enough to mix a glaze that will resist the action of heat nearly to

its melting point and then fuse suddenly, he may be able to handle low heat clays with some degree of success.

From what I have said you will all understand that this article deals only with the treatment of high heat clays. I had probably better give some idea of what I consider a high heat and what a low heat. High heat, I consider, is from bright orange or yellow, to white or brilliant white, and would be met within the biscuit kilns of the Trenton potters, in some or most fire brick kilns, in stoneware kilns and in the glass kilns of the porcelaine manufacturers. Low heat I consider as anything below the orange, and so far as I have seen, would be met with in terra cotta kilns and most building brick kilns. The red clay vitrified pavers are made at about the border line, I should judge, between the high heat and low heat, rather encroaching upon the high heat line. I judge this from the fact that I have never tried a red clay in my kilns that was not over vitrified and in many cases melted into a black slag.

I do not mean to imply that the body must be composed entirely of refractory clay, nor that it is desirable to have it so composed. In fact, the lower the heat used, so long as the difficulties alluded to are avoided, the more economically can glazed brick be made. I have found it advisable to use a mixture of refractory clay and low heat clay. In many cases this will be found to be a very decided advantage, especially in cases where the refractory clay is very short, and where a good fat or tough, low heat clay can be easily obtained. Some clays are too refractory; that is, they burn too soft and porous at a reasonable heat. Many refractory clays are entirely too silicious, as will be pointed out later on. In this case a low heat aluminous clay is just the thing to mix with it. The clay used need not necessarily be free from stones or gravel, provided the stones are not lime or iron or of a deleterious nature, and also provided they are finely ground.

All clay for glazed brick should be passed through a No. 10 mesh screen of 20 wires, not coarser. The advisable amount of shrinkage is about one inch to the foot, from the press to the burned brick. Three quarters of an inch will do, and it may run as high as one and one-eighth inches to the foot, but I consider it troublesome and inconvenient to have the shrinkage exceed one inch. The shrinkage if too great can be re-

duced by adding finely ground grit to clay, provided clay is tough enough to stand it.

The numerous handlings to which glazed bricks are subjected makes it extremely advisable that the clay should be tough and strong in all conditions, especially is it advisable that it be strong when dry.

It is better that the clay should be an even dryer; that is, one that dries evenly throughout, and not as some clays do—dry quickly on the surface and remain soft inside. The body of brick should be adjusted to the heat used, so as not to be too porous when burned or too nearly vitrified. If too porous, the brick will not meet with ready sale, and if too hard, many difficulties will be met with in the course of manufacture. A brick that will absorb from seven to ten per cent. of water, I have found makes a desirable glazed brick.

Clays of a sticky, mud nature are usually more easy to handle than those of a fat, greasy nature. In other words, a clay that does not readily polish handles well. The coal measure shale clays seem, as a rule, to handle better than the soft, plastic clays.

I presume it is needless to say that a buff burning or light-colored clay is almost indispensable—not that the darker clays cannot be handled, but architects are prejudiced in favor of the light-colored clays, and they are certainly easier to work and look much better when finished.

*To be Continued.*

IT is a curious fact, says the *Brickbuilder*, that comparatively few architects understand that architectural faience is merely glazed or enameled terra cotta—that it can be made in any form that terra cotta can be made in, and the coloring is at the command of the architect. This misunderstanding has made it a bugbear in the minds of many who regard it as some mysterious and experimental material that conservative practitioners had best steer clear of. This belief is so prevalent that a certain firm of manufacturers have decided hereafter to refer to it in their printed matter as "glazed or enameled terra cotta," rather than stick to the first, adopted and more proper name of "faience."

THOSE having machinery which has been thrown out to make place for something better, may find a purchaser by a little card in our "Wanted, For Sale, Etc." columns.



## CORRESPONDENCE.

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## Button-hole Talks.

Editor Clay-Worker:



**T**HAT "Keystone" business was a real good joke, said one of a little group of us that had been monopolizing some of the easiest chairs of the hotel lobby one evening after

adjournment, and some slighting reference had been made to "Keystone." "Yes," replied a level-headed brother, "For a while—for a year or two—it was really good. But it's in the past tense now, and I want to just call your attention to the fact that Purington or Eudaly or any of the rest of that old standard lot, always get close attention when they work their lungs in public, and there's no one in a hurry for them to get through either. They may talk a lot, but they think a lot too."

"It's the dangerous man that talks and don't think. Why, they have been present at every meeting of the Association and know what you have had, and consequently don't spring half the chestnuts that the new members, (your "fresh blood," you are talking about) does, for he knows nothing of what you have already had and takes it for granted that you never thought of Pharaoh in connection with brickmakers, and so jumps right into a lot of that stuff and you have to take it and smile."

"And, further," said he, warming up, "I notice their clever heads and smooth tongues have been mighty handy in some emergencies, where trouble has been avoided. No sir, I won't sit here and hear them scoffed at, for I consider them as among the very best friends of the cause—as true gold, absolutely without alloy!" Here the lean and hungry brother broke in abruptly, "What Loy?"

"Loy the poet?"

"Well, well, knew him did you?" Makes me think way back in the time before Loy discovered that he could write poetry, or at least, before other folks discovered that he could, he went out West to make tile, taking an old plant and trying to infuse new life. It seems that in the old 'bone yard' connected

with his plant there had sprung up a rank growth of Canada thistles. About the time Loy begun to get acclimated and settled down to making tile, a delegation of the neighbors filed in on him and he started in to do the honors, thinking them possible customers. Finally the spokesman said: 'Mr. Loy, do you know you have a patch of Canada thistles?' Loy said, 'No, he didn't; where?' The spokesman said, 'Right back there among that old machinery and great big, stout thistles too.'

"Loy brightened up and said, 'Any money in them?' The spokesman answered hotly, 'Gosh darn it no! They are a condemned nuisance and you must keep them cut down.' Loy looked sadly at him and softly remarked, as he started back for his nest of old machinery to see what had broken while he was away, 'Oh, you go on now, I'm making tile and not in the thistle business.' 'And,' concluded the lean and hungry brother, 'They had to cut them themselves.'"

Just here I caught sight of the wild-eyed brother breathing hard and all ready to pull the hair trigger on a reminiscence and wearied, as I was, I made a wild break and escaped to my home.

GATES.

## A Rejoinder upon "Clay vs. Stone."

Editor Clay-Worker:

Our Editor in the March issue of CLAY-WORKER has made a few remarks upon "Clay vs. Stone," to which I would like permission to make partial reply.

In my article upon Brice's Stone Brick of the same issue, I failed to make proper mention of the durability of that material in the face of fire and great heat. And to my remissness in certain other statements that should have been made, is perhaps due the including of the artificial material in the dissertation against stone. As a matter of fact, while the "stone brick" is, properly speaking, a silica stone, it is very different from the granites and natural felspars. It partakes more of the refractory nature of silica proper, so well exemplified in the silica brick commonly used for retorts and furnaces.

In calling attention to my own omissions, I desire to emphasize not only the fact that the Brice Brick is at once durable in the face of fire or heat as well as climatic changes; but that in its common form for building purposes, its composition is from one-half to two-thirds of clay and clay soil. Thus, the material is not so far removed from the

sphere of the clayworker, as at first glance it would seem.

EDWARD C. WEAVER.

## Size of Brick—The Tariff Question.

Editor Clay-Worker:

Mr. George B. Engle, Jr. in reply to question No. 7 in Question Box—"Is there any way in which roofing tile, fastened on with nails, can be removed for use upon other building," replied: "There is no question about it. It has been done a number of times; where the roof had been improperly put on, the tile were taken off and relaid."

Would Mr. Engle further kindly state just exactly how this was accomplished?

Some time ago I supplied some tile of this class (with the nail fastening) for a building here. Owing to alterations in the building, it was found necessary to remove the tile. These were fastened with four-penny nails, to inch sheathing, the heads of the nails being set with a punch into the socket prepared for them in the tile (as was necessary in order that they might not interfere with the overlapping tile), leaving no room whatever between the sheathing and tile for the insertion of any instrument to cut the nails.

After various efforts it was found impossible to remove the tile without breaking them, thereby rendering them almost an entire loss.

As an annealed roofing tile will outlast any building upon which it can be put it is absolutely necessary that said tile shall be capable of being removed for use on other structures. If there is any way in which a nail-fastened tile can be successfully taken off, it is, therefore, for the interest of all concerned that it be generally known.

For my own part, I cannot understand why anyone wants to adopt this method of fastening. An interlocking tile, hung on the sheathing with cleats, with a lug beneath, by which it can be fastened, with wire, when necessary, is by far the best pattern for all intents and purposes. A cut of this tile appeared in the CLAY-WORKER. A dozen of these tiles can be put on the roof while one is being fastened on with nails, and two dozen can be taken off while the corners are being broken off the other kind in vain efforts to remove it.

In view of the discussion lately appearing in your columns regarding "The best size for brick," I would draw attention to the following opinions expressed at the late Convention.



Mr. Geo. B. Engle, Jr. says: "The size of English brick, 3x9x4½ in., seems likely to become the standard size in this country for glazed brick, as they can be made English size at not over 15 per cent. above cost of American size. The English size brick gain about 33½ per cent. over the American size in laying, besides being about \$8 per 1,000 less expensive in labor and materials in laying. The English size brick at say \$115. per 1,000, are cheaper for the contractor than American size at \$68. per 1,000; also you will find that the larger surface of the English size gives a better effect and appearance to the wall when laid, and there are fewer joints to aid in gathering dust and soot."

Mr. Edward Orton, Jr. says: "I have made both sizes of paving brick. I have made the larger size 3x4x9 and vitrified them to the core. I think there is a great advantage in having a little larger size than a common brick. I stand committed in favor of a block 3x4x9 in."

Mr. Fairhall says: "I claim it is just as easy to make a block and burn it, as it is to burn a brick."

My own experience with regard to size in the manufacture of roofing tile, is strictly in accord with the opinions expressed above. It is just as easy to make and burn a roofing tile covering over 100 inches, as one less than half the size. It will not cost over 25 per cent. more to produce, and will sell for more than double the amount. It is easier and quicker placed upon the roof, requires less timber for sheathing, etc., and makes a better roof when on. As the joints are the only places at which it is possible for a tile roof to leak, it will at once be seen that by the use of the large tile you reduce the risk in this respect more than 100 per cent.

The manufacture or use of a small roofing tile is, in my opinion, a piece of folly of which no sensible man should be guilty.

#### IMPORT DUTIES ON BRICK AND TILE.

I have just read the extract from Mr. Homes' paper read before the National Association of Fire Brick Manufacturers. As far as I can make out from the figures, the "flattering result" of the McKinley bill, has been the decrease in a little over two years of something over two million imported bricks, including fire, glazed, ornamental and other than these classes. Truly a wonderful thing to make a fuss about! There is also an increase in duty, and consequently in value, of

about \$80,000 on all imported bricks during that time, which of course comes out of the pocket of the general consumers of brick.

As far as personal interests are concerned, every brickmaker should be a free trader. The weight of brick is so great in comparison to its value, that any *advalorem* duty must necessarily be small in comparison to the cost of transit, which always is, in itself, sufficient protection for this article.

On the other hand, a high import tariff so advances the cost of *everything* (which invariably finds its own level,) that the brick manufacturer finds it quite impossible to compete in neutral markets. For example, Mexico annually imports large quantities of roofing tile, fire brick, etc., which, however, France can supply much cheaper than it would be possible for the States to do under existing circumstances.

There is no import duty into Mexico on these articles, but on the contrary, the manufacturer has to pay heavy contributions to the Government, also, in many instances, duties on the machinery he imports to make them with.

Mr. Harriman in his address at the Powwow lays the entire financial trouble at the door of the prospects of a reduction in import duties. It is not, rather, largely due to the reaction after nearly three years of the suicidal policy followed under the McKinley bill, where the general consumers (including the entire agricultural class—unquestionably the greatest wealth producers in the country) have been systematically robbed for the benefit of a few monopolists?

Those who have the real interests of the great American Republic truly at heart, are, at length beginning to see, that a great manufacturing, a great producing country cannot afford to virtually cut herself off from competition in foreign markets, closing that vent for the overproduction to which Father Crary attributes the entire trouble.

Mr. Gladstone clearly defined the situation when he said, "While America adheres to protection, England's Commercial Supremacy is secure."

No doubt the interested protectionist who allows, what he considers, his own petty interests, to go before the welfare of his country, will fight hard over his "pound of flesh;" but, to use another of the "Grand old man's" expressions, the "flowing tide" is with the free trader.

Tuxpam, Mexico. R. M. GREER.

#### The Situation at Chicago.

Editor Clay-Worker:

Were I to undertake to give a full account of the brickmakers' strike in and about Chicago more space would be required than you could possibly give to this subject. The strike started through the action of the brickmakers at Bernice, Ill., they marching to Blue Island and Somerville and other yards about Chicago with the firm determination of forcing the brickmakers in the various yards at these places to come into their union.

In many of the yards no desire was manifested on the part of the brickmakers to quit work, and this is still the situation. An arrangement was arrived at yesterday in which work is to be begun to-day at Hayt & Alsip, Alsip Brick Co., and Purington & Kimbell yards. The arrangement is with the men in those yards and not with any union. There is but little dependence to be placed on the men being allowed to work for more than a few days, and it may be that before the sun goes down to-night these yards will again be stopped by strikers from the other yards intimidating the men.

The unfortunate part of the whole business is that the brickmakers themselves are suffering from loss of wages and the manufacturers of course are suffering in consequence of being unable to make brick, and therefore cannot do any business in their line.

To the building interests of Chicago, this whole trouble is exceedingly unfortunate. The results thus far seem to be in stopping the great volume of work which was planned for this summer. Six weeks ago the prospects for the building trade in Chicago were never better. To-day architects' offices are idle largely. New work has been pigeon-holed, and all building largely stopped. It is impossible at the present writing to give an intelligent guess at what the outcome will be. Judging by past experience, I feel safe in saying that such work as was proposed and plans made and have been laid aside on account of the scarcity of common brick, will not be taken up again this season, at least.

The times just now seem to be all "out of sorts." That out of confusion good may not come, I would not dare to predict. Things are not what they should be, and in politics and business and with the employe the spirit of unrest, agitation and disquietude seems to



be abroad, in our land, at least. Wise, indeed, would be the man that could tell the exact outcome of the whole matter. To us it seems plain that before good can come, a spirit of charity must be shown in the conflict, and both sides must subscribe to the resolution of the N. B. M. A. (passed at Indianapolis, I think,) that the "only basis of the final settlement of the labor question is in the adoption of and carrying out of the Golden Rule." But the millenium is not here. Man still remains selfish, and by might is inclined to try to carry out his desired ends. COSMOPOLITAN.

Chicago, May 9.

#### D. W. Stookey on Pulverized Fuel, Etc.

*Editor Clay-Worker:*

I am inclined to defend the eminent authority quoted by Bro. Stookey in the April CLAY-WORKER.

If the loss of heat from unconsumed coke, tar, etc., spoken of as being lost, refers to gas producers, then Mr. S., like many more—has an incorrect idea of the general construction and rationale of fuel-gas and its production. So many confound it with illuminating gas, and cannot understand—therefore remain unconvinced—that the coke of the coal gives off the bulk of the gas.

I do not class Bro. S. with the unconvincibles, because, he evidently knows *how* and *when* monoxide, and dioxide of carbon is produced on a grate, and will therefore easily understand me when I say, the fuel of a gas-producer is consumed on a *grate* thickly bedded with incandescent fuel, the object being to convert dioxide into monoxide again, by passing through such fuel. To those readers who have not yet wrestled with the new nomenclature I may just say, monoxide and dioxide of carbon mean respectively, carbonic oxide and carbonic acid. Further, this bed of hot fuel serves to distil from the coal its hydro-carbons, etc., so that fuel gas as usually made with *soft coal*, is a mixture of carbon monoxide and illuminating gas.

Precisely the same combinations, decompositions and distillations take place on the grate of a boiler furnace, as on the grate of a producer, or rather, they ought to; but there is an additional combination on the boiler grate; that of *combustion* of the gases so produced, and upon the *perfection* attained in consuming these gases depends—other things being equal—the amount of steam made.

I readily grant Bro. S. all the improvements claimed by adopting mechanical stokers, etc., and commend him, or anyone else, who will endeavor to improve on the present wretched system of firing furnaces, etc. I only take exception to his *methods* for obtaining the best results. He may see clearly how such complications of phenomena can be satisfactorily consummated on one grate or in a single chamber, but my own experience is, that simply burning the gases in one chamber is sufficiently problematical.

I presume Bro. S. is fully aware that all *solid* fuel must be gasified before it is available as *fuel*. If this be granted the question is narrowed down to this. Can we obtain the best results by gasifying our fuel in the combustion chamber, or, in a separate one?

WM. WAPLINGTON.

#### Buffalo, N. Y., and Vicinity.

*Editor Clay-Worker:*

The brickyards in this vicinity, are starting very late, in fact with the exception of one yard that has a dry floor none of them will make brick till about May 7th, and then partly to give employment to their men. There is fully 2,000,000 common brick on hand besides a new factor in this market of about 5,000,000 old brick. They are tearing down a number of brick buildings on the new Post Office site, and for two new bank buildings on Main street and three large stores on Pearl street. The building interests were almost paralyzed by the crisis in the money market last season, but times are brighter, and demand stronger, with the fine weather. Old brick are selling for \$3 per M. and some of the yards have been selling common at \$5.50 per M. delivered.

Buffalo for its size is a good deal of a wooden city, having a great many frame buildings but extending the fire limits, and tearing down and rebuilding is going to require large quantities of brick as soon as the times will permit.

I notice one thing this spring, not a machine man has been in to see us, only one man with a model for a self strike for soft mud machines.

The Niagara Falls Brick Company has had a run of hard luck, but will now be run under the direction of Mr. Tompkins, the brickmaker at LaSalle, N. Y.

The Lancaster Brick Co., of this city with yard at town line are trying some new improvements to better prepare their clay for making a fine brick. This

firm reports an increased demand for their hollow brick and drain tile.

The project of a new brickyard at Eighteen Mile Creek moves slowly at present. VIDETTE.

#### Philadelphia News.

*Editor Clay-Worker:*

The brickmaking and general building interests have gradually improved since April 1st. There are several drawbacks however to prevent that full and all around resumption for which we are so hungry. What there is in store for us we cannot clearly see just yet, but judging by the list of permits taken out for building, we are doing about as well as last year.

Contracts for brick are reported daily at our leading offices but there is no rush. Our brickmakers have built up this industry on a basis of 10,000 new houses per year. If we build only 5,000 it does not take a smart man to tell about how the brick business is going this year. Brick is cheap. It is a poor business to go into and a harder one to get out of when once in. We have invested an enormous amount of capital during the past three or four years, and have not yet gotten much out of it.

Reference has been made to our trolley system. Our city is pretty well cut up, miles and miles of streets are barely passable, but in a few weeks all will be serene and we will be gliding over smooth streets at the rate of 12 miles an hour.

The improvements in suburban districts are quite important, because of cheap land. About 2,000 houses will be erected on the outskirts of the city this year. There is not quite as much being done in the interior of the city as usual. The country brick yards throughout eastern Pennsylvania and New Jersey are doing a moderately good business.

The Trenton potters are in a great state of mind over the tariff. Capital has been liberally invested there year after year to furnish the finest plants. Skill and taste have been developed to a high order. The finest of goods are turned out from those works. A stubborn fight has been made at Washington to protect these interests, but no one feels certain of the outcome.

Building material has declined in price all around but dealers say that it has now reached bed rock. We hope so. There is a great deal of capital awaiting the opportunity to get to work and make dividends. ANON.



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**OHIO'S NOBLE EXAMPLE.**

The long talked of school for clayworkers is at last to become a reality. On a preceding page we give the full text of the bill recently passed by the Ohio Legislature and signed by the Governor.

This measure marks an epoch in the history of clayworking. It is a great stride in the right direction and good results will soon be realized. Other states will ere long follow Ohio's good example and training schools with departments devoted especially to this most important art will be established throughout the land.

We feel confident on this point for these schools if properly conducted will prove profitable to the state from a monetary standpoint. The technical education afforded will enable clayworkers to more rapidly develop the state's vast resources now lying dormant in her clay beds and, so, materially increase her wealth, and, consequently, her revenue from taxation.

That Ohio craftsman will not be slow to avail themselves of the opportunity to obtain technical information, the need of which has been sorely realized by many of the most successful manufacturers, is reasonably certain and, as a result, the brick, tile and pottery industries will be established upon a more intelligent basis than has prevailed in the past. Ohio has taken the initiative

in a good work in which it is to be hoped her sister states will soon follow.

**THE COXEY FEVER.**

Fever is never a disease; it is only a symptom, which indicates some abnormal condition or conditions in the working machinery of the system, hence wise physicians prescribe only for the removal of the fever by the removal of the cause. This usually requires patience as well as skill. The disease must not only be located but ordinarily the recuperative forces of the body must be depended upon to do their work under the conditions which medicine and treatment can only facilitate. More than this, the sensible physician does not contemplate a perpetual application of remedies. If he understands his business and is an honest man he aims to so restore the several vital organs to their normal conditions that in the proper discharge of their several functions the whole body may be in such health as to need no other tonic than is derived from the proper digestion of wholesome food.

Coxeyism is only a symptom. It is one form, and the least sensible form yet discovered, of proclaiming an abnormal condition of the economic functions of the body politic. It is led by men who are either fools or knaves, or who are both fools and knaves, with the knave predominating. If Coxey or any of his "Generals" believe for a moment that the presence of a thousand or of a hundred thousand "men in boots" can overawe congress and extort legislation at their dictation, they are fools. While by appealing to the ignorance or cupidity of the shiftless herd, inducing them to leave even such homes as they have, in hopes of foraging on farmers and other industrious men by the way, the leaders proclaim themselves knaves of the most heartless type.

Coxeyites call themselves the unemployed. So they are, and so they have been most of their lives. They do not want employment, they want money. Not one in a hundred of them are men who have been thrown out of work by the closing of mills or mines. As a rule they never did work and do not want to now. Wherever it has been offered them, en route, they have refused it. A few of them are old professional tramps, though most of them are probably taking their first lessons in the tramp "industry," preparatory to a life in that line.

As a symptom the Coxey fever indicates several abnormal economic conditions all of which may be summed up under some shade of the general classification known as communism or anarchism. Its leading motto is "The World owes me a living." The only question of dispute is how to collect the debt.

Coxeyism is only a modified form of the tramp method. It scorns to defraud by dishonest methods, and is too cowardly to resort to violence and unlawful schemes, hence Coxeyites assume that the government should come to their relief. One of their kind once asked Mr. Lincoln for an office because he needed help. "What place do you want?" asked the President. "Almost anything," replied the patriot, "but I think I would most like to support the constitution." "I have a place for you," said Mr. Lincoln, "Enlist in the army." "But that means too much work and too little pay," said the applicant as he turned away sorrowfully.

It is not the want of work these men are suffering from, but it is because the work from which happy homes have been built and are now being built implies too much work and too little pay to suit their views, hence they prefer to tramp and live off those who by patient work have homes and food. Whether the recuperative forces of our economic system will rally in time to save it from more than a fever, remains to be seen. We have faith to believe it will, but the scope of our paper will not allow us to prescribe further than to advise our readers not to join the Coxey army nor to aid or comfort it in any way.

**SELECTING A PAVING MATERIAL.**

One of the larger cities of this state sent a committee to visit various places with the idea of determining the kind of paving material which they would use. The committee fortified a preconceived opinion and returned favorable to asphalt. This committee found a number of poor brick pavements. They visited cities containing large quantities of wretched asphalt and coal tar pavements. They saw only the imperfections of a few unworthy brick pavements, none of the good qualities of good brick pavements and none of the poor qualities of wretched asphalt coverings. So much for consistency.

The engineer who accompanied this party had the temerity to quote the



experience of London and Paris as a justification for using Trinidad asphalt in his own city. He did not know that the only Trinidad asphalt pavement that had been put down in Paris, was taken up at the Barber Asphalt Co.'s expense. He did not know that in Great Britain, the home of the stockholders of the Island of Trinidad, there is not one square yard of that material used per year for street paving. It is used for other purposes, but not to withstand the wear of vehicle traffic.

So much for a study of the asphalt question. Good Trinidad asphalt pavements have been put down. However, it requires a quality of superintendence which is way beyond the ability of the ordinary engineer. By the way, to this autocratic gentleman is due many of the weaknesses of improperly selected and improperly laid brick pavements of to-day. There are brick pavements and brick pavements. The good is the antidote for the bad.

#### AMONG THE MACHINE MEN.

A RECENT trip to Cleveland enabled us to visit several of the clay-working machinery manufacturers in that section. We were agreeably surprised to find most of them fairly busy.

The shops of E. M. Freese & Co., at Galion, O., presented a very active appearance for so dull a season. Mr. Freese said that trade was dull but that he guessed they were getting their share, and from the number of men at work and the machinery we saw being built and erected, we thought so too.

It was our first visit to their present establishment, which, having been built especially for them, affords every known convenience for carrying on the work. The molding room is spacious, and the machine shop is very roomy and light and equipped with the latest and best machinery adapted to their needs.

Mr. Freese said it was his ambition to make the "Ohio" Brick and Tile Machine second to none on the market. A laudable ambition, truly, and one that with their facilities may be easily realized. They are now completing a combination brick and tile machine, with a novel attachment for making large tile which they think will prove a prize winner.

About midway between Galion and Cleveland on the Big Four Railway is the little town of Wellington, the habitat of the Monarch Brick Machine. We arrived late in the evening and stopped but a few minutes—just long enough to

walk to the Wellington Machine Company's works, but a little way from the station, and say "howdy" to McDermott ("Mac" for short) who is as portly and be-whiskered as when at the convention. He has regained his voice, which he lost in the auditorium, and said they were not overrun with orders but were prepared for the rush when it did come, having a large stock of Monarchs ready for delivery.

At New London, a few miles west of Wellington, we were joined by Mr. D. J. C. Arnold, the well-known manufacturer of brickyard supplies. A man so kindly and guileless is seldom met. He, too, said that trade was extremely quiet, orders being received in homeopathic doses and less frequently than could be wished for. His new "up-to-date" repress, he says, is making friends wherever used, and, he thinks, that when business does revive, it will take a place well up toward the front of the procession.

At Willoughby, 20 miles east of Cleveland, on the L. S. & M. S. Ry., we found the extensive works of J. W. Penfield & Son running full handed. While they have telegraph connection with the wide world in their office they don't seem to have learned that there is a general and wide spread business depression. At least that is the impression one gets from a trip through their shops, where the whirl of revolving wheels and the bustle of busy workmen make a merry tune to ears weary of doleful tales of idleness.

We were both surprised and gratified to find the senior member of the firm in excellent health and spirits. We had somehow got an idea that he had retired from active business, owing to poor health, but such is not the case. He conducted us through the works in person with as much vim and ease as a youth in his teens, evincing particular pride in their new four-mold dry press, which is indeed a massive affair. One was put in operation for our inspection and a few brick turned out, the appearance of which seemed to fully justify their high praise of the machine which moved easily without jar or strain.

After going through the machine shops Mr. Penfield, Sr., drove us to their brick and tile works, a half mile or more away, where we found a gang of men hard at work turning out brick and hollow tile for fire proofing purposes. They have here a complete plant equipped with steam heated dryers,

machinery, etc., all of their own make, for the manufacture of all kinds of brick and drain tile. We were also shown an immense storage shed well filled with clay to be made into pressed brick on one of their dry presses now being erected. They expect to be an important factor in the Cleveland pressed brick market in the near future.

A call at the shops of J. W. Heiser & Co., Cleveland, found the business manager explaining the *modus operandi* of their brick machine to a Knickerbocker who wants to increase his capacity. Heiser & Co. are perfecting an automatic cutting table that they hope to have ready for the fall trade. It is different from anything now in use, and, in due time, will be illustrated in our advertising pages.

#### JOLLYING JOLLY DIXON DOYLE.

He who laughs last laughs best.

In our April issue we, in a very mild and amiable manner, called attention to the fact that our Chicago cotemporary had, as we supposed, unwittingly used matter taken from the CLAY-WORKER without credit. Instead of, frankly admitting the *mistake*, which good taste and good sense both should have impelled him to do, for it's a clear case of—he calls it cribbing, the Editor assumes the role of an artful dodger, and performs some of the queerest rhetorical gymnastics we have ever seen. Perhaps the compo. is again at fault and has omitted important connecting words. It must be so, for surely the Editor of a great Chicago trade magazine would not, in sober earnest, utter such a mess of meaningless balderdash as appears in the *Clay Record* under the head of "Why We Laugh." We suggest as a much more appropriate head for such stuff, "*Why We Hang Our Head in Shame.*" It is such senseless drivel that we confess to a feeling of shame for having incited it.

We are reminded of a story told by Henry Ward Beecher of an encounter he had, when a boy, with a cat that crossed his path in a meadow. Boy-like he kicked at it and evidently frightened the poor creature dreadfully. Retribution followed quickly, however, and Beecher learned a lesson that he remembered ever after, and never again kicked at a strange cat. That night he buried his clothes in the back yard.

We hesitate to again offer advice to our cotemporary, but in all kindness would suggest that the guilty compo. be laid off and the proof reader lectured roundly for allowing such matter to go to press. It may be "jolly," Dixon, but it's not creditable.



## WHEN THE APPLE BLOOMS.

BY EDWIN S. HOPKINS.

*"The Wilderness and the solitary place shall be glad . . . It shall blossom abundantly, and rejoice even with joy and singing."*—ISAIAH XXXV., 1-2.

WHEN the apple's full of blossoms and the blossoms full of bees,  
And the bee's full of honey, buzzin' up and down the breeze;  
When the flavor of the lilacs and the smell of hyacinths  
Mixes with the Johnny-Jump-ups bloomin' by the garden fence;  
Oh, it's then you want to git up soon and wash and comb your hair,  
While the early birds go singin' round about you everywhere,  
And the leaves of life unfold again as fresh as sproutin' peas,  
When the apple's full of blossoms and the blossoms full of bees

There's a softenin' of the feelin's kind o' kin to love, perhaps,  
Steals acrost you when you see the buds peel off their winter wraps,  
And the ba'my breath of mornin', makin' sparkles in the dew  
With the risin' sun a creepin' up the sky so bright and blue,  
Melts the icicles 'at time has froze acrost your clouded life  
Till you think about your sweetheart and you go and kiss your wife;  
For it's then about the time o' year yerself and her agrees,  
When the apple's full of blossoms and the blossoms full of bees.

Everything's so glad and happy you just want to laugh outright,  
For your worries, like the snow, has melted plumb clean out of sight,  
And the warble of the bluebird in the sky so fur above,  
And the pleasant coo and gurgle of the pigeon and the dove  
And the very wind 'at fans your face with kisses seems to say,  
"Rest yourself a little, old man, heaven hain't so fur away;  
Take a day off and go fishin', for the's mighty few like these,  
When the apple's full of blossoms and the blossoms full of bees."

—Judge.

## THE MAN A PRINTER LOVES.

HERE is a man the printer loves, and he is wondrous wise;  
Whene'er he writes the printer man he dotteth all his i's,  
And when he's dotted all of them, with carefulness and ease,  
He punctuates each paragraph, and crosses all his t's.

Upon one side alone he writes, and never rolls his leaves;  
And from the man of ink a smile, and mark "Insert" receives,  
And when a question he doth ask—taught wisely he hath been—  
He doth the goodly penny stamps for postage back put in.

He gives the place from which he writes—his address the printer needs—  
And plainly writes his honored name, so that he that runneth reads.  
He reads, revises, reads, corrects, and rewrites all again,  
And keeps one copy safe and sends one to the printer man.

And thus by taking little pains, at trifling care and cost,  
Assures himself his manuscript will not be burned or lost;  
So let all those who long to write take pattern by this man—  
With jet black ink and paper white, do just the best they can;

And then the printer man shall know, and bless them as his friends,  
All through life's journey as they go until that journey ends.

—London Tid-bits.

## MY FAVORITE PAPER.

THERE'S a little country paper that I love to sit and read,  
A paper poorly printed and behind the times, indeed,  
With pages small and narrow, and the ink inclined to spread—  
And here and there a letter gravely standing on its head.

Or Caps, a bit erratic, boldly popping into view—  
In unexpected places, and knocking things askew.  
A real old-fashioned paper, from my little native town;  
Each week I hail its coming, and I never put it down—

Till I've read its every column, all the local news you know;  
About the dear old country folks I lived with long ago.  
I note whose barn is painted—whose cattle took the prize,  
And how Uriah Potts has raised a squash of wondrous size.

How Farmer Martin's daughter takes the school another year—  
At this I pause and smile a bit and feel a trifle queer,  
Remembering how, in bygone days when life seemed made for mirth  
I thought this schoolma'am's mother was the sweetest girl on earth.

And now and then, perchance, I read that one I knew is dead,  
Or find, again, some boyhood chum the second time has wed;  
And so it goes, and none can know what memories sad and sweet  
Come back to me whene'er I read this homely little sheet.

—Exchange.

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J. W. Crary, Sr., \$2.50

## "TABLE OF ANALYSES OF CLAYS,"

Alfred Crossley, \$1.00

## "DURABILITY OF BRICK PAVEMENTS,"

Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of  
them to one address for \$5.50. Address T. A. Randall  
& Co., Indianapolis, Ind.

## ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and Belleville, Ill.

ESTABLISHED 1859.

RED Pressed and Ornamental Brick of unsurpassed quality  
a specialty and can be furnished in any desired quantity.  
Builders who desire the finest pressed brick at reason-  
able prices, are requested to write for illustrated catalogue and  
price list.

Rock-faced and Roman brick, red and brown, granite,  
mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

ANTHONY ITTNER, Telephone Building, ST. LOUIS, MO.



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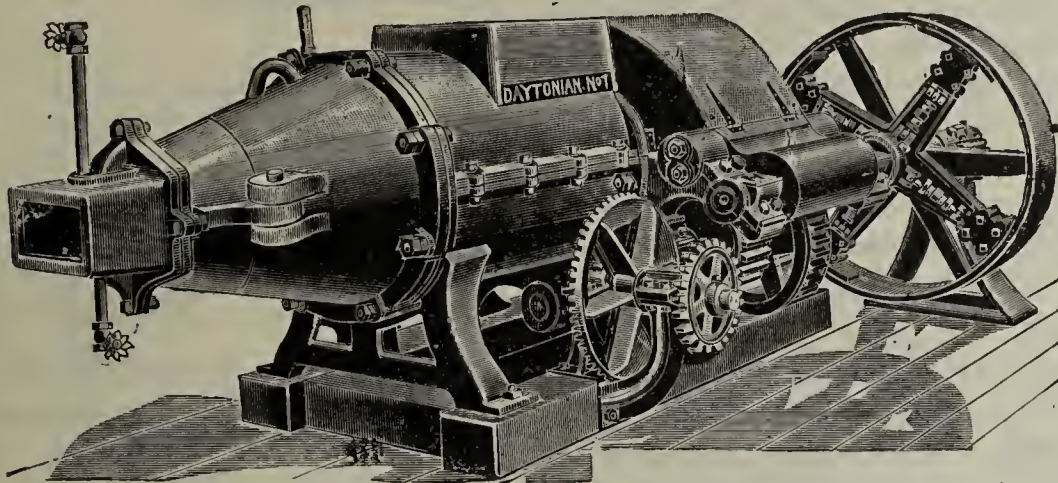
**STEVENSON & CO.**  
WELLSVILLE, O. U.S.A.

**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES, STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES, DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS & ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFTING, BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS, MANUFACTURED & CARRIED IN STOCK WITH ALL MILL & FACTORY SUPPLIES.



# ❖ RAYMOND'S ❖

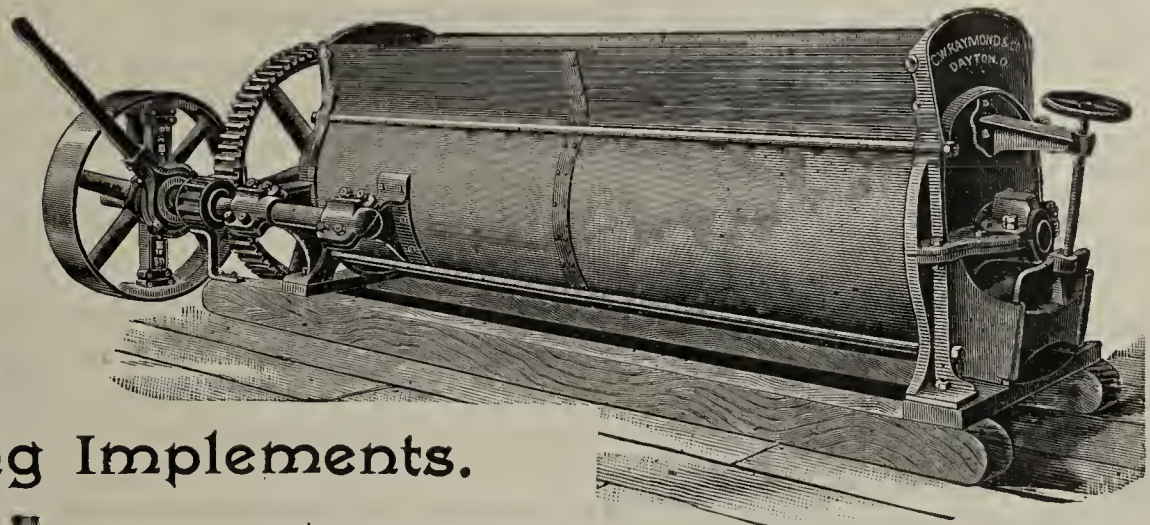


# BRICK

# MACHINERY

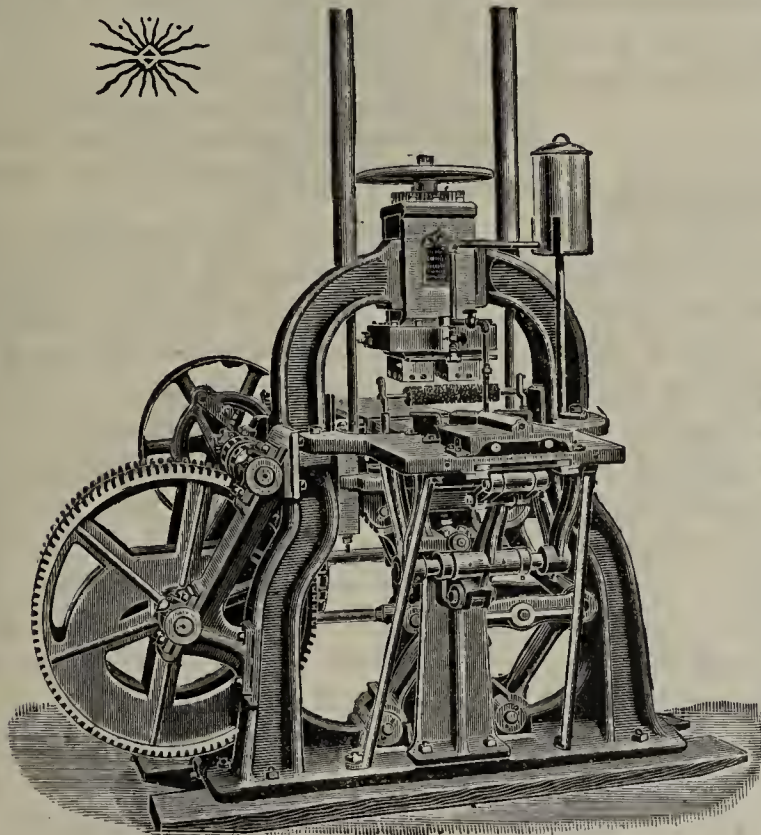
## Brick Machines:

Cutting Tables,  
Pug Mills,  
Revolving Screens,  
Roller Crushers,  
Disintegrators,  
Dry Pans, &c.,



A COMPLETE LINE OF

## Clay Working Implements.



The Columbian Special Re-Press.

*Re-Presses for Red Brick,  
Re-Presses for Fire Brick,  
Re-Presses for Paving Brick,  
Re-Presses for Ornamental Brick,  
Re-Presses for Roofing Tile,  
Re-Presses for Sidewalk Tile.*



THE LARGEST LINE OF  
RE-PRESSES  
IN THE WORLD.



## C. W. Raymond & Co

DAYTON, OHIO.

... SEND FOR CATALOGUE ...



EDITORIAL ACKNOWLEDGMENTS.

WE are under obligations to The Sayre & Fisher Co., Sayreville, N. J., for a large and neatly framed picture which now adorns the inner wall of our Sanctum. It is composed of groups of photographs of their extensive brick works, including a charming view of the Raritan river, along the banks of which the works extend for nearly a mile, thus affording them unsurpassed shipping facilities. Their different clay banks, which embrace several acres, are shown, together with views of their plants for making Common Building Brick, Fire Brick, Pressed and Ornamental Brick and Enamel Brick, all of which are produced in vast quantities. Indeed, their works, which comprise several different plants under practically one management, are among the largest brick-making establishments in the world.

WE are indebted to the American Terra Cotta and Ceramic Co., Chicago, for an ornate lawn vase, which, for the want of a lawn, is now doing duty as an umbrella holder in our office. In design it is plain, yet pleasing. Its chief charm is its color, which is a deep dark red, irregularly mottled with blue and dark grey. The effect produced is very pretty. Mr. W. D. Gates, President of the Company, has worked out several novelties in the combination of colors. His beautiful residence, which we illustrated in the January CLAY-WORKER, is an example of what may be done in this direction. "Will's" Company is fortunate in possessing a remarkable variety of clays, with which it seems possible for them to work out almost any desired effect. Truly, brains and clay make a great combination, especially when of such a quality and quantity as possessed by the A. T. C. & C. Co.

FOR the illustrations and most of the matter which appears on preceding pages under the head "Making Brick in Canada," we are indebted to the *Toronto Globe*.

TRADE LITERATURE.

CLAY, is the title of a new quarterly magazine issued by J. W. Penfield & Son, Willoughby, O. The first issue contains several handsome illustrations and a liberal number of selections bearing on the various branches of clay work in general and the Penfield brick machinery in particular. Like all of their printed matter, it is attractive in appear-

ance, the title page being especially artistic. The subscription price is 50 cents a year, and specimen copies will be mailed free to any address.

CHISHOLM, BOYD & WHITE, Chicago, are out with a four-page pamphlet, showing fac-simile of the Great Bronze Medal awarded the Boyd Brick Press. Those of our readers who want to see what the much talked of St. Gauden's design really looks like, can gratify their curiosity by sending to Messrs. Chisholm, Boyd & White for one of their pamphlets.

THE AKRON (Ohio) Vitriified Pressed Brick Co. have favored us with a copy of their new illustrated catalogue and price list of plain, ornamental and terra cotta pressed brick, of which they make a very large variety of designs. A copy of this book, which is handsomely gotten up, should have a place in the office of every architect and builder.

THE DECATUR (Ill.) Leader Mfg. Co. are sending out advance sheets of a forth-coming catalogue devoted to their stiff clay brick machinery, and will be glad to have our subscribers write them for a copy.

THE COLUMBIA KILN, is the title of an interesting pamphlet now ready, and which any of our readers may obtain by addressing the Columbian Pottery and Brick Kiln Co., Dexter Building, Chicago. "The Columbia" is built on an entirely new principle and its inventor is very sanguine of revolutionizing the method of burning brick.

THE VILLAGE BRICKYARD.

IN the CLAY-WORKER for April is a series of figures from the advance report of the Eleventh Census, and in looking over them the writer is forcibly reminded of a question that in other days he often asked the railroad president: "What are these figures that you ask me to prepare for? Are they to exhibit or to conceal the truth?"

With the CLAY-WORKER's permission these figures may be rearranged so they will talk and not look like the awkward squad in a militia company drawn up for their first inspection.

| TOTAL INVESTMENT IN BRICK AND TILE PLANTS.       |               |
|--------------------------------------------------|---------------|
| Land.....                                        | \$ 21,031,133 |
| Buildings.....                                   | 14,601,046    |
| Tools and Machinery.....                         | 17,997,196    |
| Live assets (book accounts).....                 | 28,949,191    |
| Total money invested in 5,828 plants. 82,578,566 |               |

| RECEIPTS AND EXPENSES.                                                                                                |                     |
|-----------------------------------------------------------------------------------------------------------------------|---------------------|
| Total receipts from all sources.....                                                                                  | \$ 67,770,695       |
| Deduct expenses as follows:                                                                                           |                     |
| Total wages paid.....                                                                                                 | \$ 32,695,189       |
| Material used.....                                                                                                    | 12,639,597          |
| Miscellaneous expenses.....                                                                                           | 5,108,769           |
| Total running expenses....                                                                                            | 50,443,555          |
| Gross profits.....                                                                                                    | 17,327,140          |
| Out of this sum there is to be paid certain items for which the government bookkeepers make no allowance, as follows: |                     |
| Interest on capital \$82,578,566 at 6 per cent.....                                                                   | \$ 4,954,713        |
| Depreciation on buildings and tools per year, \$32,598,-242 at 10 per cent.....                                       | 3,259,824 8,214,537 |

Leaving as the net profit on 5,828 plants \$9,112,603

This sum of money is equivalent to about eleven per cent. on the capital invested in the yards; that is every brick and tilemaker in the United States for the year 1890 estimated that he earned as his personal salary or profit of 11 per cent. on the amount required to conduct his business.

As an illustration of how large the brick and tile plants of the United States are and the amount earned by each; the Government figures may be reduced by dividing the totals given by the number of plants that made report and we shall have the following results:

| TOTAL AVERAGE INVESTMENT IN EACH PLANT |          |
|----------------------------------------|----------|
| Land .....                             | \$ 3,608 |
| Buildings .....                        | 2,505    |
| Tools and machinery .....              | 3,090    |
| Live assets.....                       | 4,967    |
| Average investment in each plant.....  | 14,170   |

Dividing the gross profits in the same way; it appears that each of us,

|                                           |        |
|-------------------------------------------|--------|
| Pay Interest amounting to.....            | \$ 851 |
| Tools and machinery depreciate..          | 559    |
| And 5,828 of us have a net profit of..... | 1,564  |

per year, or in other words every brick and tilemaker in the country earns an average of \$5 for each days work.

One thing in the above figures is very striking, our capital is \$82,578,566, and yet our annual sales only amount to \$67,770,695, it takes us 1 1/4 years to turn our capital over one time.

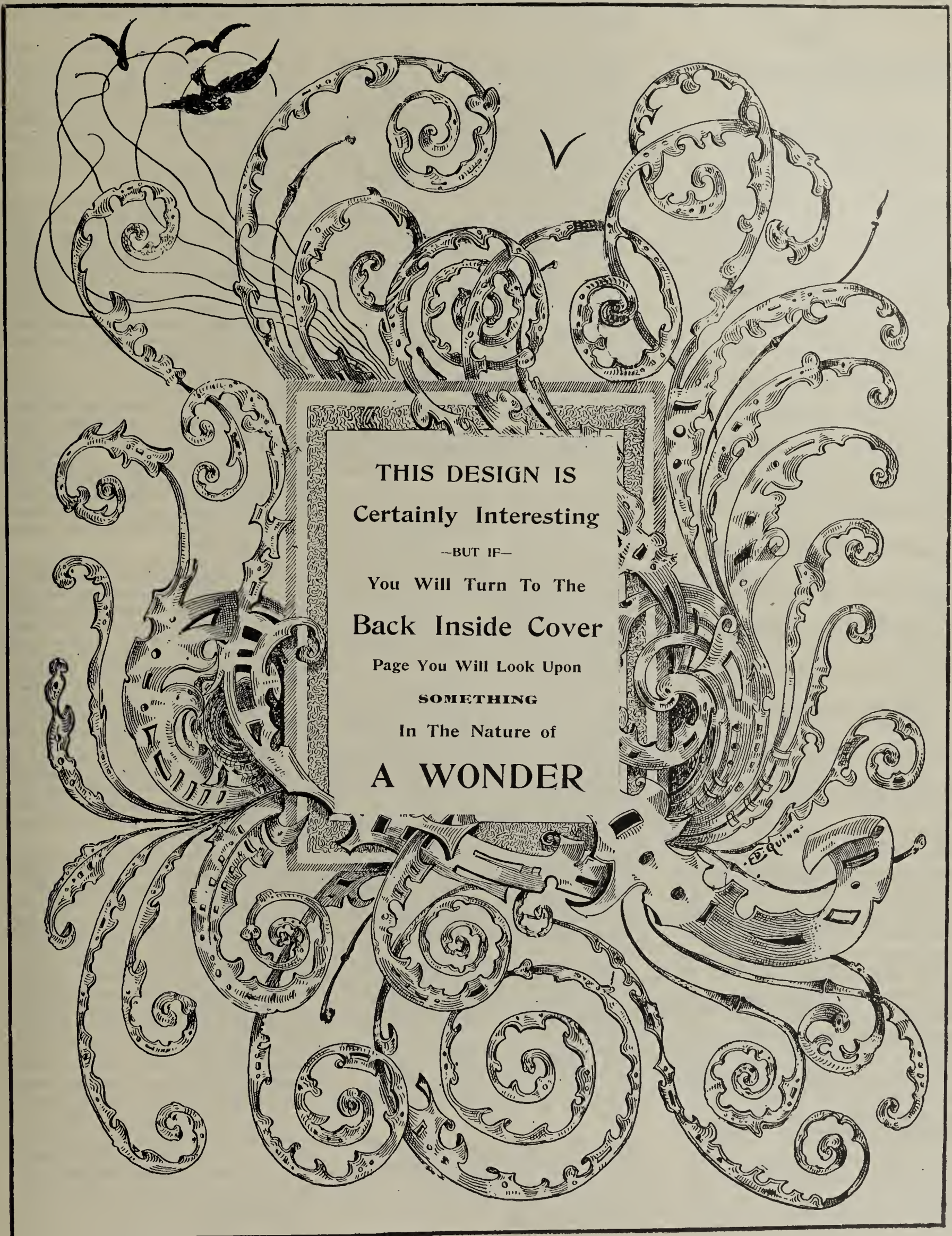
Another point illustrated is the fact that we are all small fellows; an average of about a four gang yard; and hence the village brickyard is a sample of our business and the result of the figures for the United States are almost identical in every particular, with the report sent to Washington from

THE VILLAGE BRICKMAKER.

ALFIBETICALLY KORRECT.

Oh, merchants in thy hour of e e e,  
If on this paper you should c c c,  
Take our advice and be thrice y y y,  
Go straightway out and adver t i l;  
You'll find the project of some u u u,  
Neglect can offer no ex q q q.  
Be wise at once, prolong your da a a a,  
A silent business soon de k k k!  
—Oneonta (N. Y.) Star.





THIS DESIGN IS  
Certainly Interesting

—BUT IF—

You Will Turn To The  
Back Inside Cover

Page You Will Look Upon

**SOMETHING**

In The Nature of

**A WONDER**

DRAWN FOR  
THE WALLACE MANUFACTURING CO.,  
FRANKFORT, IND.



## EDITORIAL NOTES and CLIPPINGS.

## A MORAL.

There was a man in a far-away town  
Who thought him wondrous wise;  
He swore by all the fabled gods,  
He'd never advertise.

\* \* \* \* \*

His goods were advertised at last,  
And thereby hangs a tale;  
The "ad." was set in nonparel  
And headed "Sheriff's Sale." —Ex.

Laurel, Md., is to have a new brick and terra cotta works.

Wm. Ward has started a new tile factory at Good Hope, Ill.

A new brick marker is illustrated on page 538 of this issue.

Welch & Co., are preparing to build a large tile factory at Eaton, Ohio.

A fine cut of "a Cutting Table that beats the world" is shown on page 615.

L. K. Holmes, Lincoln, Neb., wants to purchase a second-hand repress.

Andrew Yount is erecting a brick plant at Plumcreek, near Kittanning, Pa.

Brownfield & Boyle's brick yard, Morristown, Pa., was damaged by fire the 5th inst.

The Milan, (Ind.) Brick and Tile Co., has been incorporated, with a capital of \$20,000.

The Brick and Drain Tile Co., Grand Blanc, Mich., has been organized. Capital stock \$10,000.

Elmer Chapman and others are contemplating the establishment of a brick yard at Ariel, Penn.

The Deepwater Clay & Tile Co., Rich Hill, Mo., intend to spend \$15,000 in improving their plant.

A pottery near London, Ont., owned by Mr. Wistow was completely destroyed by fire the 3rd inst.

W. A. Morin, Albert Lea, Minn., will erect one of the largest paving brick factories in the northwest.

A. Martin has purchased the brickyard of J. R. Everson at Crawfordsville, Ind., and will operate same.

The Fultonham, (Ohio) Brick and Drain Tile Co., has been incorporated with a capital stock of \$10,000.

The McMullen Brick Co., has been incorporated at Minneapolis, Minn., with a capital stock of \$15,000.

Mr. Ball is improving his brickyard at South Lee, Mass., whereby the output will be increased this summer.

J. M. Powell, Orestes, Ind., is contemplating improving his brick plant with a view of increasing the capacity.

Isaac Berry has purchased some new machinery, and will add other improvements to his brickyard at Houston, Me.

The kiln sheds at the Jones Brick Co's plant, South Knoxville, Tenn., were damaged to the extent of \$300. by fire recently.

The Hooversville (Pa.) Pottery Co., are building a kiln and will branch out into the manufacture of paving brick this summer.

The Chicago brick manufacturers and their employes have settled their differences and most of the yards started up May 10th.

The Hartford Brick Co., has been organized at West Hartford, Conn., with a capital stock of \$60,000. W. S. Loveland is interested.

The price of iron has gone down and this cause has something to do with the price at which the Bonnot Co dry pans are selling.

Mr. Rudolph Flick, Cleveland, Ohio, has purchased a farm near Canton, that State, and will erect thereon an extensive shale brick plant.

Canton, Ohio, is not only noted for producing a good quality of clay products, but is also noted for first-class clayworking machinery.

A spark from a burning kiln at John Russell's brick yard in Leslieville, Can., set fire to some of the drying sheds, causing considerable damage.

Isaac Van Leuven, Catskill, N. Y., has purchased the brickyard of the late Peter Hayne, and will, with his two sons operate the plant this season.

The Cherokee (Iowa) Brick and Tile Works desire to purchase 25 double deck iron dryer cars and a second hand side cut-off table with separator belt.

Henry Predmore has sold his interest in the brickyard at Gouvernor, N. Y., to C. H. Anthony and the firm will from this on be known as Smith & Anthony.

All the brickyards at East Kingston, Steep Rocks and Kingston Point, N. Y., have closed down owing to a strike, caused by a reduction in the wages of 20 per cent.

A fire which originated in the engine room almost totally destroyed the brick works of Ross and Hedgecock, Frankfort, Ind. Loss \$16,000, with \$9,500 insurance.

The United States Brick Press Works, Chicago, have removed their offices to No. 72 West Washington St., where all visiting brickmakers will be cordially welcomed.

The Star Brick Co., has been incorporated at Lafayette, Ind. The directors are C. H. Baldwin, T. T. Conner, T. Head, M. A. Sullivan, W. F. Stillwell and John A. Johnson.

It may not be generally known, but it is a fact, that the Bonnot Co., Canton, Ohio, can make very low prices on brick cars. It would be well to write them for information.

The Dempsey Brick Works, near Bethlehem, Pa., are building a new dryer, and will spend \$5,000 in otherwise improving the plant preparatory to putting same in operation.

E. W. Klaas, has purchased the plant of the Peerless Brick and Construction Co., Bessemer, Ala., and is putting same in shape for operation. He will give employment to about thirty men.

B. F. Hodgeman, has purchased the plant of the Mound City Brick Co., Moundsville, W. Va. He intends putting in new machinery, etc., and will continue the operation of the yard.

An oil pipe at the South Bend, (Ind.) Construction Company's brickyard burst the 29th ult. The oil spurted out on a post which caught fire and communicated to the roof causing a slight damage.

A second hand boiler which had just been put in the day before at Houser & Foutz's tile factory, Huntington, Ind., exploded the 25th ult, killing Elmer Anson and fatally injuring David Houser and Adam Foutz.

The Eagle Clay Works, Streator, Ills., have recently added a revolving screen to their equipment and in selecting, ordered a screen from the Bonnot Co., Canton, Ohio. They report it as giving entire satisfaction.

The Quincy Clay Gatherer is a very valuable adjunct to a dry press brick plant. You can learn all about it by referring to "Ad." on page 573, or dropping a line to the Illinois Supply and Construction Co., St. Louis, Mo.

A company composed of business men and the striking potters has been organized at East Liverpool with a capital of \$60,000. They will purchase the East Liverpool pottery which has been closed down for some time, and will operate same.

Ground was broken at Monongahela, Pa., last week for the immense plant of Monongahela Fire Brick Works. At first just enough red brick will be made to complete the works and they will then take up the manufacture of fire brick.

The Bonnot Co., Canton, Ohio, are constructing a dryer for the Cleveland Brick Co. It is called the Imperial Dryer. The Bonnot Co. make their own cars and are very careful in all the details and conveniences, such as belong to a dryer.

Nolan, Madden & Co., Rushville, Ind., report a fairly good trade considering the times. They have a large line of brick and tile machinery ready for delivery at "panic" prices as our readers may see by referring to their ad. on pages 606, 607. This, they say, is the time wise men buy machinery.

C. & L. Merrick, Syracuse, N. Y., in renewing their subscription, write, "We want to say for your encouragement that we find no paper which we read with more interest. Its pages seem to be filled with good solid meat. It is instructing, entertaining and useful to us as manufacturers of clay products, and we wish you continued success."

The McDonald Brick Co., Louisville, Ky., is suing the Newport News and Miss. Valley R. R., for a breach of contract. At the time brick works were established on their line of road, they agreed to haul brick at a certain rate for a term of twenty years. They now, owing to the

road being in the hands of a receiver, refuse to live up to the contract, and a suit for \$60,000 is the result.

"May first brought good weather for brick-making in this section," writes our New York correspondent, "and it looks as though there will be a general movement toward resumption of work by most of the manufacturers early in the month, though a majority of them, as the boys say, 'Don't care whether school keeps or not.' The great brick trust did not materialize and the prevailing conditions are about the same as last season."

L. Hancock, the American representative of the Perfect Kiln, which is advertised on page 534 of this issue, writes that they now have several kilns in this country, all of which are giving the very best of satisfaction and mentions particularly the kilns at Franklin, Pa. The Franklin Paving Brick Co., of that city, put up a "Perfect" Kiln last year and have been operating it almost continuously since with splendid results, though their clay is very difficult to handle and burn.

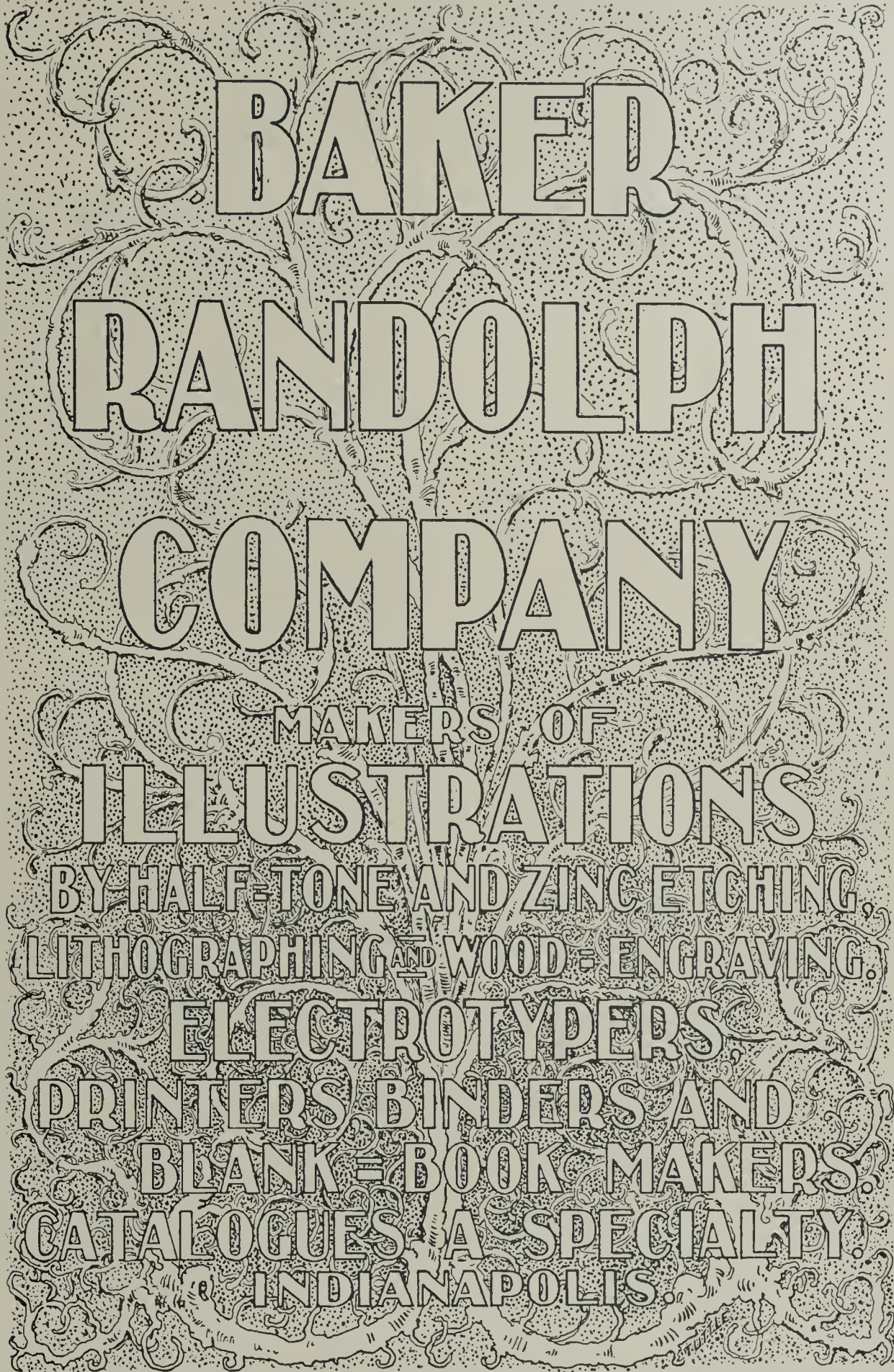
The twenty-one brick yards of Cleveland, Ohio, shut down the first inst. The men demanded an increase in wages of over 25 percent. more than the employers were willing to pay, hence a strike was ordered. The manufacturers said they would make no concessions, as they could not afford to pay the wages asked. Subsequently, however, they made their men a proposition which, though much less than the men demanded, was accepted and work was resumed. Each manufacturer treated with his own men.

Y. S. Dotterer, of Pfeiffer & Dotterer, Gettysburg, Pa., in sending in subscription given an experience which he thinks is hard to equal. He says, "The demand for brick here has never been so great as this spring. We have been unable to supply the demand. On the 19th of March, it being so unlike March weather, we began to make brick by the rack and pallet system. We made about 50,000 in three days. Just when they were almost dry, the weather turned cold and those brick were frozen as hard as possible. They contemplate to freeze until they are dry. We expected to have to wheel all those brick back to the clay bank, as we supposed they would thaw, as is usual with brick when frozen. But to our surprise they remained dry and now we have them all set in the kiln ready to burn. I want to know if any of the craft can beat this."

W. N. Wleire, superintendent Sewer Pipe department of the C. Pardee Works, Perth Amboy, N. J., writes, "On Saturday April 7, 1894, we made a run of 6-inch sewer pipe, which we consider a very good one, and thought possibly it might interest some of your readers to know of it. During a run of 10 hours, we run out 6,085 pieces of 6-inch socket pipe two foot lengths, first class; 175 pieces 6-inch socket pipe, two foot lengths, defective; 25 pieces 6-inch ring pipe, two foot lengths, first class, a total of 6,285 pieces 6-inch two foot length pipe. On this run of ten hours, we had one die change, caused by an obstacle lodging in the die, which necessitated the removal of the outside or ring die, before we could continue the run. This run was made by one pressman—Mr. Wm. J. Martin—on a Turner, Vaughn & Taylor Sewer Pipe Press, 44-inch steam cylinder and 120 pounds boiler pressure. Our pressman, Mr. Martin, claims the championship of the world for pipe pressing, and as far as we can learn, and with this record to his credit, we think he is justly entitled to his claim."

If you want to buy or sell a second-hand machine, read or advertise in our "Wanted, For Sale, Etc." columns.





# BAKER RANDOLPH COMPANY

MAKERS OF  
ILLUSTRATIONS  
BY HALF-TONE AND ZINC ETCHING,  
LITHOGRAPHING AND WOOD-ENGRAVING.

ELECTROTYPERS  
PRINTERS BINDERS AND  
BLANK-BOOK MAKERS  
CATALOGUES A SPECIALTY  
INDIANAPOLIS.



# HIGH GRADE WOOD ENGRAVING A SILENT SALESMAN

It is a good thing to know  
How to make an Engraving

But we do not stop there.  
We believe, and act upon that  
belief, that to do

❖ ❖ FIRST CLASS WORK

The illustrator must also know WHY.

That is to say, he must understand WHY it is necessary to bring out a particular point of a subject clearly, to enable the prospective purchaser to see and understand the merits claimed by the manufacturer.

## We Know How and Why.

BUT STILL WE DO NOT STOP THERE. WHY?



Because we have, in addition to our efficient corps of illustrators, a superior equipment for High Grade Catalogue Work.

Clay Workers, and Manufacturers of Clay Working Machinery, upon investigation, will find us able and willing to fulfill any requirement they may make in the way of Illustration and Printing.

WE DESIGN, ENGRAVE, ELECTROTYPE, PRINT AND BIND,  
COMPLETE, AND DO IT WELL, BECAUSE WE KNOW

WHY AND HOW \_\_\_\_\_

Respectfully yours,



### BAKER-RANDOLPH Co.,

INDIANAPOLIS, IND.

THE ILLUSTRATIONS FOR THE  
CLAY-WORKER ARE FURNISHED BY US.

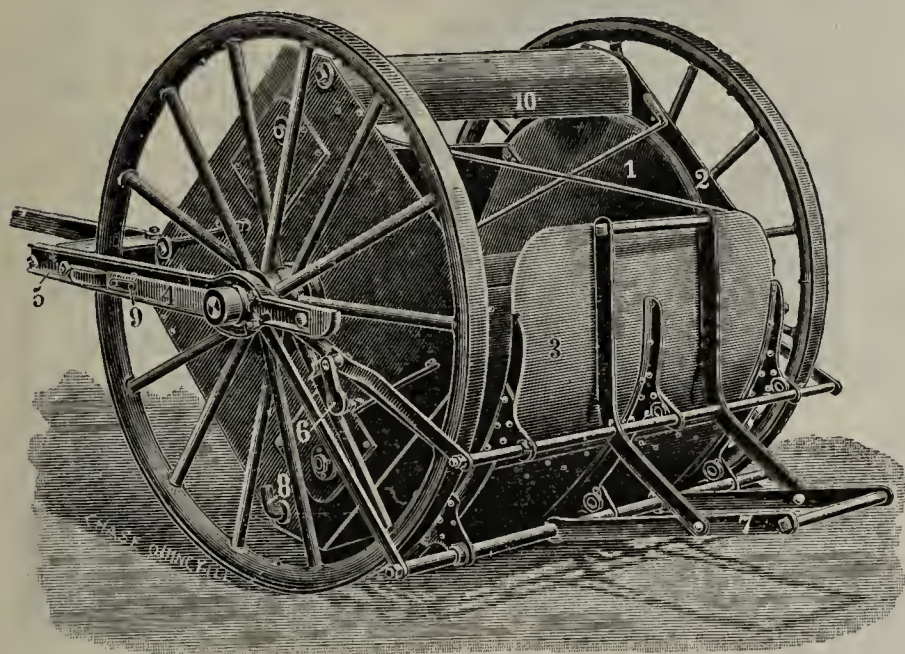


# PATENT BRICK BOXES,

Are durable, save labor and are practical for delivering brick in every way. Also rights and territory for sale. Write for circular. Address

J. BLUM, 1015 Lincoln Ave., CHICAGO, ILL.

# The QUINCY CLAY GATHERER.



This is by far the best machine that has been introduced to gather dry clay for making pressed brick. No pressed brick works is complete without one.

For gathering and shedding Dry Clay it is unequalled.

It is self-loading and unloading.

It is the cheapest and most approved Clay Gatherer.

Gathering Clay by this method dispenses with shovellers and avoids strikes.

No Brickyard complete without the Quincy Clay Gatherer.

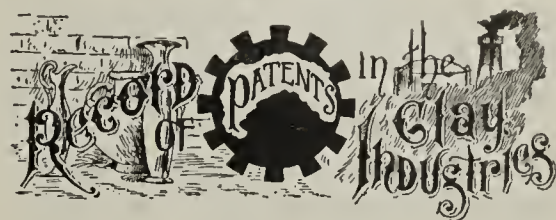
For prices and further information, apply to

ILLINOIS SUPPLY  
& CONSTRUCTION  
COMPANY,

ST. LOUIS, MO.

## A NEW CLAY PRODUCT.

The Indestructible Clay Wick Co., is the name of a new concern being organized in New York City, which, according to their prospectus, will manufacture a novel clay product in the form of wicks for oil lamps and stoves. The clay wick is said to possess many points of superiority. It never burns out, does not have to be trimmed or cleaned, emits no odor whether the light is turned high or low, and consumes less oil than the old style cotton wicks—in short is better in every way. The projectors are in hopes of interesting capital at Erie, Pa., sufficient to enable them to start a large manufactory at that point.



Complete specifications with drawings of any patent may be secured from Edward C. Weaver, Councillor and Attorney in Patent Law, 900 F. Street, Washington, D.C. Enclose fifteen cents in stamps to cover cost of each copy, and order by the number of the patent.

517,832—Tile Roofing, by George H. Babcock of Plainfield, N. J. Filed March 3, 1893.

517,883—Brick and Tile Kiln, by George N. Phares of Sheridan, Ind. Filed March 23, 1893.

517,893—Kiln for Burning Brick, by Samuel K. Smith of New Brighton, Pa. Filed Sept. 14, 1893.

518,012—Downdraft Muffle Kiln, by Andrew M. Strusholm of Woodbridge, N. J. Filed June 18, 1892.

518,153—Kiln for Burning Brick, by Fred Macarthy of Sayreville, N. J. Filed June 15, 1892.

518,185—Mould for Brick Machines, by Emil Fernholtz of St. Louis, Mo. Filed Sept. 27, 1893.

518,460—Plunger for Brick Machines, by Jacob Leonhardt of St. Louis, Mo. Filed April 10, 1893.

518,461—Mould for Brick Machines, by Jacob Leonhardt of St. Louis, Mo. Filed April 10, 1893.

518,597—Brick Machine, by Henry G. Gilbert of Dayton, Ohio. Filed June 16, 1893.

518,643—Re-press Brick Machine, by Davis Brown of Decatur, Ill. Filed July 26, 1893.

518,690—Combination Brick Kiln, by Geo. C. Firestone of Benicia, Cal. Filed July 26, 1893. The combination is of a brick kiln and drying house.

519,138—Drying Kiln, by Charles H. Seaman of St. Joseph, Mo. Filed Feb. 28, 1893.

# NEW ..AND.. NOVEL,

## The Columbian Pottery and Brick Kiln.

NO WASTE OF FUEL, LABOR  
OR TIME.

ALL PERFECT GOODS.

THOROUGH REGULATION OF  
HEAT.

OUTPUT UNIFORM AS TO TIME  
AND QUALITY.

The fires remain in one division ONLY  
and are continuous.

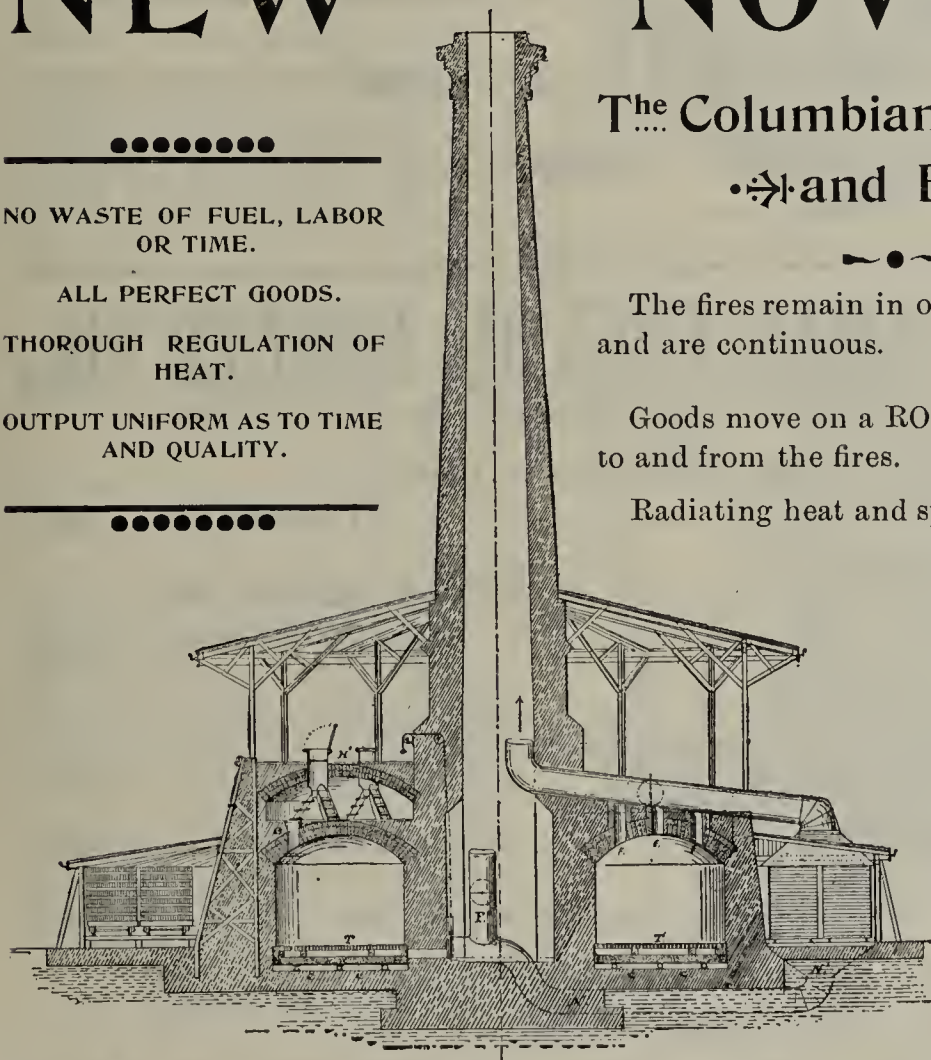
Goods move on a ROTATING FLOOR  
to and from the fires.

Radiating heat and spare heat are used  
for drying and  
heating air for  
combustion.

A perfect and  
reliable factory  
Winter and Summer.

Kiln and dryer  
combined.

Full information  
on application.



COLUMBIAN POTTERY & BRICK KILN CO., Dexter Bld'g., 84 Adams St., CHICAGO, ILL.



## WHAT IS "ACCRUING" INTEREST?

THE Supreme Court of Pennsylvania holds that "accruing" interest means running or accumulating interest, as distinguished from accrued or matured interest. When we speak of interest which is from day to day accumulating on the principal debt, but which is not yet due and payable, it says that we call it accruing interest. When we refer to interest heretofore payable, but still remaining unpaid, we speak of it as overdue interest, arrears of interest, or interest in arrear, just as we speak of rent in arrear. Hence, if, for example, mortgaged property be sold, the purchaser agreeing to pay the accruing interest, he is under no obligation to pay any interest at the time overdue and unpaid. In case of real property such interest constitutes an incumbrance which the seller must remove, under such a contract.

Mention the Clay-Worker

When writing to Advertisers

Mention the Clay-Worker

## FOR SALE, WANTED, ETC.

Advertising rates in this column 25 cents a line, or 4 cent a word, each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

**FOR SALE.** A new improved Simpson Brick Machine. EVENS & HOWARD, St. Louis, Mo. 5 tf d

**FOR SALE.** Steam engine 18x28, slide valve, ten foot pulley, five-inch governor, lubricators, heavy frame. In first-class condition. EVENS & HOWARD, St. Louis, Mo. 5 tf d

**WANTED.** A good repress, having a daily capacity of eight thousand brick, or more. State make, condition, price, etc. L. K. HOLMES, Box 653, Lincoln, Neb. 5 1 d

**FOR SALE.** One Brewer Stone Picking Clay Crusher, in good condition. For price, etc., Address THE WONER & CRAMER BRICK AND TILE Co., Clifton, Iroquois Co., Ill. 5 2 d

**FOR SALE.** Half interest in patents on dry brick press in U. S. A. and Canada. Will give half interest to party that will build one press for owner of patents, or will trade interest for interest in brick plant. Send for cut of press. Box 13, Care Clay-Worker. 5 1 t c

**WANTED TO LEASE.** Advertiser desires to lease, for a term of years, with privilege of purchaser a modern yard, either stiff mud and tile or both. Buildings, machinery and kilns must be in good order and to have facilities for drying. Yard well located as to railroad facilities and within reasonable distance of large towns. Address with full particulars, as to capacity, condition, location, price of labor, fuel and rent. 5 1 d "BRICK YARD," Care Clay-Worker.

# The YATES IMPROVED KILN, DOWN DRAFT

For Burning All Kinds of Brick.



**DON'T FAIL** to get our descriptive Circular and References.

BOTH ROUND AND SQUARE KILNS.

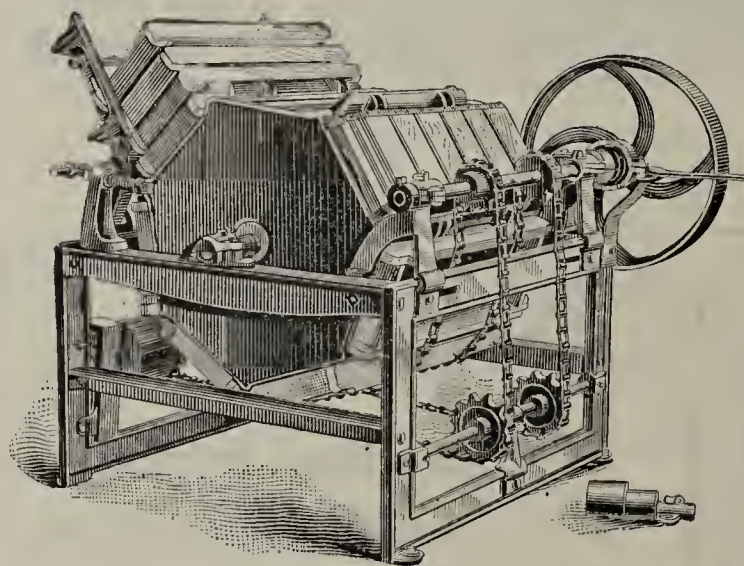
FULLY PROTECTED BY PATENTS.

THIS Kiln has worked its way to the front by results, which is the highest test of merit.

Send stamped envelope for particulars to

**ALFRED YATES,**  
Johnsonburg,  
Penn.,

or, W. N. PIKE, Contractor, MALDEN, MASS.



## CHAMPION Brick Mould

SANDING MACHINES.

This cut represents the latest improved Champion. No belts, apron or gearing. Simple, strong, and Serviceable.

**A. H. NEWTON,**

Manager and Sole Agent,

HAVERSTRAW, N. Y.

**NOTICE** To Brickmakers, Dealers and Others.....

Any person purchasing Champion machines from other than the above, render themselves liable to damages, as no other person has the right to manufacture said machines.

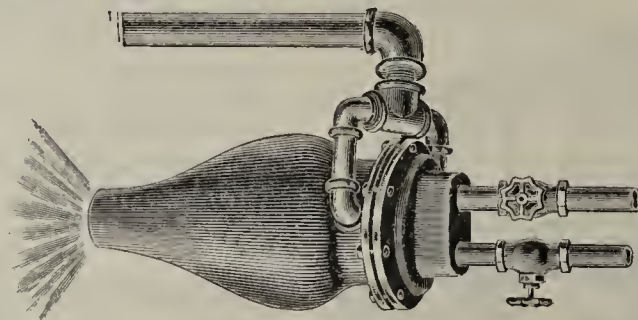
# THE THURMAN FUEL OIL BURNER CO.,

Designers, Contractors and Engineers, Fuel Oil Equipment,

GENERAL OFFICES: 35 and 36 Cordova Building,

JOHN S. THURMAN, Mech. Engineer.

INDIANAPOLIS, IND.



We are not Connected with any other Oil Burner Company.

The only perfect Crude Oil Burner on the market. The cheapest and best. Absolutely smokeless. It is Economical. Reliable. Requires no expert to manage. Cheaper than Coal. It perfectly atomizes the oil with the air and steam.

MAKES LESS NOISE THAN ANY OTHER BURNER.

For stationary Boilers, Brick Kilns, Locomotives and all Steam Plants. No soot. No Sparks. No Smoke. No Odor.

TRY OUR IMPROVED BURNER IN YOUR KILNS.

Write for Prices.

E. A. BOLDT, Sole Agent Eastern States, 320-322 Broadway, New York.  
J. POWER HELY, Chicago Manager, 1405 Monadnock Bl'k, Chicago, Ill.



DO NOT BUY A

[FOUNDED 1879.]

# SOFT CLAY BRICK MACHINE

Until You Have Investigated Ours.

Send for Photo.

W. E. TALLCOT &amp; CO., Croton-on-Hudson, N. Y.

## Fire Brick

We make a special High Grade Fire Brick (all shapes) for Brick Kiln Construction.

**NOT EXCELLED**

By any. Our quotations will surprise you. We sell Fire Brick on their merits and

their use will prove **AN ECONOMY.**GROUND CLAY IN  
.....BULK OR SACKS.

We solicit your favors.

Manufacturers of.....

High Grade Fire Brick for Every Purpose.

THE AMERICAN FIRE BRICK &amp; CLAY CO.,

MINERAL POINT, OHIO.



Send For Our Catalogue "A", Sketch Book Supplement, or Lithograph.

We Make Tubular Boilers and Outfits Only.

THERE IS A WHOLE SERMON

.....IN THE ABOVE LINE.

FULTON STEAM BOILER WORKS &amp; FOUNDRY, = = Richmond, Ind.

### STRONG, WELL-BUILT, SERVICEABLE STEAM ENGINES

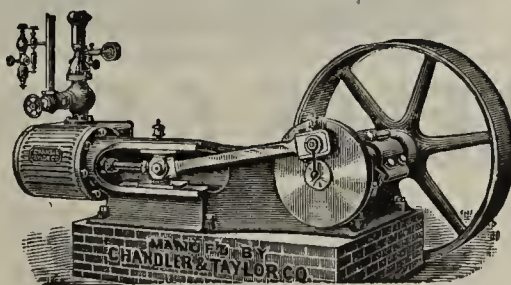
12 to 100 Horse-Power.

Adapted to heavy continuous work. Every Engine tested under full load.

Suitable Tubular &amp; Firebox BOILERS On hand for immediate delivery

For descriptive catalogue address

CHANDLER &amp; TAYLOR CO., - Indianapolis, Ind.



## THE "AJAX" BRICK MACHINE

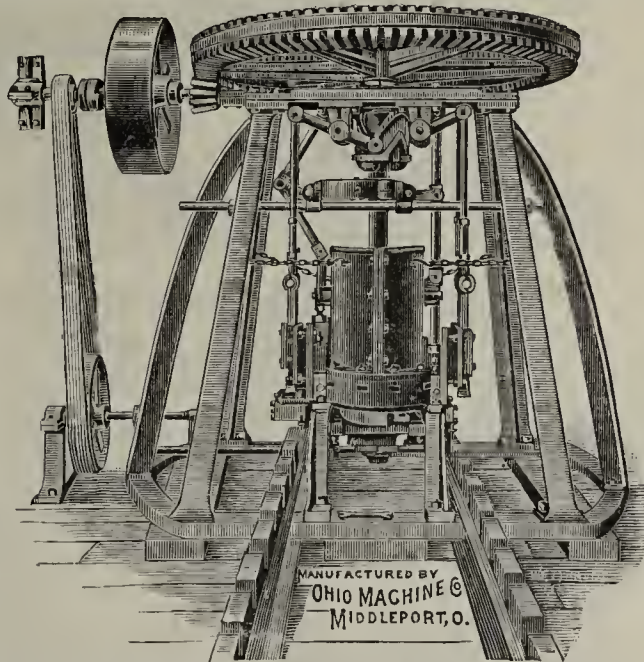
MANUFACTURED BY

Ohio Machine Co.,

Middleport, Ohio.

Under the very Latest Improved Grant-Murray Patent.

This machine is constructed with the object of giving to purchasers the very best results obtainable for the money invested. It is at once Simple, Durable, Convenient, and Easily operated. We claim these machines make the strongest brick in the market, a brick that is very superior for Street Paving and building purposes. Their superior quality as pavers may be ascertained by reference to some of the leading cities of Ohio and West Virginia. This machine works the clay very stiff, pressing all the clay into each brick that it will possibly contain, thus imparting the quality requisite to a No. 1 Paving Brick. We guarantee these machines to our customers, and solicit investigation as to their merits. For further particulars please correspond with



OHIO MACHINE CO.,

MANUFACTURERS.

We manufacture the Grant & Murray Patent Reprress Brick Machine, pressing 4 brick each revolution and 40,000 per 10 hour day.

Middleport, Ohio

**FOR SALE.** Two Philadelphia Iron Wheel Tempering Machines, five single iron hand mould, one alert pump, all of which are in good order. Address L. R. SPONG, Wormleysburg, Pa. 51 p 1

**FOR SALE OR TO LET.** At Epping, N. H., a brickyard, including the property, machines, engine and boiler, pallets, shed, barn, house and shanty. Best of clay, tempering and moulding sand. Easy terms given. Address Mrs. C. E. WATTLES, West Haverstraw, Rockland 51 e m [Co., N. Y.]

**FOR SALE.** Fourteen Penfield five-pipe rack iron dry cars—in good order—but little used. Also one transfer car—half price. Address PERKINS & PITT, Stamford, Conn. 21 e

**SECOND-HAND MACHINERY.** We offer the following second-hand machinery for cash: One 30-inch by 10-foot iron pug mill, with friction clutch pulley. Good as new. One Adrian Automatic Cutting Table, in good order. THE DECATUR LEADER MFG. CO. 81 tf Decatur, Ill. See our Advertisement on page 610.

**WANTED.** Situation as foreman or superintendent by a first-class brickmaker. Has had several years experience in making ornamental press brick, setting, burning, etc. Best of references. Address Box 60, Kirkville, N. Y. 51 e

**FOR SALE.** One 40 h. p. engine, one 20 h. p. engine, two 60 h. p. boilers, one Little Wonder brick machine, one set of Drake rolls, one Drake granulator, one hoisting machine and shafting pulleys complete for a brick plant. Address THOMAS MOULDING CO., 409-34 Clark St., Chicago, Ill. 51 f d

**FOR SALE.** To Brickmakers. About 1,800 twin pallets, five cars and two transfer cars, Chambers make, for sale cheap. Apply to THE HERCULES CEMENT CO., Catasauqua, Pa. 43 e

**FOR SALE CHEAP,** and on reasonable terms—a good Drain Tile Factory, well located and equipped. For full particulars write to GEO. S. POLLOCK, 224 Ash St., Indianapolis, Ind. 42 c

**FOR SALE.** One No. 2 Pott's Disintegrator, in use one month. One up-right Potter's Pug Mill. Address D. CULBERTSON & CO., White Hall, Ill. 26 e

**FOR SALE.** A two-mold Boyd Dry Press Brick Machine, in perfect order, very little used. POTOMAC TERRA COTTA CO., Washington, D. C. 26 c

**FOR SALE.** Horse power brick machine, in good condition. Address FRED H BROCKETT, North Haven, Conn. 1-5-e-

**PARTIES** who want to go into the roofing tile business can get advice about paterus, machines, cars dryers, kilns, etc., at the address of ROOFING TILE, care Clay-Worker. 1-6-e-

**FOR SALE** Very cheap. Two Clay Pulverizers in a No. 1 order. One set of Clay Rolls. One four-mould Dry Press. One Clay Elevator. Shafting and Pulleys. A great bargain, if sold together. Address M. F. W. & Co. Care "Clay-Worker." 2 tfd

**FOR SALE.** Three combination plastic press brick machines. These machines are of an excellent manufacture and highly adapted to plastic clays. Also one dry press machine and three power presses. Apply or address to ALFRED YATES, Mgr. Somerset & Johnsonburg Mfg. Co., 33 d Johnsonburg, Pa.

**A BARGAIN.** One Grand Automatic Brick Machine, only used 18 months, \$275. 18,000 pallets, 35x10x3/4, apiece 2 1/2 c. 600 racks or ladders, eight shelves, apiece 24 c. 5 off-bearing trucks, one wheel and spring, \$2. 400 ft. 14 lb. steel T rails, wheelbarrows, 3 ft. and 4 ft. grate bars, etc. Must be sold by all means. Box 10. 43 e "Care Clay-Worker."



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| 2 " "                                                              | 2 $\frac{1}{4}$ "                           | 56     | 2 7-16 "            | 3 "                 | 42 "  |
| 2 " "                                                              | 2 $\frac{1}{4}$ "                           | 56     | 4 $\frac{7}{8}$ "   | 5 $\frac{1}{2}$ "   | 42 "  |
| 1 " Pinion                                                         | 2 $\frac{1}{4}$ "                           | 14     | 3 7-16 "            |                     | 12 "  |
| 1 " "                                                              | 2 $\frac{1}{4}$ "                           | 14     | 2 15-16 "           | 5 $\frac{1}{8}$ "   | 12 "  |
| 1 " "                                                              | 2 $\frac{1}{4}$ "                           | 17     | 3 11-16 "           | 5 $\frac{1}{2}$ "   | 14 "  |
| 1 " Wheel                                                          | 2 $\frac{1}{4}$ "                           | 66     | 4 $\frac{7}{8}$ "   | 5 "                 | 50 "  |
| 1 " "                                                              | 2 $\frac{1}{4}$ "                           | 53     | 3 11-16 "           | 5 $\frac{1}{2}$ "   | 40 "  |
| 2 " "                                                              | 1 $\frac{1}{2}$ "                           | 66     | 2 15-16 "           | 4 "                 | 32 "  |
| 2 " Pinions                                                        | 1 $\frac{1}{2}$ "                           | 16     | 2 15-16 "           | 4 "                 | 9 "   |
| 1 " "                                                              | 1 $\frac{1}{2}$ "                           | 15     | 2 7-16 "            | 4 "                 | 8 "   |
| 1 No. 6 38 in.                                                     | B. F. Sturtevant Blower, Boston,<br>[Mass.] |        |                     |                     |       |
| 1 " 7 40 "                                                         |                                             |        |                     |                     |       |
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| 1 Steadman Pulverizer, 44 in x14 in. cage.                         |                                             |        |                     |                     |       |
| 1 Carload scrap iron, one-half wrought, one-half cast.             |                                             |        |                     |                     |       |
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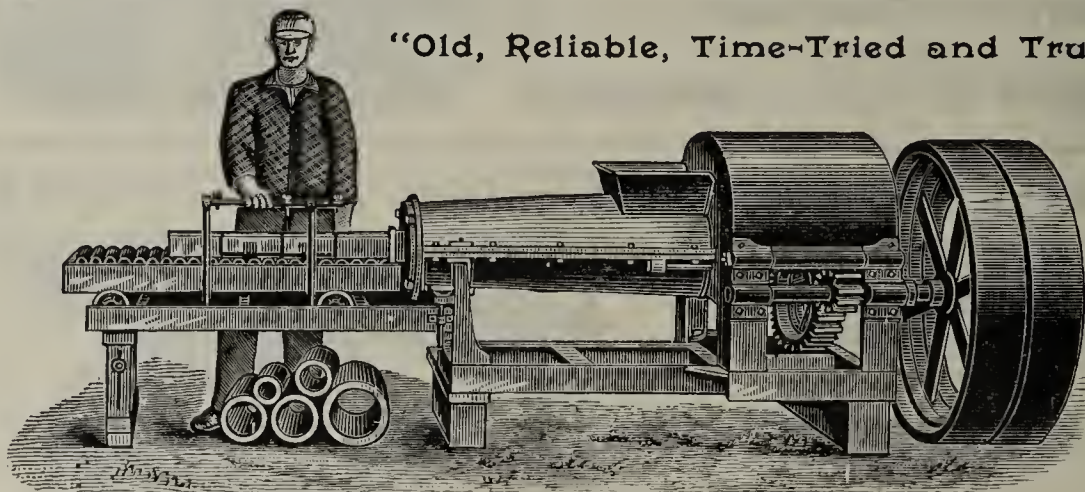
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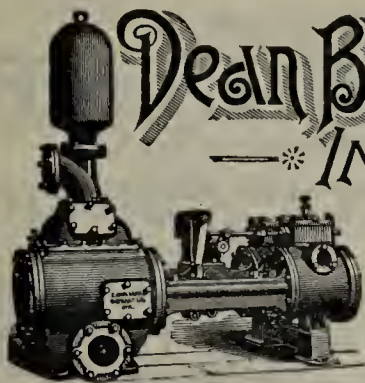
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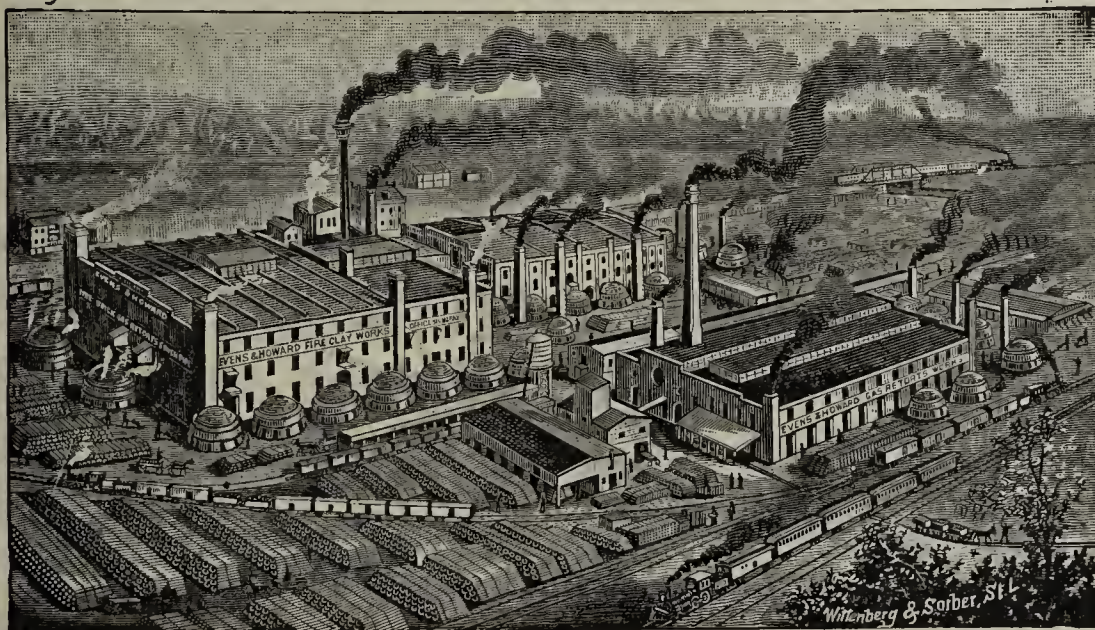




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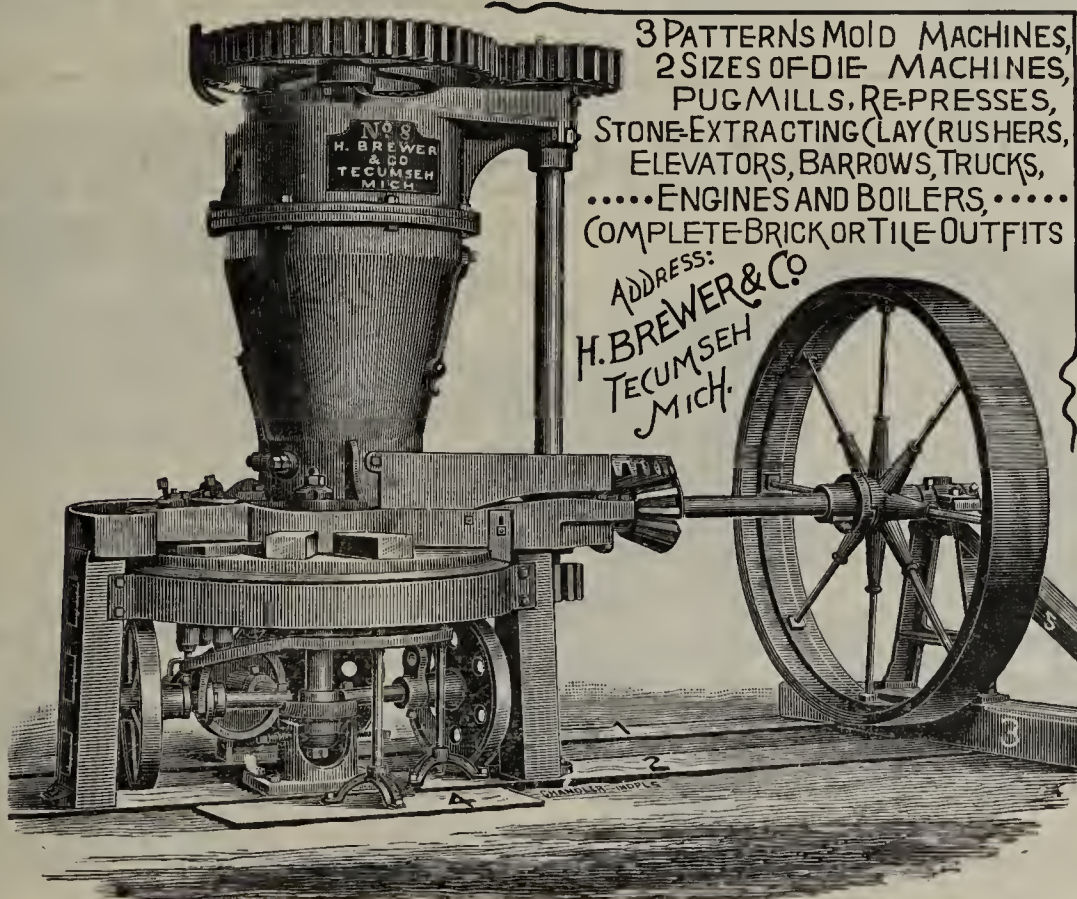
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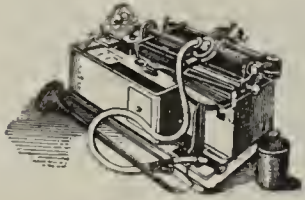
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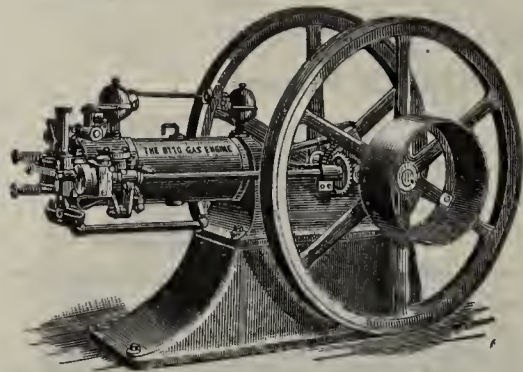
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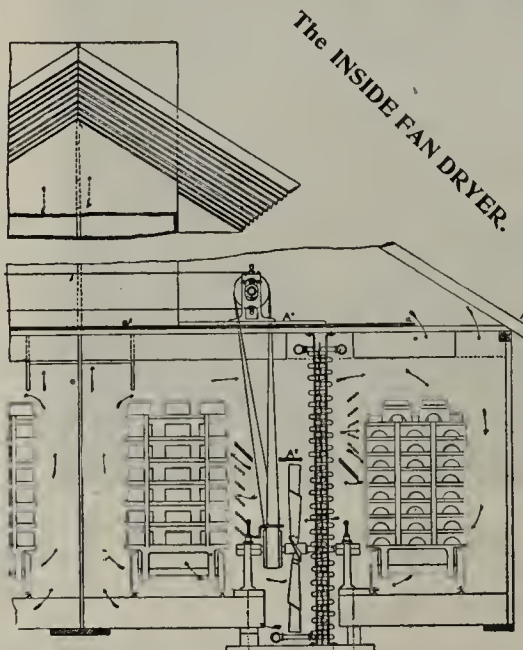
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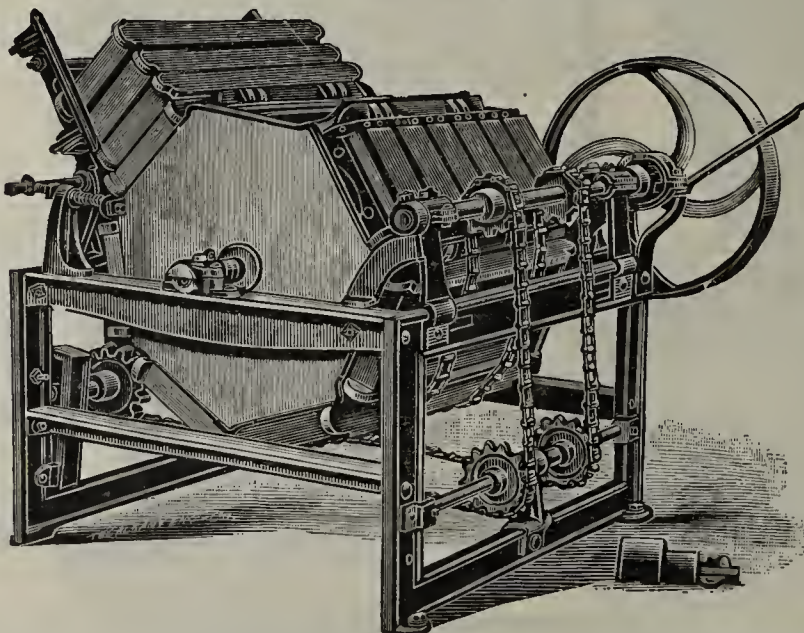
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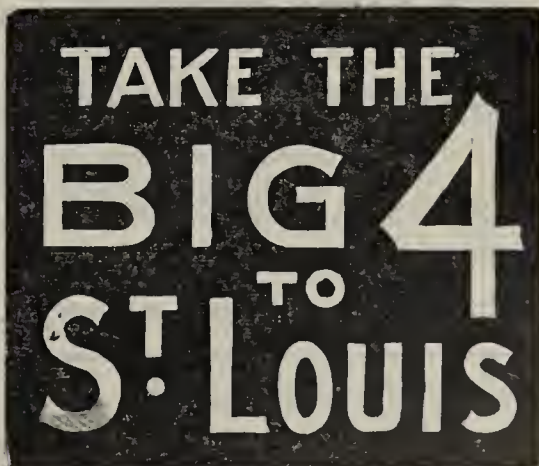
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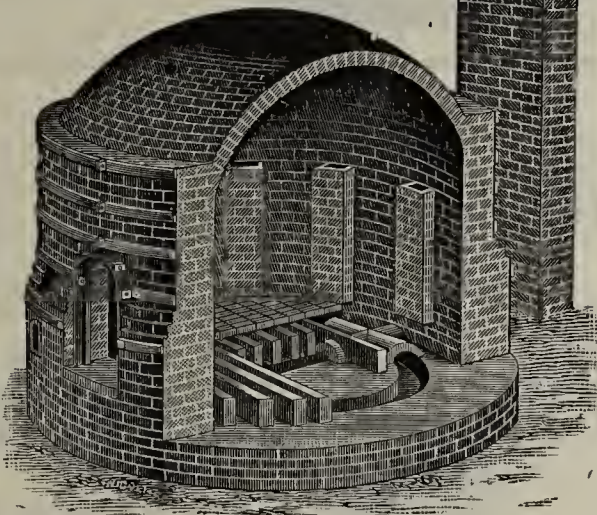
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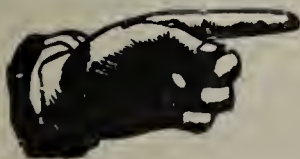
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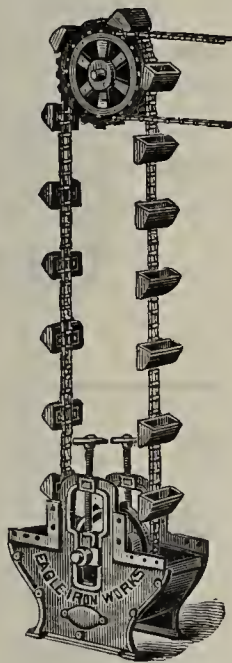
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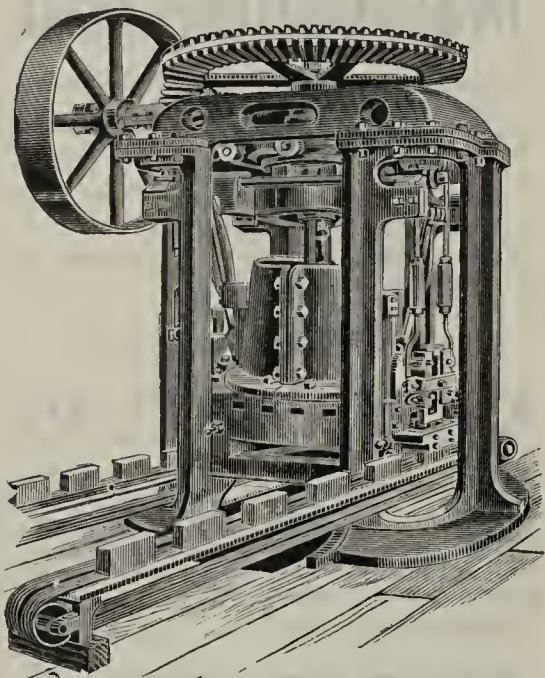




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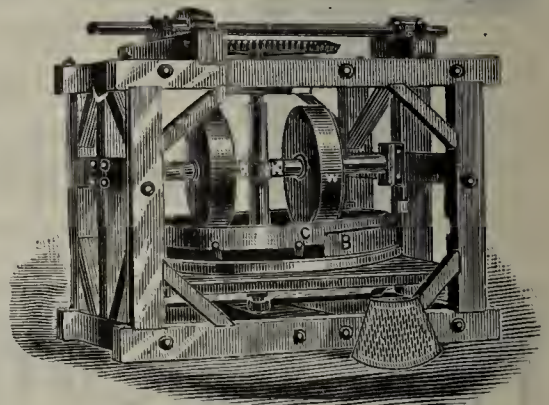
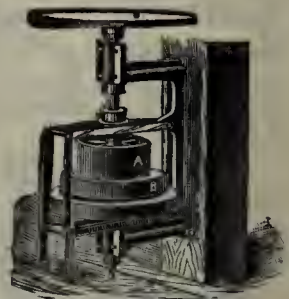
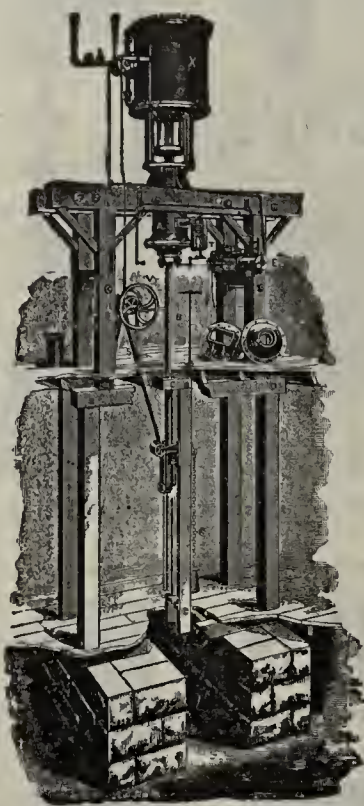
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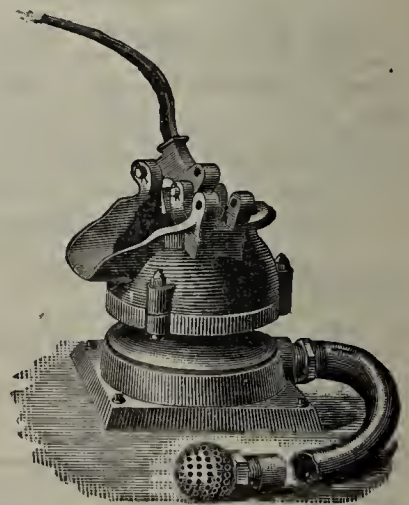
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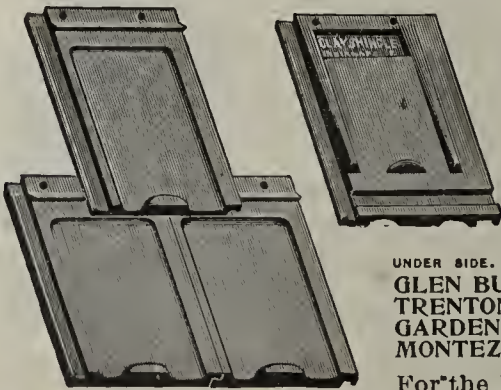
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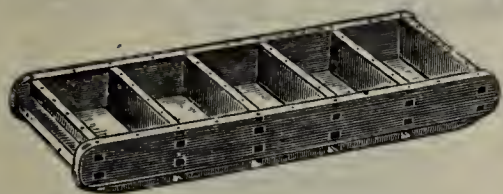
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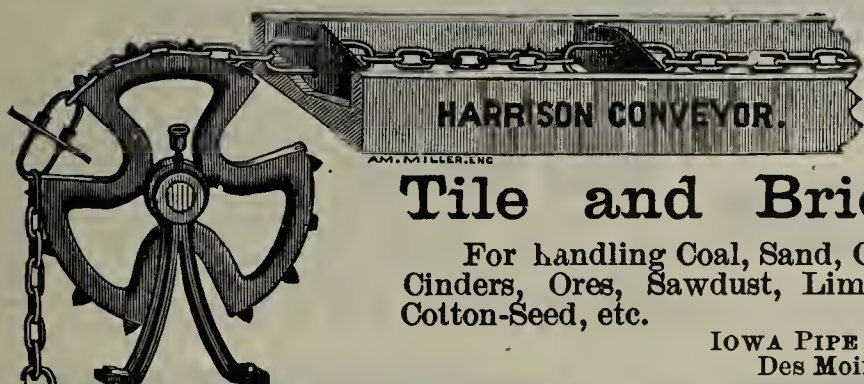


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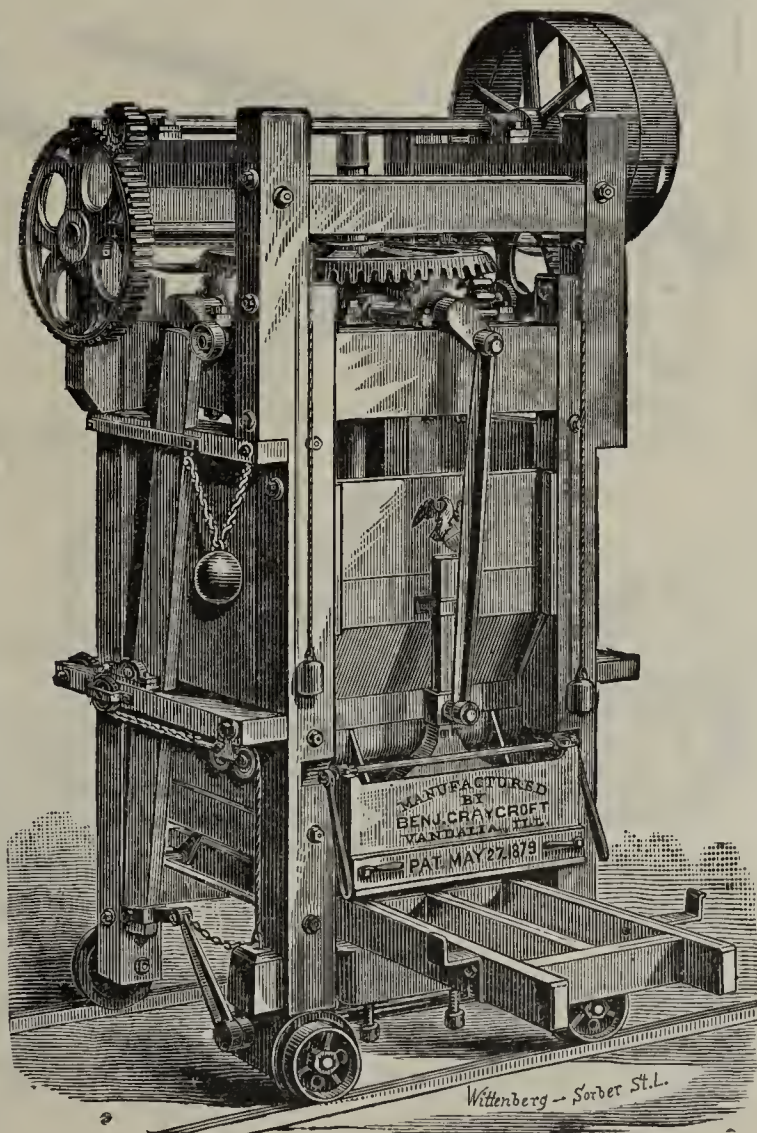
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## Steubenville Foundry & Machine Works,

Established in 1820.

—Manufacturers of—

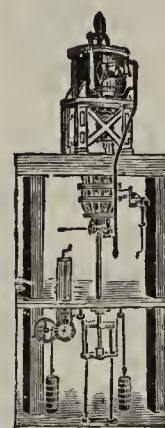
### STEAM SEWER PIPE PRESSES

OF DIFFERENT SIZES,

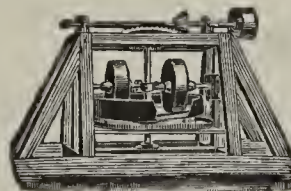
Making From 2 to 30-Inch  
Pipe Inclusive.

Pipe, Brick, Tile, Coping,  
Fire Proofing, and  
Building Block Dies.

Clay Grinding and Tempering  
Pans and Pug Mills.



FEED  
SCREWS  
FOR  
MINING  
CLAY.



STEAM  
— ENGINES  
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Every Variety of Iron and Brass Castings  
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Send for Circulars and Estimates.

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## THE SHORT LINE TO CHICAGO

Milwaukee, St. Paul, Minneapolis,  
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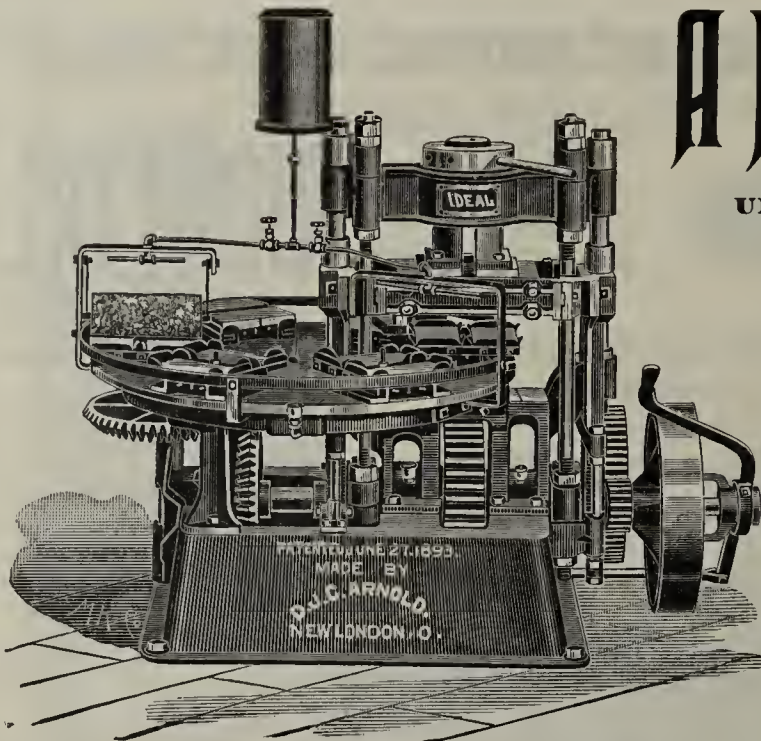
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UP TO DATE.

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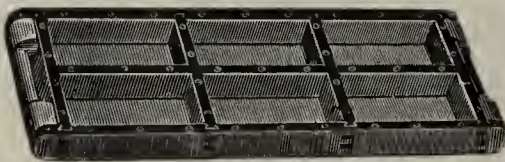
Simple, Compact,  
Convenient to  
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New features not found  
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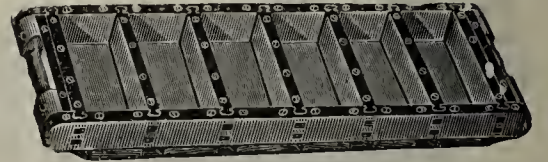
Find out all about it before  
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3 Brick Hand Mold.



6 Brick Hand Mold.



6 Brick Machine Mold.

## BRICK MOULDS.

All kinds and shapes  
made to order. A large  
stock of Hand and Ma-  
chine moulds of stand-  
ard sizes on hand to fill orders immediately. Anything  
not in stock made promptly. Standard of quality,  
the very highest to be found anywhere. New ideas  
this year. Satisfaction guaranteed. Some odd sizes  
**cheap.** Send for list and prices, stating about sizes  
desired.

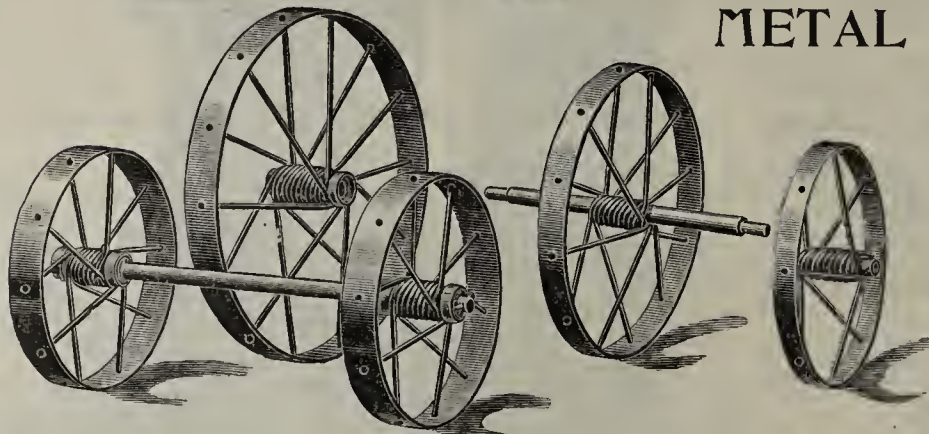
## IRON BRICK BARROWS.



Not affected by  
the weather.

About the same  
weight of wooden  
barrows, and cost  
but little more.

## METAL WHEELS.



Specially adapted to  
use on  
Brick & Tile Yards.

**STRONG**

...and...

**DURABLE**

A Full Line of Brick and Tile Yard Supplies.

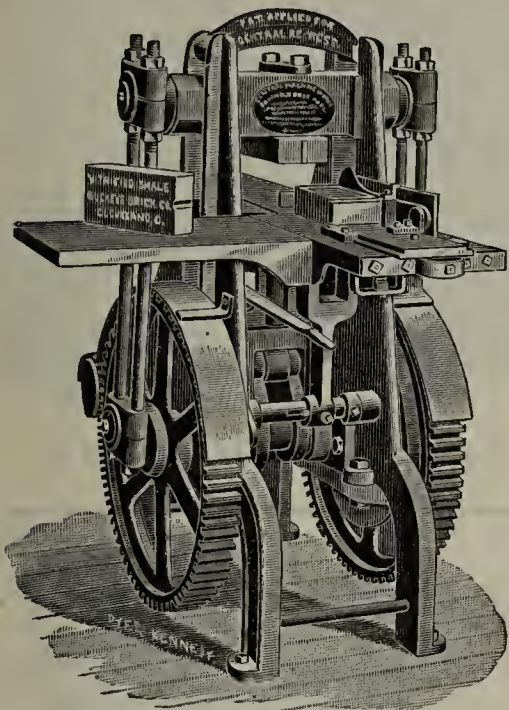
**ADDRESS, D. J. C. Arnold,**

**New London, Ohio.**

Send for Catalogue and Prices.



# REPRESSES and BRICK MACHINES.



.....

This cut represents one of the most complete Power Represses ever offered to brick-makers.

It has been tested in every way and given entire satisfaction. It has a capacity of 15,000 brick per day.

Our No. 2 Repress Double Mould has a capacity of 30,000 per day. They can be seen in full operation at the Buckeye Brick Company's plant at Wickliffe, Ohio.

—MANUFACTURED BY—

## CENTRAL MACHINE WORKS,

Send for Circulars and Prices.

226-236 Abbey St. CLEVELAND, O.

# FIRE BRICK.

Below are analyses of the PLATT BRICK & FIRE PROOFING CO.'S Fire Clay Deposits.

|                            | No. 1. | No. 2. |
|----------------------------|--------|--------|
| Water of Constitution..... | 2.32   | 9.69   |
| Silica.....                | 86.63  | 55.11  |
| Alumina.....               | 10.92  | 28.71  |
| Oxide-iron.....            | .10    | 4.29   |
| Sulphureous-acid.....      | ...    | 4.16   |
| Totals.....                | 99.97  | 99.96  |

Analyses by W. S. Robinson, Chemist, Omaha, Neb.

Brick are manufactured carefully on the best of machinery. Large capacity. Prompt shipment. Prepared fire-clay. Fine Pressed Brick. Paving Brick. Address

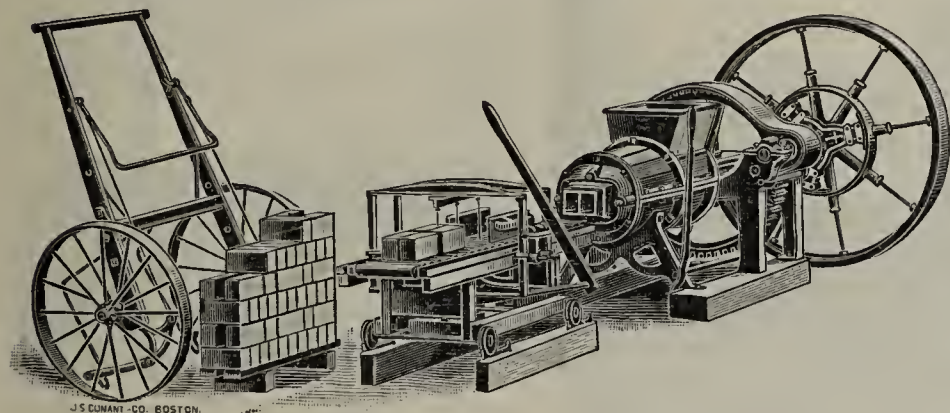
PLATT PRESSED & FIRE BRICK CO.,

706 Youngerman Block, Des Moines, Iowa.

## J. C. STEELE & SON,

SOUTHERN MANUFACTURERS  
.....OF BRICK MACHINES

The Only Manufacturers of Steele's Celebrated BRICK TRUCK for Portable Hack.



Kiln Castings,  
Pug Mills,  
Winding Drums,  
Clay Cars,  
Switch and Frogs,  
Friction Pullies,  
Etc., Etc.

THIS cut represents our "One X" Machine, which makes 10,000 to 15,000 per day. But we have a large Double Geared Machine for side or end cut brick which makes 15,000 to 20,000 per day. Write for Catalogue and Prices, and mention the CLAY-WORKER.

J. C. STEELE & SON, Statesville, N. C.

## M. V. B. WAGONER'S SLIP CLAY { For Glazing of Pottery } WORKS

ESTABLISHED 1845.

Clay in stock in any quantity, in barrels and bulk by the carload.

Office, 20 Ten Broeck St.,

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## LOCAL TIME TABLE

In Effect Jan. 1, 1894,  
Solid Train Between  
Sandusky and Peoria  
—AND—  
INDIANAPOLIS and  
MICHIGAN CITY

Direct connections to and from all points in the United States and Canada. Trains arrive and depart from the Indianapolis Union Station as follows:

DEPART.  
No. 20 Passenger..... 7:05 a. m.  
\*No. 22 Passenger..... 1:20 p. m.  
No. 24 Passenger..... 7:00 p. m.

ARRIVE.  
\*No. 21 Passenger..... 10:30 a. m.  
No. 23 Passenger..... 2:50 p. m.  
No. 25 Passenger..... 6:20 p. m.

Trains not marked run daily except Sunday \*daily, except Saturday.

No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. & A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west.

For time tables or any other general information call on any agent of Lake Erie & Western or Ft. W. C. & L. railroads, or address C. F. DALY, H. C. PARKER, General Pass Agt Traffic Manager, Indianapolis, Ind.

## 100 CITIES AND TOWNS WANTING INDUSTRIES

Is the title of a pamphlet issued by the Illinois Central R. R. Co. If you are thinking of making a change in location and are not well-informed as to the advantages of locating either in the West or South, write for a copy. If you want in a nutshell the

## SALIENT POINTS OF OVER 100 PLACES

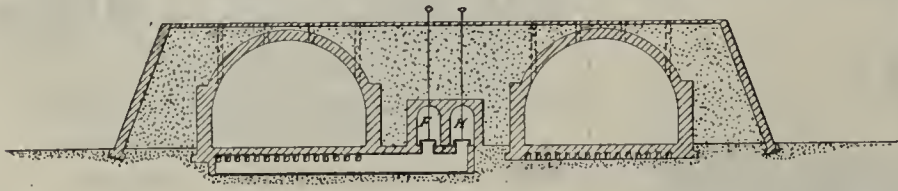
on the line of the Illinois Central and Yazoo & Mississippi Valley Railroads, giving the population, city and county debt, death rate, assessed valuation of property, tax rate, annual shipments, raw materials, industries desired, etc., apply to the undersigned. Our line is in the shape of the figure "7" and runs from Sioux Falls, S. D., and Sioux City, Ia., to New Orleans, passing through South Dakota, Iowa, Minnesota, Wisconsin, Illinois, Indiana, Kentucky, Tennessee, Mississippi and Louisiana, and has

## NEARLY EVERY KIND OF RAW MATERIAL

used in manufacturing, together with populous sections which are large consumers of the manufactured product. To sound industries which will bear investigation, substantial inducements will be given by many of our places, and they will be welcomed heartily by the different sections traversed by the Illinois Central and Yazoo & Mississippi Valley Railroads. For all information on the subject, address GEO. C. POWER, Industrial Commissioner I. C. R. R. Central Station, Chicago, Ill. 11 5 T.



# YOUNGREN'S IMPROVED CONTINUOUS KILN.



Marks a Great Advance in the Art of Continuous Burning

Accuracy of results reduced to a certainty.

Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.

Under ordinary circumstances the kiln pays for itself in six months.

Do not decide on kilns before making a thorough investigation.

Choose a kiln that is fully guaranteed as to results.

Read what some of the users say about Youngren's Continuous Kiln and be convinced.

**PETERSEN BRICK COMPANY,**

MANUFACTURERS OF PRESSED, ORNAMENTAL AND COMMON BRICK.

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR:—In reply to your inquiry as to the working of our Continuous Kiln we take great pleasure in saying that the same is a success in every respect. As you well know our people were somewhat doubtful as to ability of your kiln to burn first quality of pressed and ornamental brick, but we have now demonstrated to their satisfaction, that the same can turn out from 35 to 40 per cent. of the finest quality of press and ornamental brick the color of which is even superior to those we formerly burnt in the E— downdraft kiln. As to common brick will say that every brick comes out hard and of good color. Wishing you success, we remain,

Yours truly

SAN JOSE, Cal., Aug. 25, 1893.

Per H. M. STAMMER, Superintendent.

For particulars address

**P. L. YOUNGREN, Oakland, Cal.**

*Why Pay Royalties? Why Pay Yard Rights?  
When You Can Get*

## Bickel's Improved Down Draft Kiln

**GUARANTEED WITHOUT.**

We will build this Kiln and guarantee it to give satisfaction, either by contract or on a per cent. basis.

This Kiln is Simple and Durable in Construction, and Economical in Operation, and does not require an expert to handle it. Any good burner, who understands his business, can easily manage it.

There are no small tile to break or burn out, and no iron exposed to the flames.

This Kiln is built Strong, and to any desired size, and adapted to burning Fire Brick, Vitrified Brick, and Dry Pressed Brick, and all kinds of Pottery goods. Built Square or Round.

Advantages of BICKEL'S IMPROVED DOWN-DRAFT KILN: It burns the brick uniform throughout. It has no light or salmon brick in bottom courses. It does not burn the bottom courses at the expense of the top. It does not check or crack the brick as an up and down, or combined draft kiln will, and costs you less money to build.

For further information, address

**BICKEL BROS. CONTRACTING CO.,**

**920 Market Street,**

[Mention the Clay-Worker.]

**ST. LOUIS, MO.**

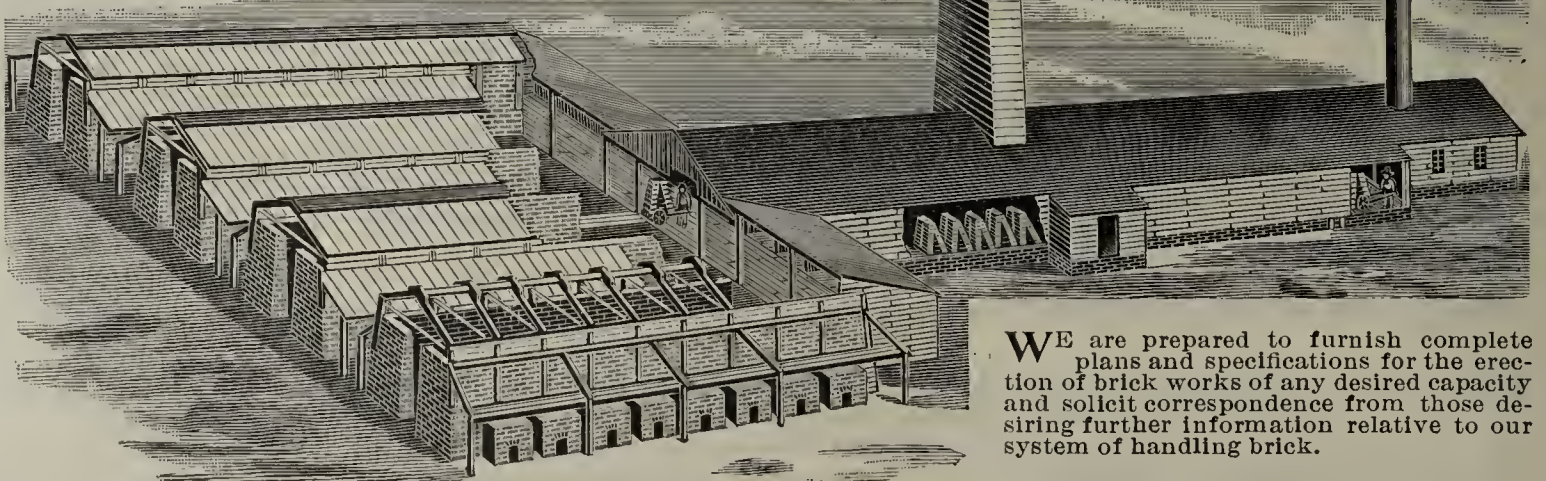
## The Mock Portable Rack and Pallet System FOR HANDLING BRICKS.

The Most Expeditious, the Safest and Easiest Method of Handling Brick from Machine to Kiln.

**IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.**

What Users say of the  
MOCK SYSTEM.

Mr. J. C. Adams, Indianapolis, Ex-Pres. of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for four seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."



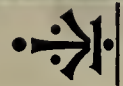
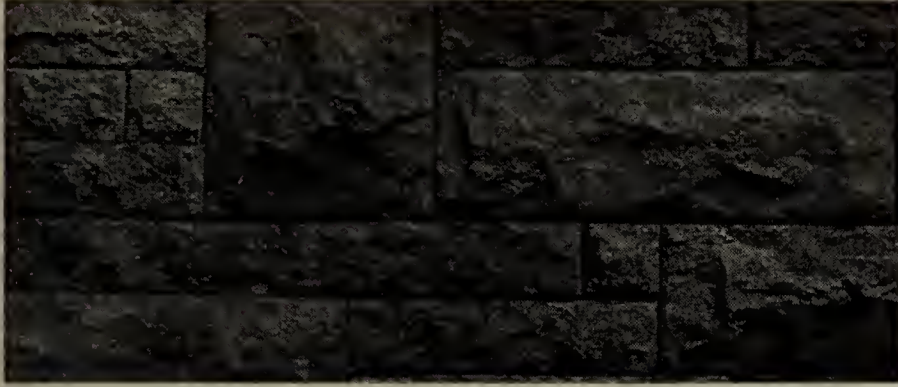
WE are prepared to furnish complete plans and specifications for the erection of brick works of any desired capacity and solicit correspondence from those desiring further information relative to our system of handling brick.

**MOCK BROS., Muncie, Ind.**



# The BOSTON BRICK ASHLAR.

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)  
ROCK FACE. TOOLED FACE.



FISKE, HOMES & CO., Boston.

NORTHWESTERN TERRA COTTA CO., Chicago.

LICENCEES.



F. H. C. MEY CHAIN BELTING  
ENGINEERING WORKS,

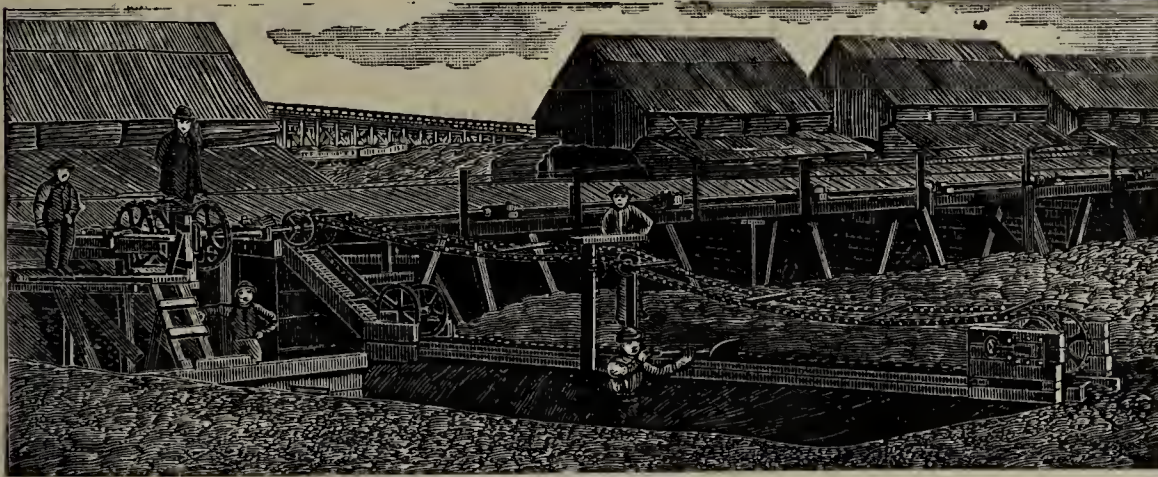
APPROVED APPLIANCES FOR

Elevating, Conveying & Transmission of Power

64 to 68 Columbia St., BUFFALO, N. Y.

Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



Mey Patent Clay Elevator.

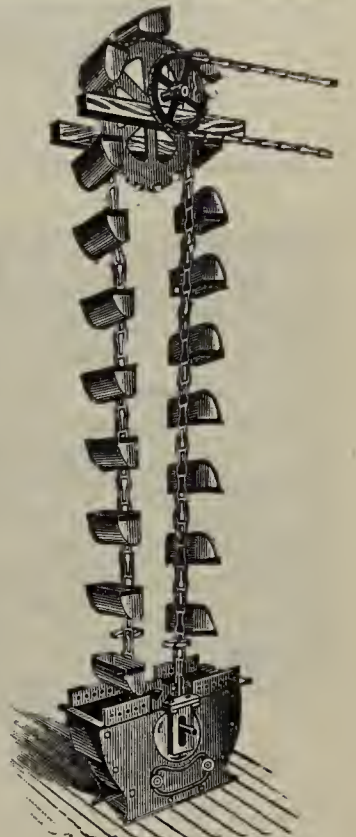
at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

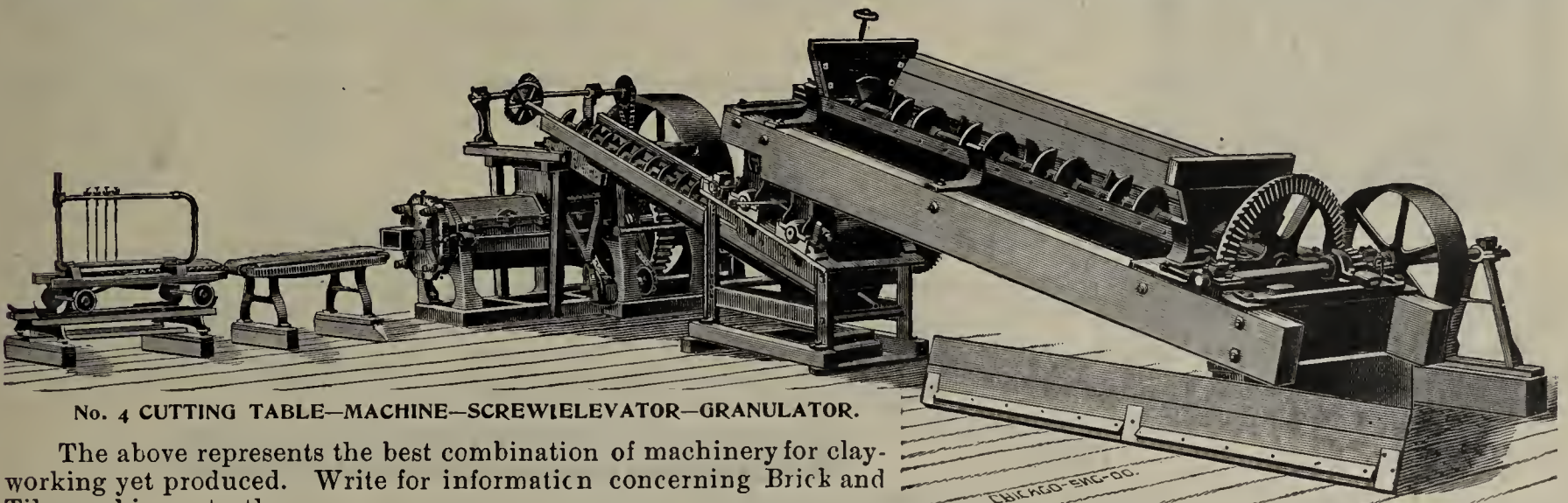
**Make Many More  
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
PRICE LIST.



# ADRIAN BRICK AND TILE MACHINE CO.

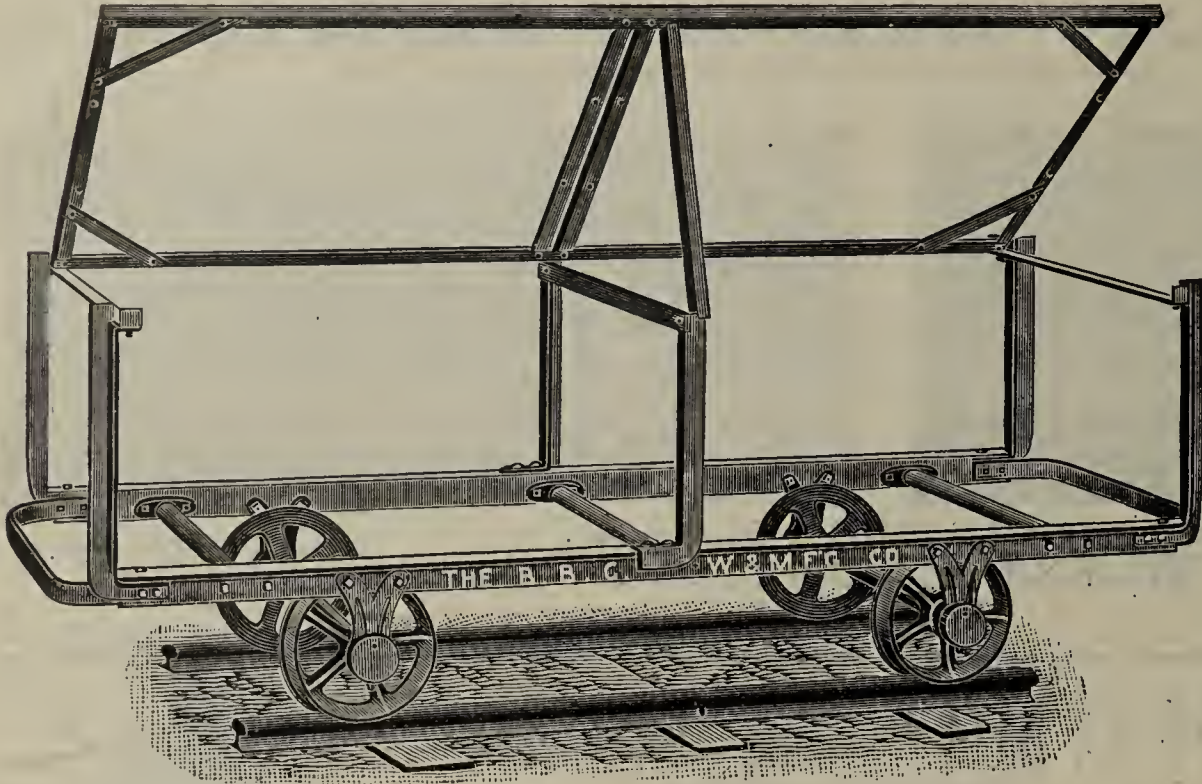


No. 4 CUTTING TABLE-MACHINE-SCREWELEVATOR-GRANULATOR.

The above represents the best combination of machinery for clay-working yet produced. Write for information concerning Brick and Tile machinery to the

ADRIAN BRICK AND TILE MACHINE CO., Adrian, Michigan.





## BRICK DRIER CARS.

ONE brick manufacturer who has used both the common cast iron and our all Steel Brick Drier Cars, says, "The

### Cast Iron Cars

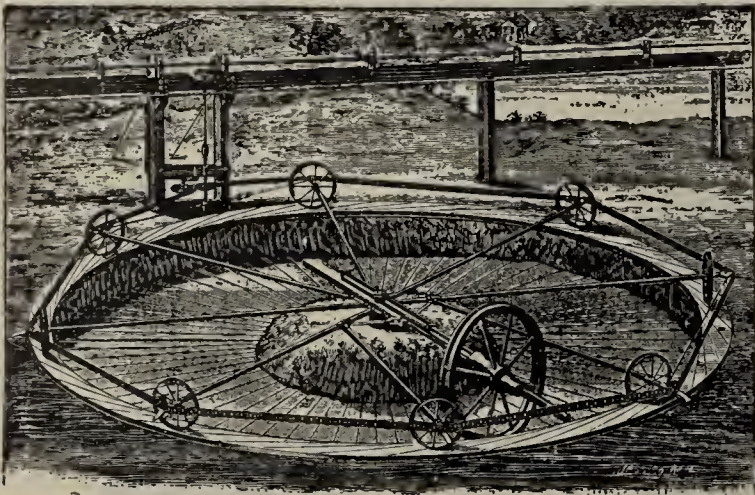
With which our yards were started have cost us fully three times as much as your

### All Steel Cars."

Profit by experience.

The Ball-Bearing Car Wheel & Mfg. Co.,  
961-981 Hamilton St., CLEVELAND, OHIO.

SUCCESSOR TO  
CLEVELAND WHEELBARROW & MFG. CO.



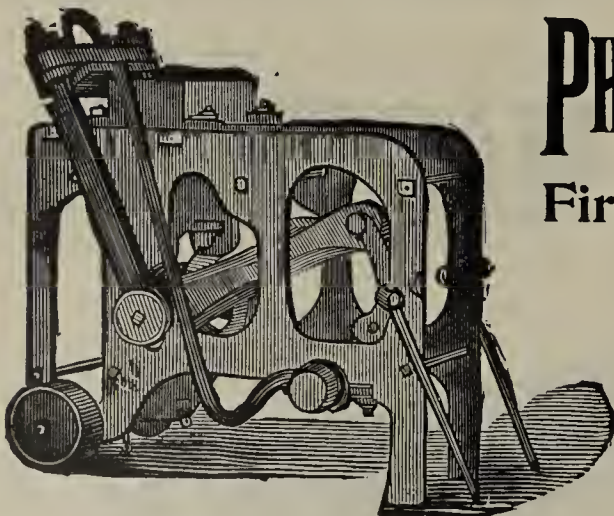
## DORNFELD'S PATENT CLAY TEMPERING MACHINE,

Manufactured by

The E. Kunert M'f'g Co.,

Watertown, Wis.

Send for Catalogue and Prices.



RED BRICK PRESS.

**GEORGE CARNELL,**

Nos. 1,819, 1,821 and 1,823 Germantown  
Avenue and Fifth Street,  
PHILADELPHIA, - - - PENN.

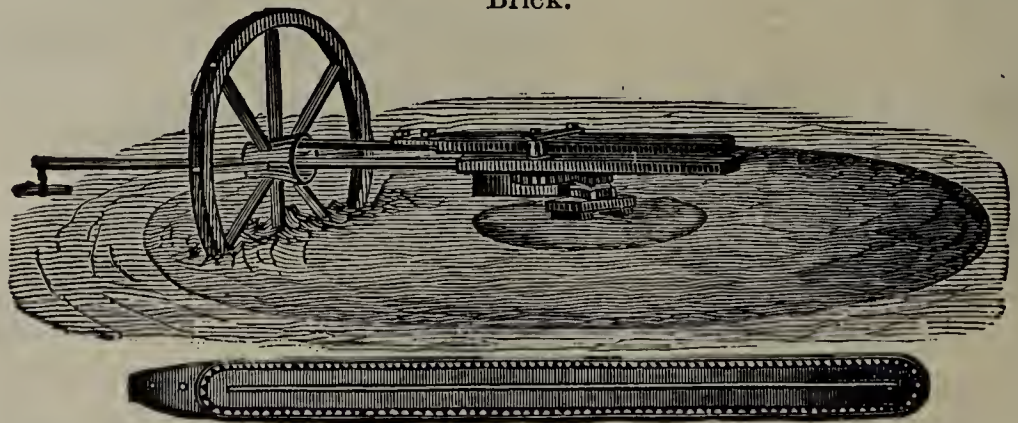
Send for Circular and Price-List.

## PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.



# BRICK MOLD LINERS.

Do YOU know that....

BRANCH-CROOKES SAW CO.,

St. Louis, Mo.,

Are making the hardest and toughest Brick Mold Liners for all the various Dry Press Brick Machines now in use in this country? Well they are. Now we understand there is a pool on these Liners. We are not in it. Try a few sets of our liners and be convinced both as to quality and price. We beg to refer to the Thomas Pressed Brick Co., of Brussels, Calhoun Co., Ill.

Branch-Crookes Saw Co.,  
St. Louis, Mo.

## THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

A. M. & W. H. WILES,  
Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



# BRICK

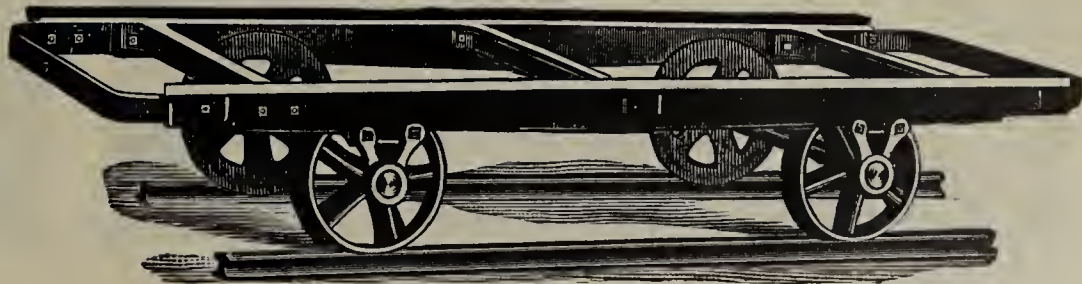
48 Styles.

Also  
Turn Tables,  
Transfers  
Kiln Doors,  
Grate Bars,  
T Rails and  
Iron Pipe.



# CARS

Send For Price List.



STYLE 23.

THE WALWORTH RUN FOUNDRY & MFG. CO.,  
Cleveland, O.



# The KAUL Continuous Brick Kiln.

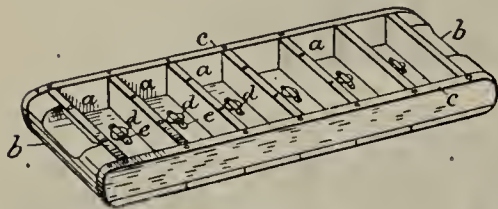
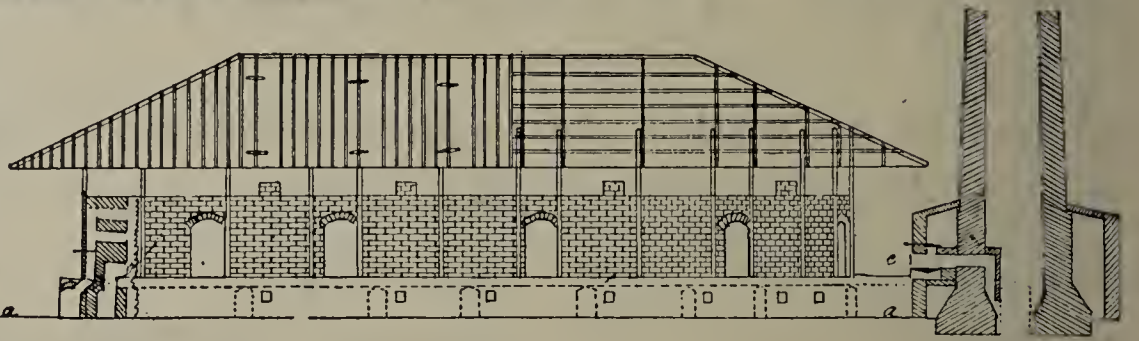
Patented March 23, 1892.

**T**HIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.



## KAUL'S PATENT BRICK MOLD

Something New, Practical and Profitable.

In the bottom of each chamber of this mold is a valve by which air is admitted when emptying the mold. Thus the brick leave the mold freely, insuring better edges and truer brick. It not only admits of more rapid and better work, but saves a great deal of sand which cannot run through the bottom as in the old way. It keeps the slats or rollers of

machine clean as it also does the table when molding by hand. By the use of this mold brickmakers can improve their product and save time and money. For full particulars, etc., etc., address

**CARL F. KAUL, Madison, Neb.**

Mention the Clay-Worker.]

## THE BONNOT COMPANY, CANTON, OHIO, Build STEAM DRYERS and CLAYWORKING MACHINERY.

Parties in search of the **VERY BEST DRYER** would do well to write for particulars. Contracts for complete equipments are especially solicited. If you want the best machinery, no matter what particular machine it is, write **THE BONNOT COMPANY, Canton, Ohio.**

### BRICK MARKER.

WHY NOT MARK YOUR BRICK?

COSTS BUT A TRIFLE.

STREAM OF CLAY OPERATES IT.

MARKING AT ATTACHMENT CAN BE USED ON ANY BRICK MACHINE FOR END OR SIDE CUT.

WRITE FOR PARTICULARS TO THE **BONNOT COMPANY CANTON, O.**

### BRICK CARS.

WITH ROLLER BEARINGS

CARS RUN EASY AND ARE DURABLE BECAUSE THEY ARE WELL BUILT.

FOR ORDERS OF FIFTY OR MORE CARS LIBERAL INDUCEMENTS WILL BE MADE — PRICES HAVE DECLINED.

ADDRESS **THE BONNOT CO. — CANTON, O.**

THE BONNOT COMPANY,  
CANTON, OHIO.

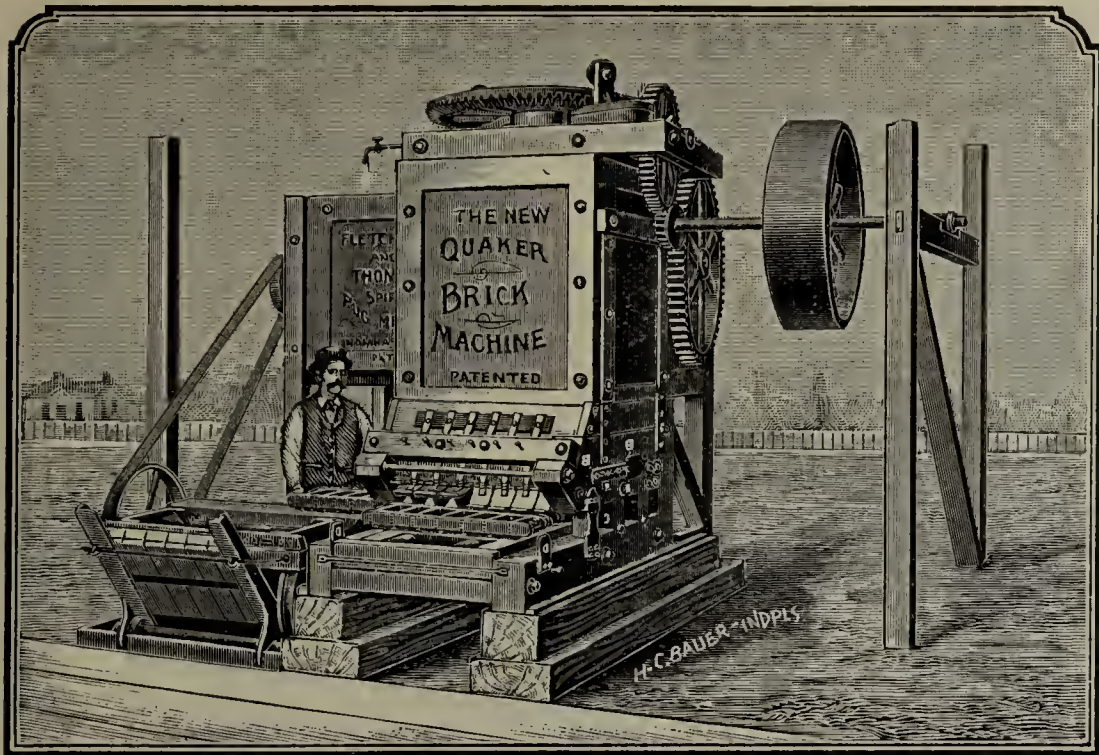
CANTON, OHIO, March 26th, 1894.

GENTLEMEN:—We are using two of your Revolving Screens at our works and in reporting to you the satisfaction the Screens are giving, we do not exaggerate in the least when we say that these Screens are indispensable to the making of a high grade of brick. We attribute our success in establishing a record for high grade brick, largely to the use of Revolving Screens. These Screens are giving such splendid satisfaction that we can heartily endorse them and they are exactly what you claimed for them. The guarantee which you made on them has been fulfilled to the letter. The Bonnot Dry Pans, Pug Mill, and Dryer, are all first-class. The Dryer is especially worthy of praise. It dries the brick satisfactorily. We are sure that no other Dryer excels ours.

Yours truly,

IMPERIAL SHALE BRICK CO., E. D. KEPLINGER, Sec'y & Treas.





EXTRA HEAVY, COMBINED OUTFIT CAPACITY 40,000 TO 50,000 PER DAY.

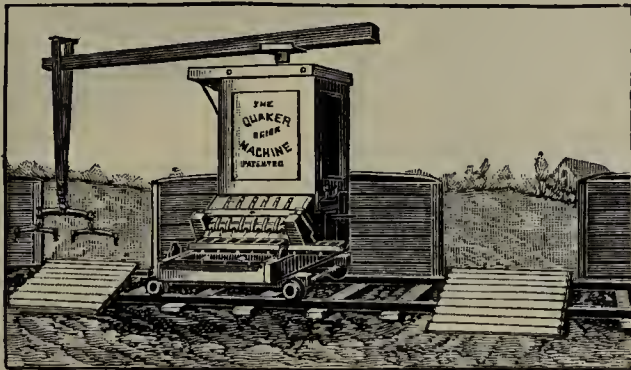
THE NEW MODEL

**QUAKER**

HORSE POWER.

The best machine for  
the man of moderate  
means ever used.

Capacity 15,000 to  
20,000 per day.



WE CONTRACT TO ERECT AND EQUIP

PLANTS COMPLETE IN EVERY DETAIL.

Send for Illustrated Catalogue and Special prices before placing  
your order, as we can save you money.

**S. K. FLETCHER,** General Agent,  
Successor to FLETCHER & THOMAS,  
INDIANAPOLIS, IND.



# "Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

*Messrs. Main Belting Co., Chicago:*

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours, I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our class of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.**MAIN BELTING CO.,**

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

**Thompson's Water-Proof Belt Dressing for**  
**Leather, Rubber and Canvas Belting.**

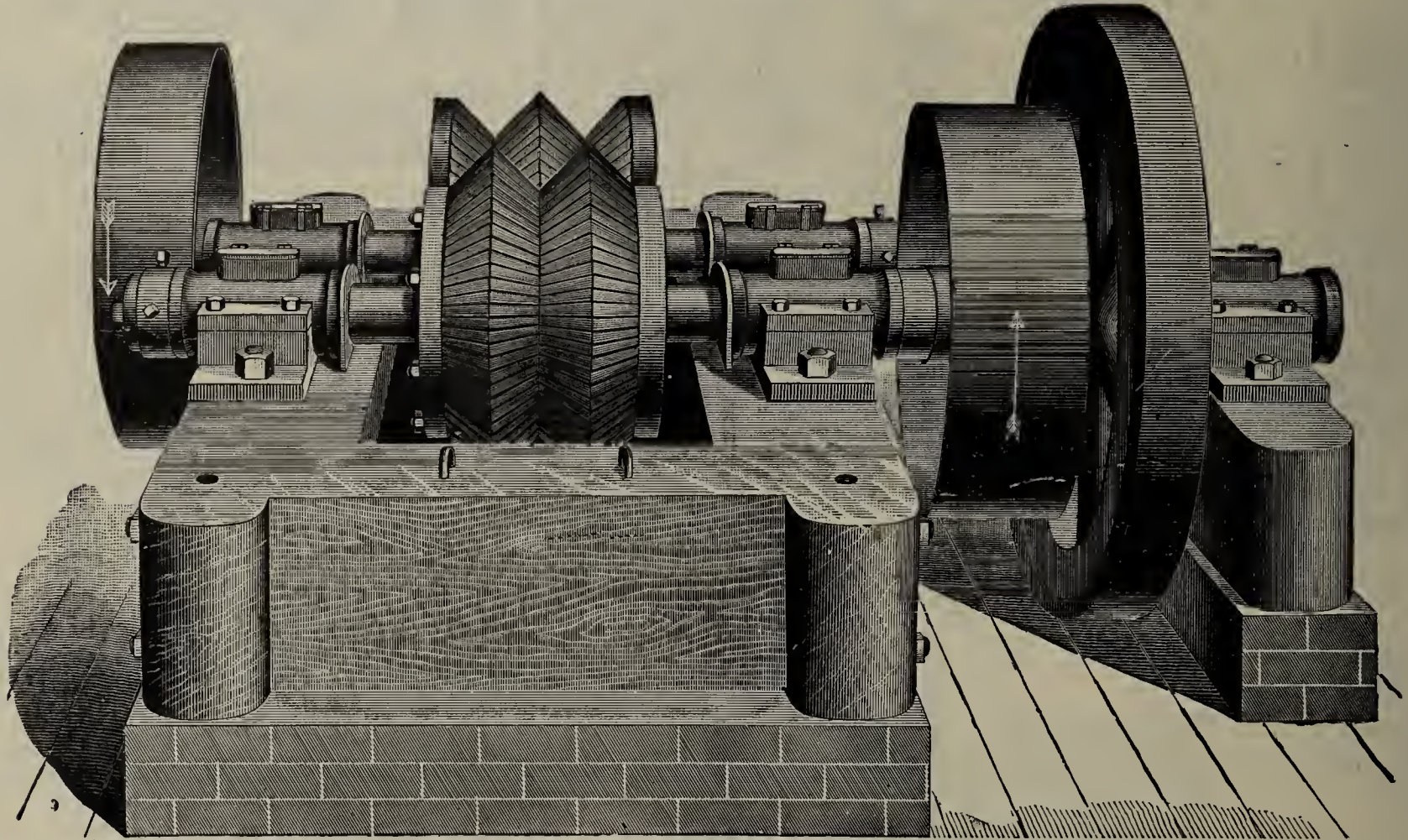
No user of Belting can afford to be without it.





# NEWELL IMPROVED CLAY PULVERIZER

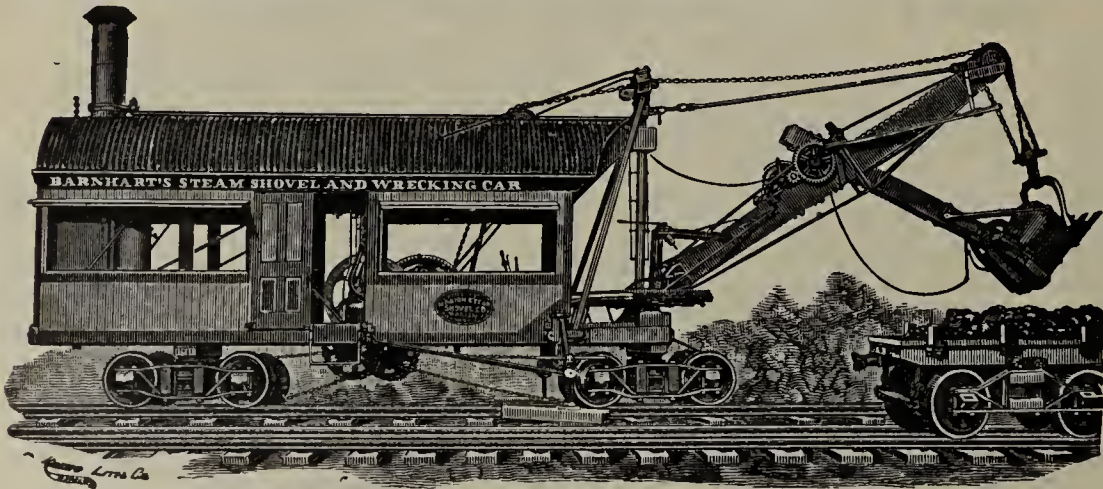
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

**NEWELL UNIVERSAL MILL CO.,** Room 710, Haremyer Building, New York, U.S.A.  
26 Cortland and 21 Dey Streets,

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**  
608 West Center Street,  
**MARION. . . . . OHIO.**

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick

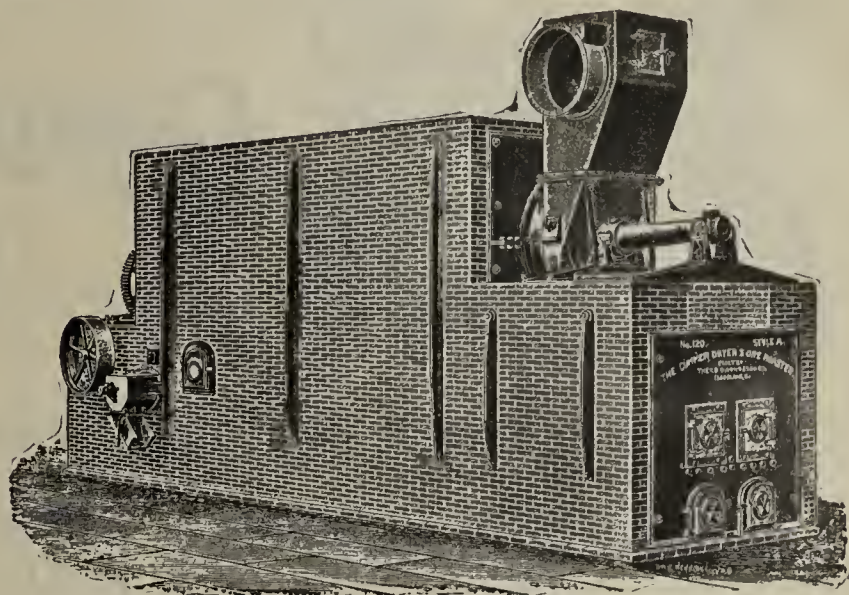


STYLE C—¾ YD



LABOR DISPENSED WITH; VERY LITTLE FUEL USED; NO BREAK DOWNS; SUPERIOR PRODUCT OBTAINED; CLAY DRIED SUMMER AND WINTER, RAIN OR SHINE, ARE A FEW OF THE SPECIAL ADVANTAGES OBTAINED BY USING THE

# Cummer Clay Dryer



## SIX SIZES MADE.

Prepares from 3 to 20 tons of clay per hour for dry pan or pulverizer. The clay is handled mechanically (without men) from bank to press or other machines.

### NEW METHODS.

#### DRIES

Phosphate, Sand, Earths, Paint Stocks, Peat, Coal, Salt, Marl and Clay for Cement making, Chalk, Cereals of all kinds, Tankage, Night Soils, Animal Manure, etc., etc.

#### CALCINING AND ROASTING MACHINERY

for Gypsum, Ores of all kinds, Phosphate, Paint Stocks, etc., etc.

## THE F. D. CUMMER & SON CO.,

613-616 Arcade,

CLEVELAND, OHIO, U. S. A.

SEND FOR  
OUR NEW CATALOGUE.

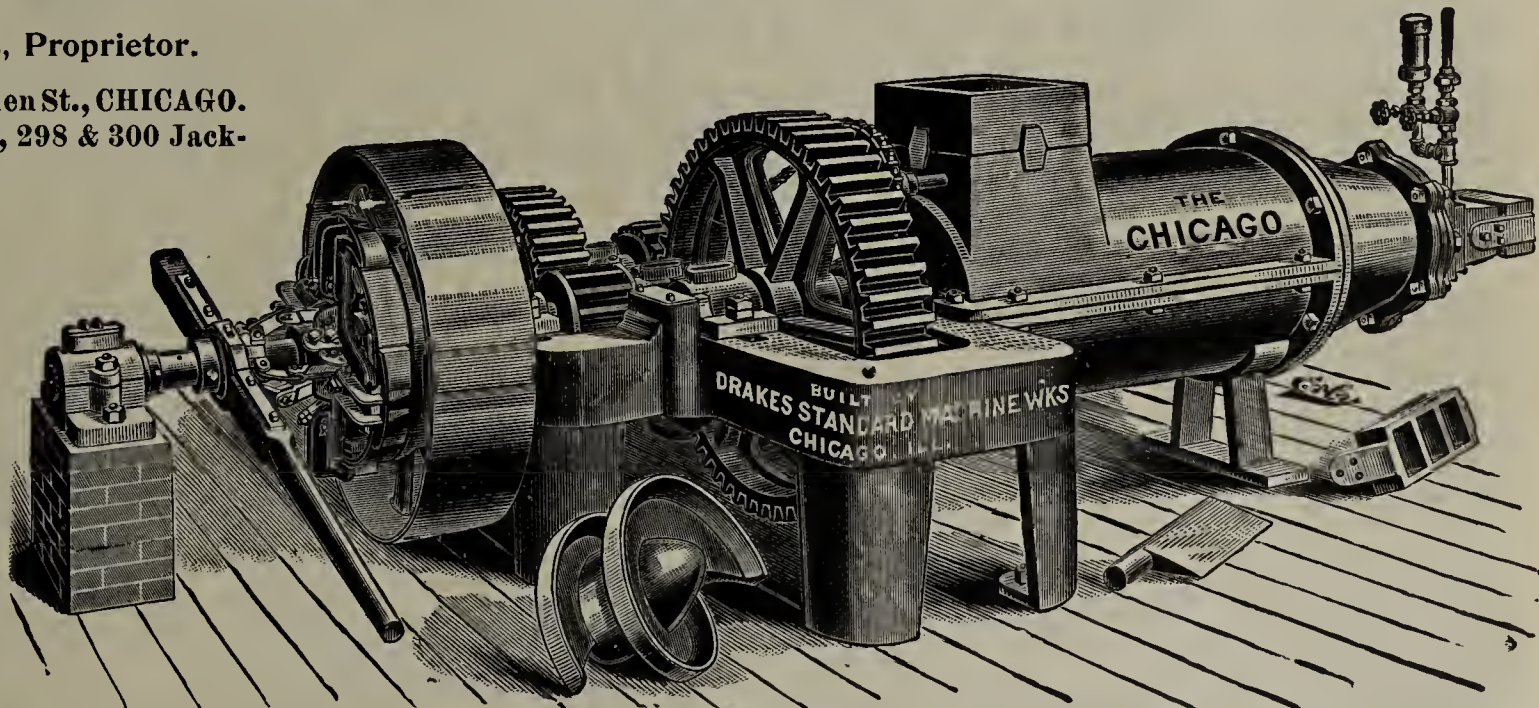
# DRAKE'S STANDARD MACHINE WORKS,

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY.

C. T. DRAKE, Proprietor.

Factory, 7 & 9 Garden St., CHICAGO.

Office & Salesroom, 298 & 300 Jackson Boulevard.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 50,000 brick per day. Surpassed by none. References: Turner Brick Co., Turner, Ill.; John Mooney, Highland Park, Ill.; A. H. Maynard & Son, Waukegon, Ill.; Myers & Toll, Chicago, and others.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

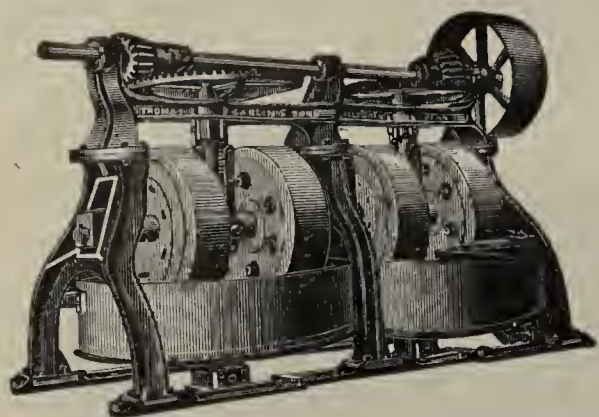
We also manufacture PUG MILLS, ELEVATORS, CLAY CRUSHERS, HAND REPRESSES, ETC., ETC.

Our "GRANULATORS" are the leaders in Chicago. So says Alsip Brick Co., who are running 11 Granulators; also Hayt & Alsip May, Purington & Bonner Brick Co.; Purington-Kimbell Brick Co.; Purington Brick Co., and many others.

**PRICES REASONABLE.**

**CORRESPONDENCE SOLICITED**





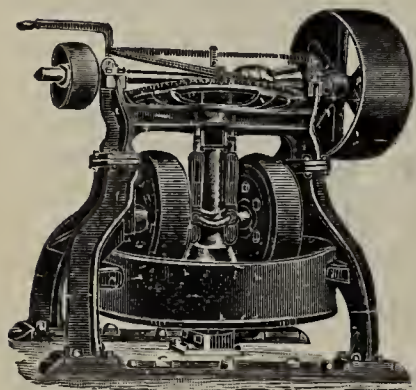
OUR SPECIALTY.

# GRINDING AND MIXING PANS

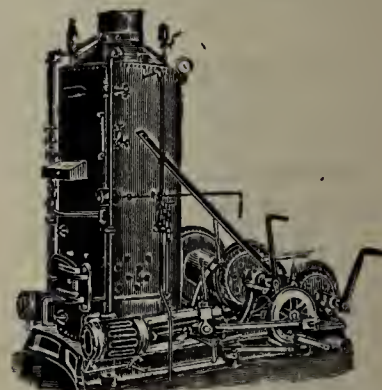
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,  
 ALLEGHENY, PA.



One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

IN STOCK:

{ One 8 foot Wet Pan.  
 { Eight 3 foot gauge Dump Cars.

MANUFACTURERS OF  
 IMPROVED  
**CLAY WORKING  
 MACHINERY**  
 OF EVERY DESCRIPTION  
**TAPLIN RICE & CO.**

CLAY MILLS,  
 STEAM SEWER PIPE PRESS,  
 DRY & WET PANS, DIES, CLAY BLOCKERS,  
 POTTERS' WHEELS AND  
 MACHINERY OF ALL KINDS.  
**AKRON, OHIO, U.S.A.**

PROMPT ATTENTION  
 & DISPATCH GIVEN  
 TO ORDERS

SEND FOR  
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 A



RELIABLE AND MODERN

# Brickmaking Machinery

...FOR Sand Moulded Brick.

The result of over twelve years continuous experience in this particular field. We guarantee results.

Estimates promptly furnished. Address

## Jonathan Creager's Sons,

• Prices Greatly Reduced. ✂

CINCINNATI, OHIO.

**J.H. & D. LAKE, CO.**  
**MASSILLON, O.**  
 U.S.A.  
 MFR'S. OF  
 PLAIN OR SPLIT  
 PULLEYS,  
 SHAFTING,  
 HANGERS, ETC.  
 ALSO  
 COUNTER SHAFTS  
 COMPLETE.

FRICITION CLUTCH PULLEYS;  
 CUT-OFF COUPLINGS, PLAIN OR SPLIT;  
 FORMERLY OF HORNELLSVILLE, N.Y.



# THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

St. Louis, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

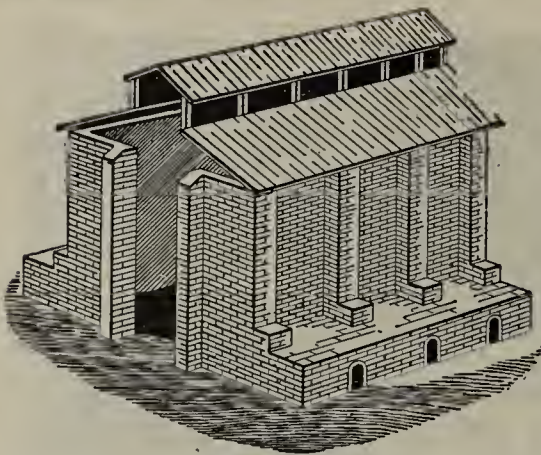
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

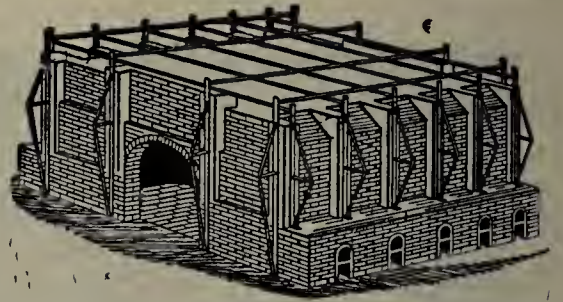
[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.



## LOUIS H. REPPPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

∴ ∴ VITRIFIED PAVING BRICK. ∴ ∴

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

### TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, Mo., July 17, 1892. }

H. REPPPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK CO., Office, 5,218 St. Louis Ave. }  
ST. LOUIS, Mo., October 18, 1892. }

MR. LOUIS H. REPPPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,

COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

LOUIS H. REPPPELL,

1,913 Indiana Ave.

KANSAS CITY, MO.



W. H. KELSO, President.

PAUL BOEHNCKE, Treas. &amp; Sec'y.

MAX A. TH. BOEHNCKE, Gen'l Mgr

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

.....Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

BOEHNCKE'S

Several other U. S. Pat-  
ents. applied for.

UP AND DOWN DRAFT

# Continuous Brick Kiln.

12 Kilns in Operation  
...in the...  
United States.

5 Kilns in course of  
construction  
East and West.



Ingleswood Works since five years in successful operation turns out 97 per cent. sewer brick.

DON'T LOSE TIME TO INVESTIGATE.

Beware  
of  
Infringe-  
ments.

## ADVANTAGES OF THE KILN.

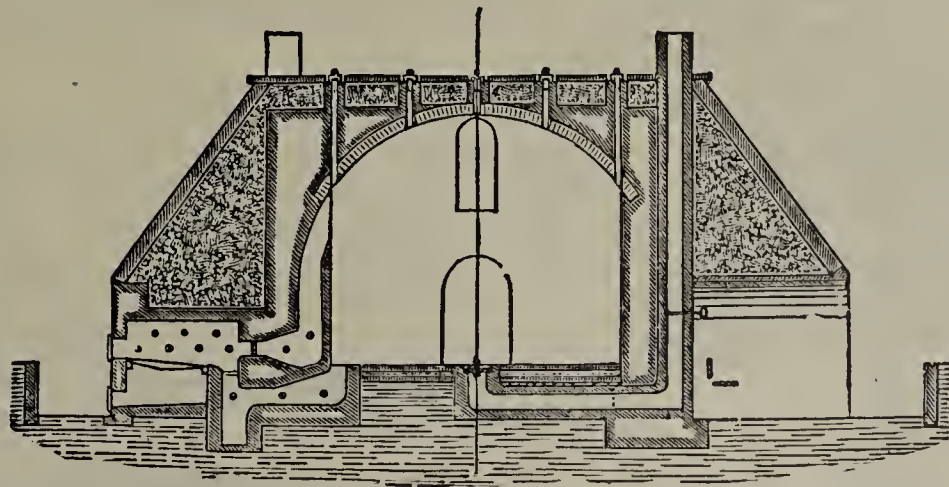
1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

Write for Circulars to

Centinela Brick Kiln &amp; Drier Co.,

Box 35, Centinela, Cal.

COMMON SENSE KILN.



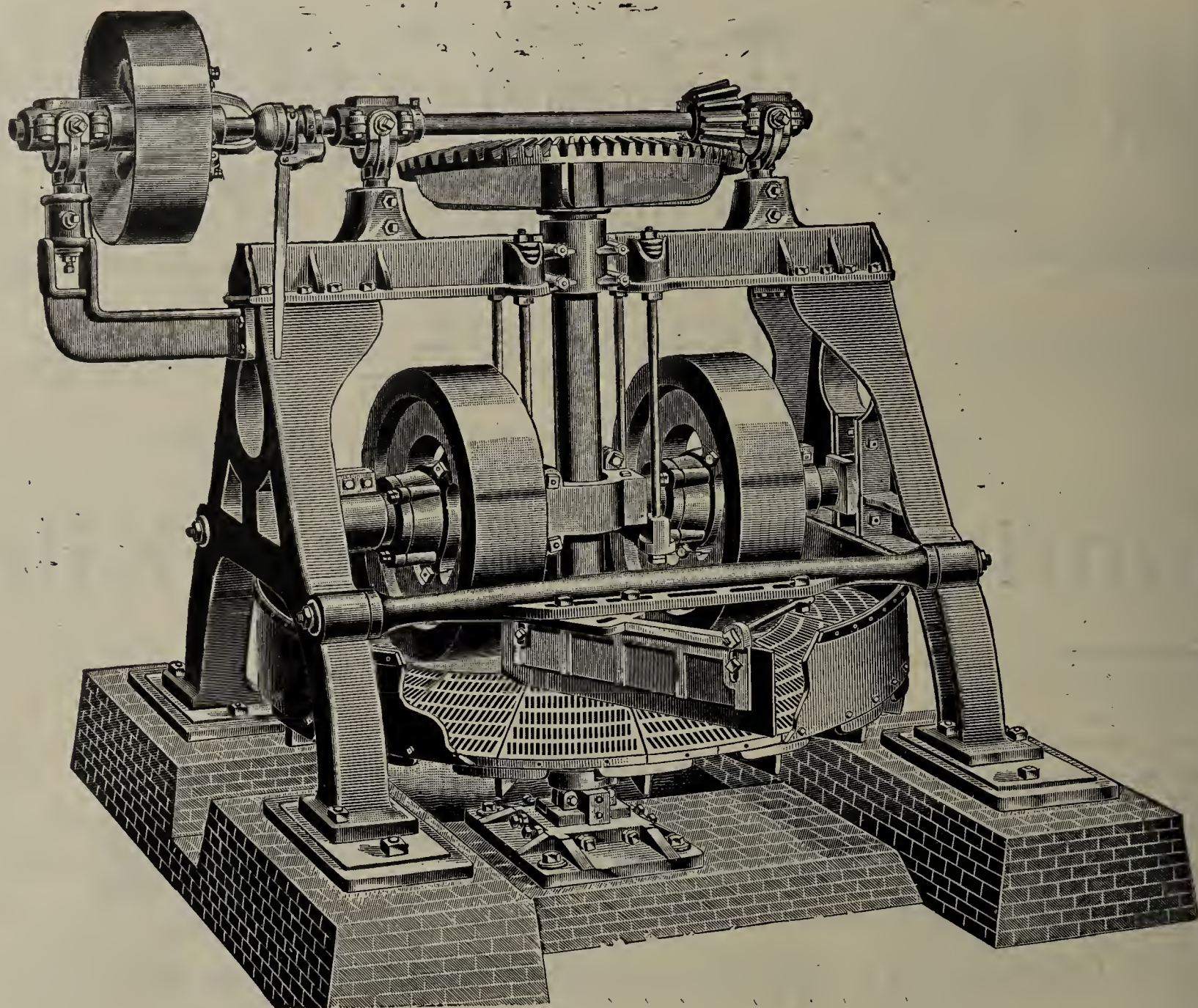
Patent No. 475,433.

FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

## A NEW BRICK DRYER.

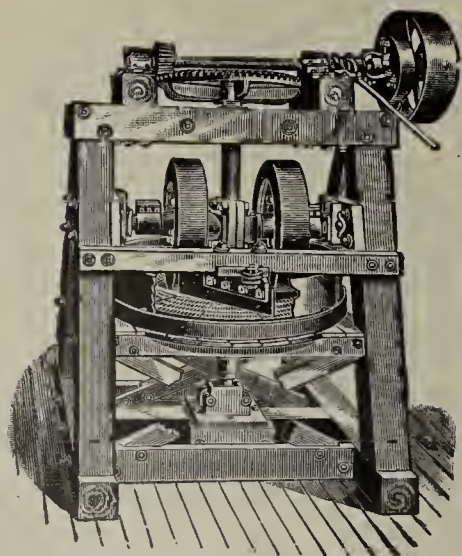
We have also Boehncke's Brick  
Drier, which is very economical





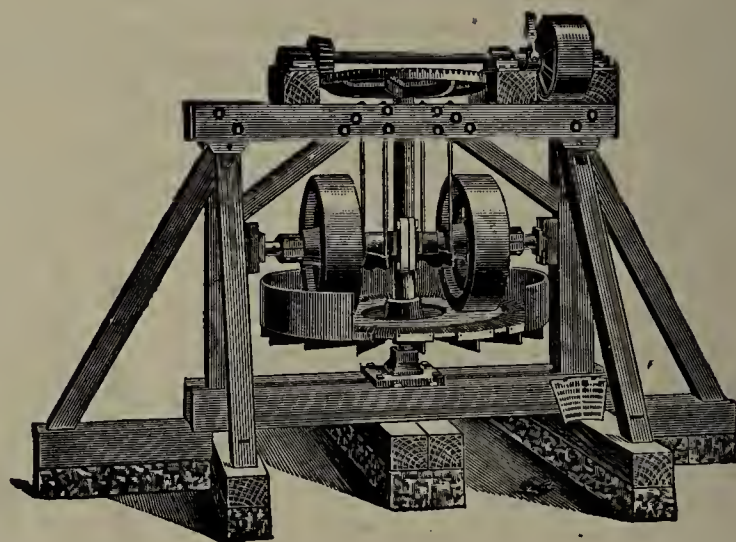
OUR SPECIALTY IS

**DRY PANS.**



IRON FRAMES,  
WOOD FRAMES.

~~~~~  
All Sizes and Price
to suit
Any Size Plant.
~~~~~



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

**FROST ENGINE CO.,** Galesburg, Ill.,  
U. S. A.



# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

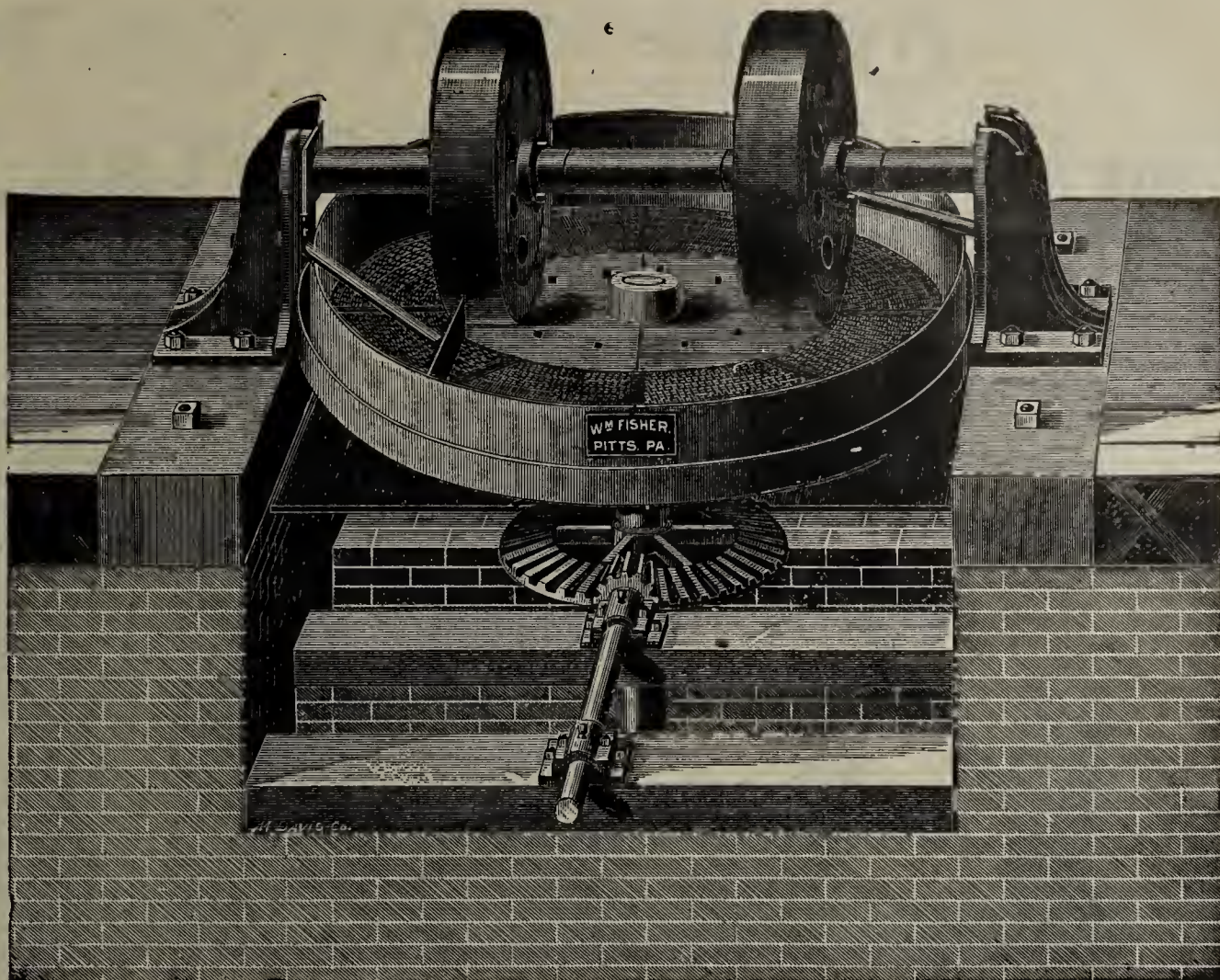
Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

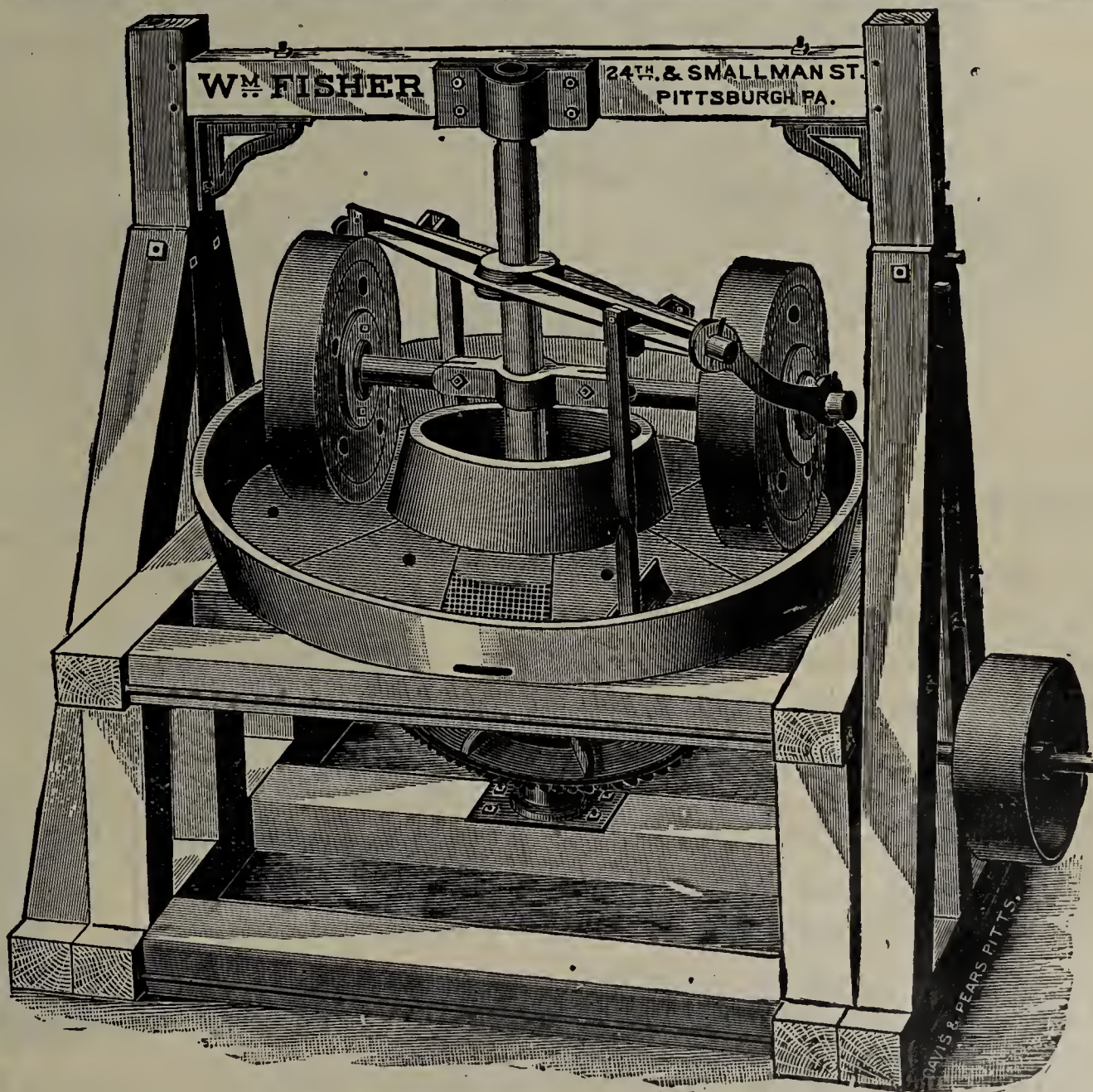
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.

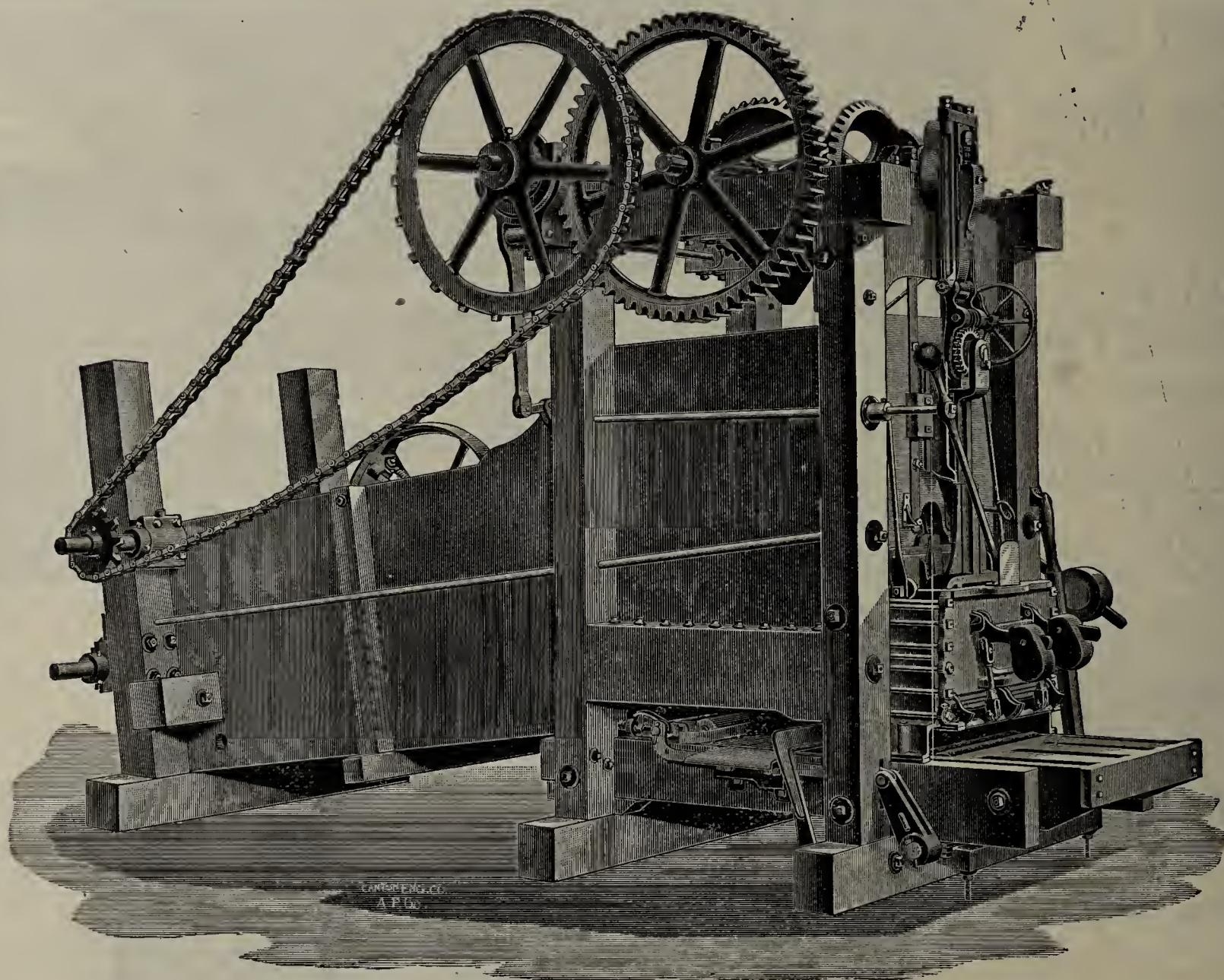


When writing for prices, state kind of material and capacity required.



# OUR LATEST!

## The "Tiffin" HORIZONTAL BRICK MACHINE



Possesses all the Good Points and  
Patented Special Safety Devices

That have conduced to render our "Tiffin" Vertical Machine so popular with practical Brickmakers.

•❖ PRICES REDUCED. ❖•

|                                                |       |
|------------------------------------------------|-------|
| Tiffin Horizontal Automatic Brick Machine..... | \$500 |
| " Vertical " " " .....                         | 400   |
| " Horse Power " " " .....                      | 300   |

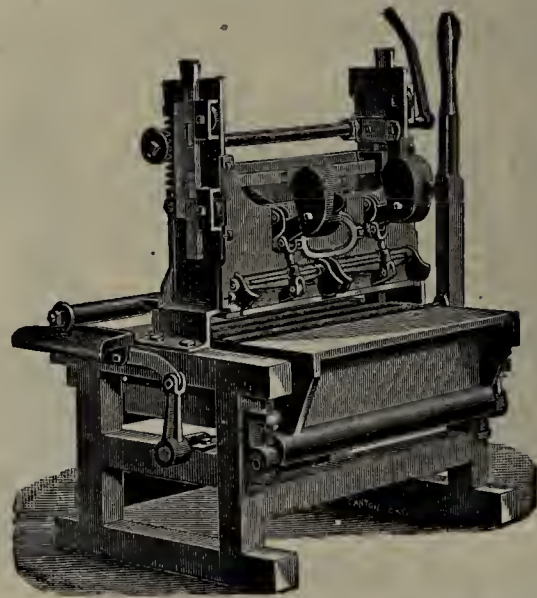
❖ If you have not received a copy of our Illustrated and descriptive Catalogue of Brick Machinery and Brickyard Supplies we will be pleased to mail you one.

## TIFFIN AGRICULTURAL WORKS,

Manufacturers of Steam and Horse Power Automatic Brick Machines, Horizontal Pug Mills, Elevators, Crushers, Tilting Turn Tables, "Old Reliable" Brick Machines, Pug Mills, Trucks, Wheelbarrows, Molds, Etc., Etc,

**TIFFIN, OHIO.**

## The "Old Reliable"



MAINTAINS THE REPUTATION of being the best Machine on the market for use in small yards.



Actual Use Decides the Durability of a Machine.

# MARTIN'S LETTER "A"

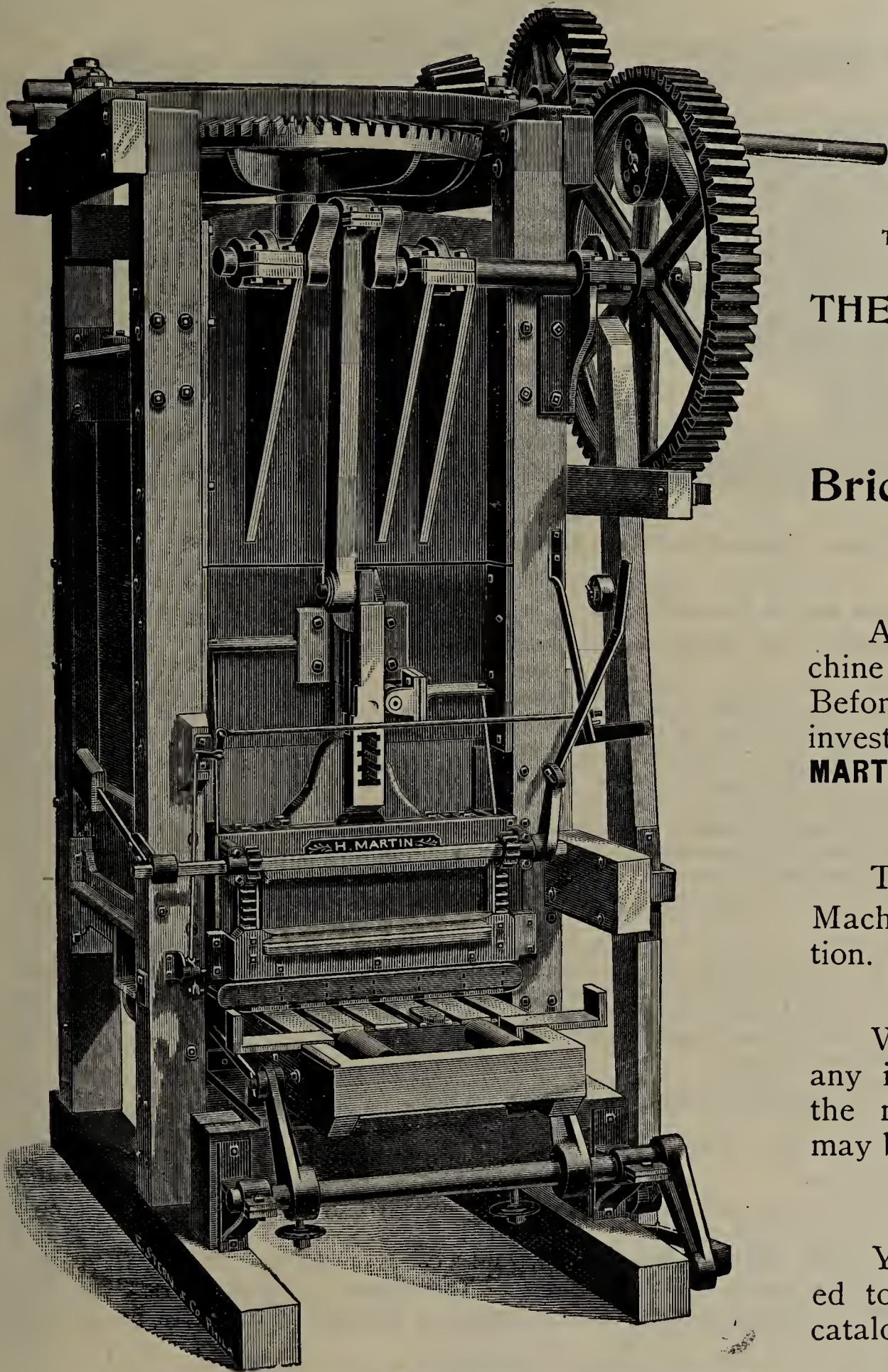
IS PRONOUNCED BY....



Practical  
Brickmakers

TO BE ~~~~~

THE STRONGEST,  
MOST PERFECT  
~~~~~ AND BEST  
Brick Machine in Use.



Are you looking for a machine that will work your clay? Before buying, do not fail to investigate the merits of the **MARTIN**.

There are over 3,000 of our Machines now in practical operation.

We will cheerfully furnish any information in reference to the manufacture of brick that may be desired.

You are respectfully requested to write for our new 1894 catalogue

THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

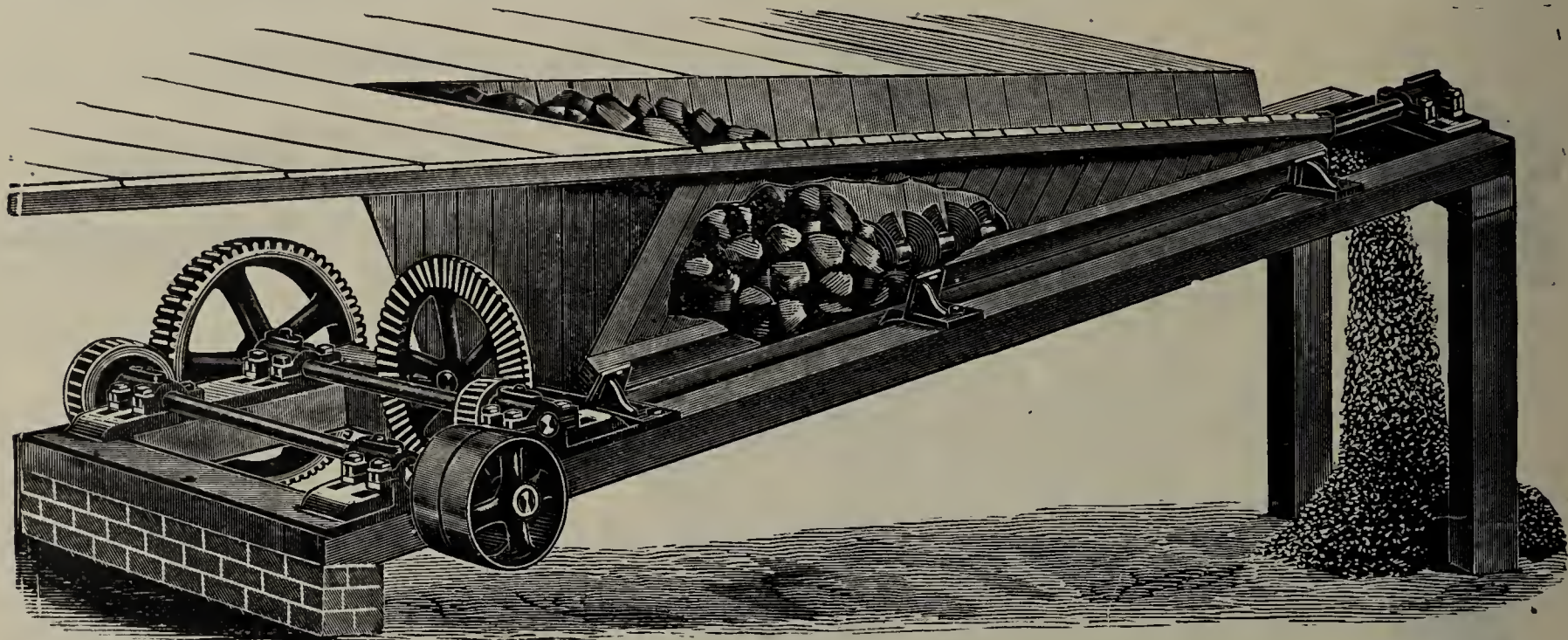
~~~~~ INCORPORATED ~~~~~

OFFICE: No. 36 E. James St.  
WORKS: Cor. James and Christian Sts. }

LANCASTER, PA., U. S. A.



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.

This machine is sold entirely upon its merits.

## —REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

# John Torrent,

## MUSKEGON, MICH.

Mention Clay-Worker.



IT DON'T . . . .

Matter So Much

WHAT we say of ourselves, as it does what our customers say of us. A case in point is that of the Staten Island Terra Cotta Lumber Co., of Woodbridge, N. J., who, in a recent letter, make the following statements:

"We have thirty machines of the Penfield pattern for various purposes now in operation in our plant. Without exception, every machine gives perfect satisfaction. They are in daily operation.

"We have over \$90,000 worth of Penfield machinery distributed through our Ornamental Brick Works, Fire Brick Works, Sewer Pipe Works and Terra Cotta Lumber Department. Have been offered machinery of lighter weight and less mechanically perfect at lower prices, but upon investigation have found that the slight difference in price was no compensation.

"After many investigations have concluded that your machinery holds the banner."

For Catalogues and Details of  
Penfield Machinery, Address

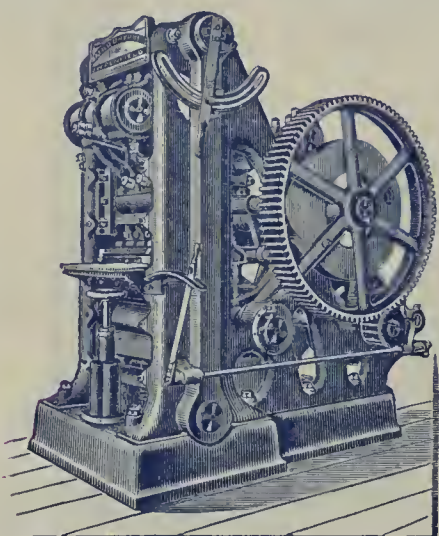


J. W. PENFIELD & SON,  
Willoughby, Ohio, U. S. A.

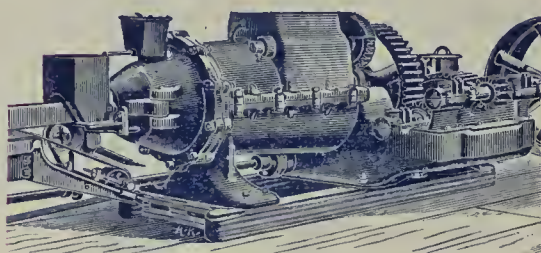


# J. W. PENFIELD & SON, WILLOUGHBY, OHIO, U. S. A.

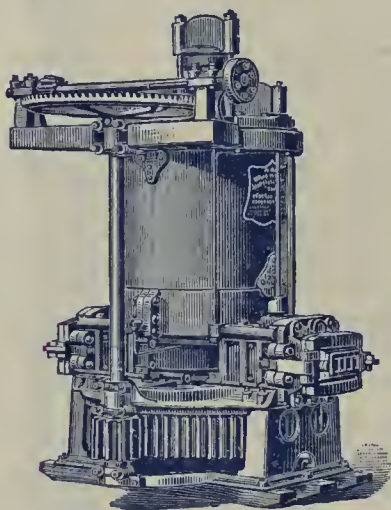
Some Things We Make :



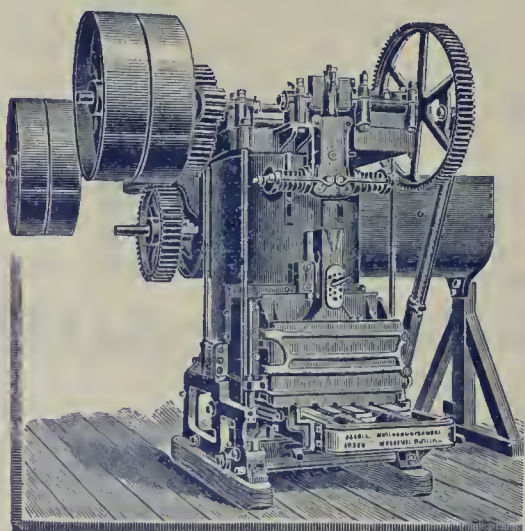
Dry Press Brick Machines.



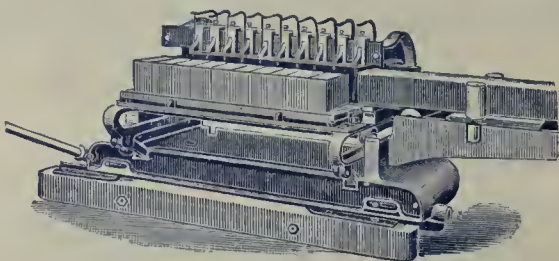
Auger Brick Machines;  
Auger Tile Machines.



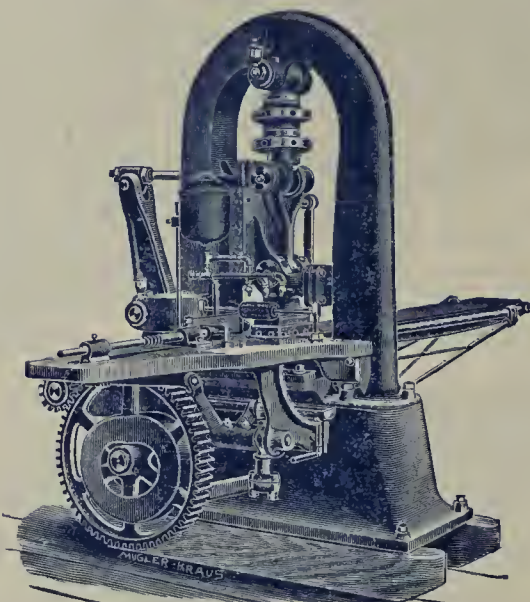
Plunger Brick Machines,  
Also suited for making Tile, Fireproofing, Etc.



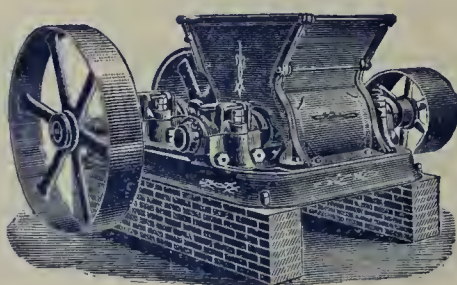
Stock Brick Machines,  
For Sand-Mold Brick.



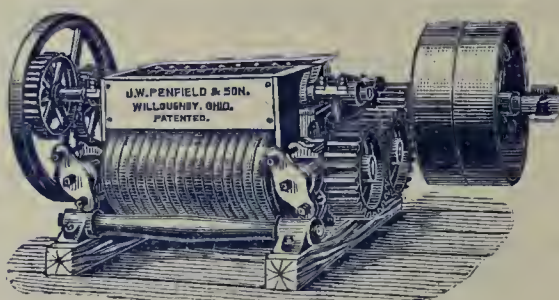
Board Delivery Brick Cutters.



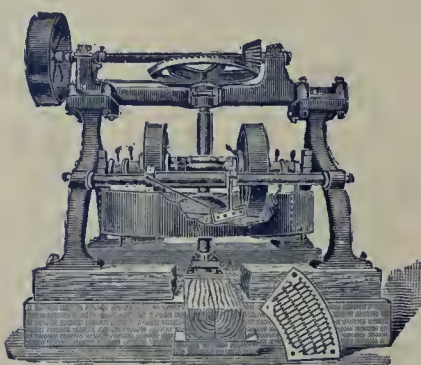
Brick Represses.



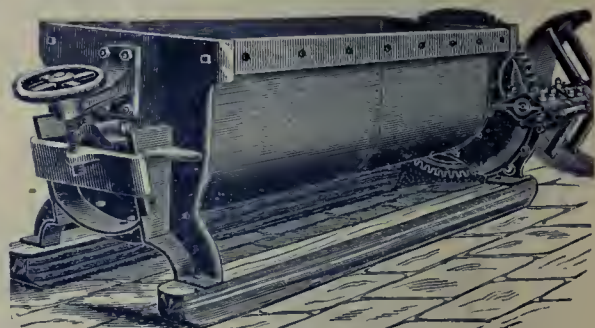
Disintegrators,  
Singly or combined with Crushers or Pug Mills.



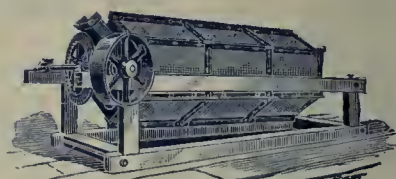
Clay Crushers; Stone Separators.



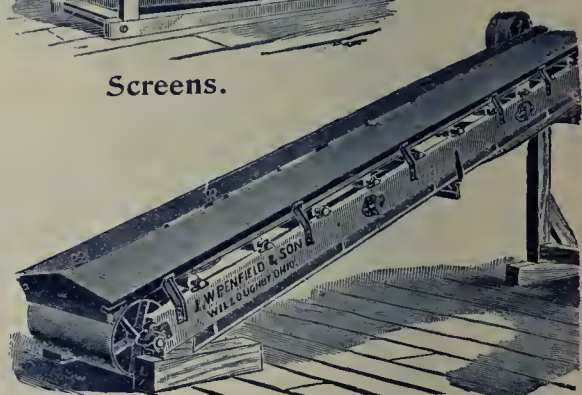
Dry Pans; Wet Pans.



Pug Mills; Granulators.



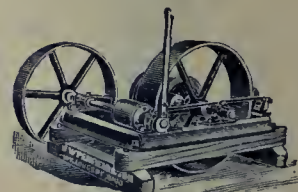
Screens.



Clay Elevators; Conveyors.

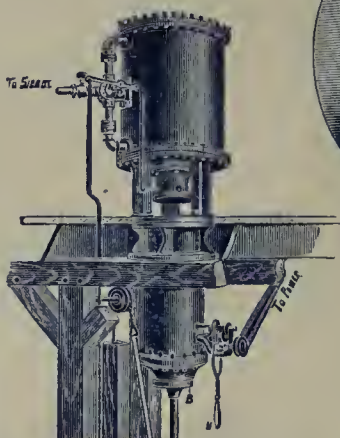


Clay Cars.



Winding Drums.

Barrows; Kiln Castings, Clutch Pulleys,  
Sewer Pipe Presses,  
Etc.



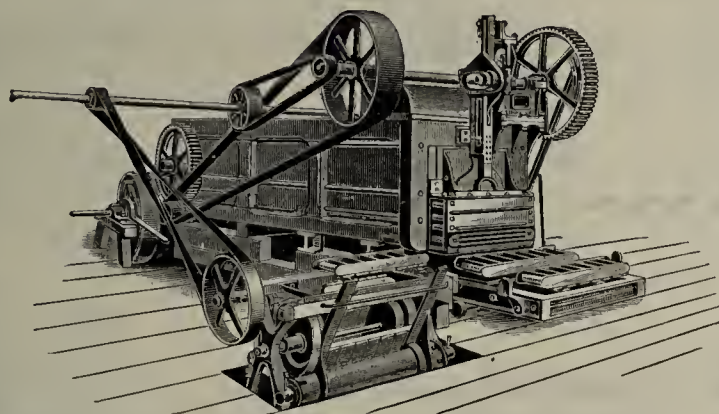
Send for Catalogue.

J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A.



# These Are Small Pictures

*Because These Are Small Pictures WE DO NOT  
Want You to Think the Machines Are Small.*



— THE FACT IS THE —

## POTTS HORIZONTAL STOCK BRICK MACHINE

IS THE

**Largest and Strongest Sand Mould Machine  
On The Market.**

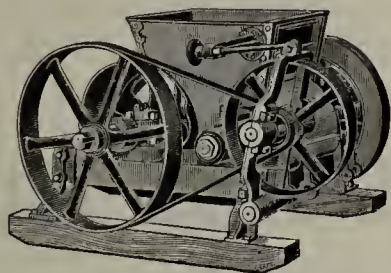
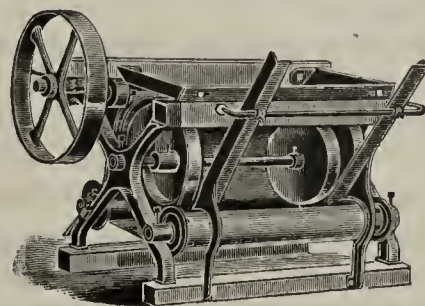
They are made in two styles, with wood Pug Mill, or all iron.

## THE POTTS MOULD SANDER

Simple in Construction.....

Strong and Durable.....

It sands moulds perfectly and will save from \$1.00 to \$1.50 per day.  
Every machine guaranteed and shipped on trial.



## THE POTTS DISINTEGRATORS

Having Chilled Rolls

Are the **Best**, Strongest and most Durable. Made in 12 sizes. Having capacity from 15 to 150 M brick per day.

You cannot afford to use any other.

We are prepared to furnish complete plants of any desired capacity, either soft or stiff clay process.

We manufacture a complete line of Clayworking Machinery, Horizontal Stock Brick Machines, either wood or iron Disintegrators, Mould Sanders, Auger Brick Machines, Pug Mills, Elevators, Dry Pans, Moulds, Trucks, Barrows, Pulleys, Shafting and Boxes.

Remember we manufacture everything furnished. Thus we are in a position to give the best, at prices we know will be satisfactory.

Write for catalogue.

# C. & A. POTTS & CO.,

INDIANAPOLIS. - - INDIANA.



## Fresh Evidence Monthly of the Highest Quality.



# NEVER !!

No other "soft mud" machine ever did what Mr. Kline states below. His is a winter yard and now in operation. "Go and see" something *no other "soft mud" machine CAN do.*

THE WELLINGTON MACHINE CO.,  
WELLINGTON, OHIO:

READING, PA., July 27, 1893.

GENTLEMEN:—The "Monarch" machine we bought of you last December is doing wonderfully well. It makes finer brick after it has been used a while, or worn in to operate the clay. This "Monarch" machine makes brick that we turn up without marking them, right after they are dumped on the pallets. The brick stay in perfect shape; the corners are perfectly filled out.

I manufacture with this machine thirty thousand brick in less than seven hours. The brick made for repressing are made in the morning and repressed in the afternoon, and then hacked in the shed to dry. I have turned out over four million brick with the "Monarch" machine while in operation from last December, and I have plenty of call for them. I don't need to go to make sale, they come to my works and buy before they leave.

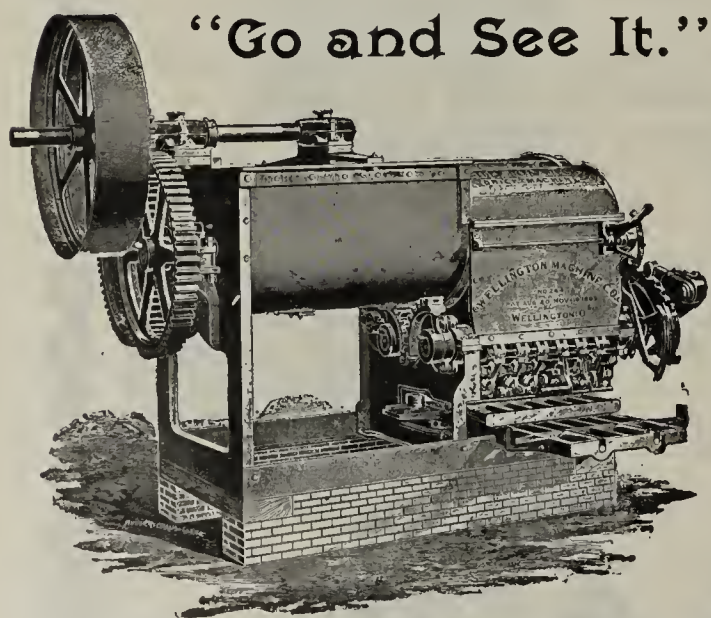
I have seen between thirty and forty brick machines, and none of them can do as fine work as the "Monarch." It is well geared and strong, and the expense of breakage is not worth talking about. It did not delay us.

I shall be pleased to show and fully recommend your machine to any one who is in need of one, and any one visiting our city can call upon us and inspect our "Monarch" personally.

Wishing you every possible success, which you deserve, I remain,

Very respectfully yours,

SIMON KLINE.



"Go and See It."

## DON'T FORGET THESE FACTS.

That we worked five years developing the new principles in this machine, perfecting and simplifying every detail before we put it on the market.

That it is scientifically and mechanically constructed from the ground up, aiming not merely at goodness, but at perfection.

That it has 14 feet of pug mill (double), changing direction of movement of clay three times, cutting it all up.

That the presses are entirely in the mud. (This is the greatest point ever produced in a brick machine). Enabling moulding the stiffest possible material. Wear, leakage and friction are absolutely eliminated. This means much. Reflect on its importance.

That it is extremely simple. (Only four gears and none bevel.)

Immensely strong, (all iron and steel. Weighs 11,250 pounds.)

That long, easy moving, scientific leverages make its draft so light.

Investigate it now as it will last a lifetime, and is the "perfect machine" you have longed for so long. Only investigate is all we ask. GO AND SEE for yourself; the small cost of the trip, will be the best investment you ever made.

## The Wellington Machine Co.,

Wellington, Ohio.

See the October CLAY-WORKER for list of 43 Happy Users.



# THE "QUAKER"

Family of Machines, are the Most Used of Any Single Make of Machine.



## The "New Model Quaker" Horse-Power Machine.

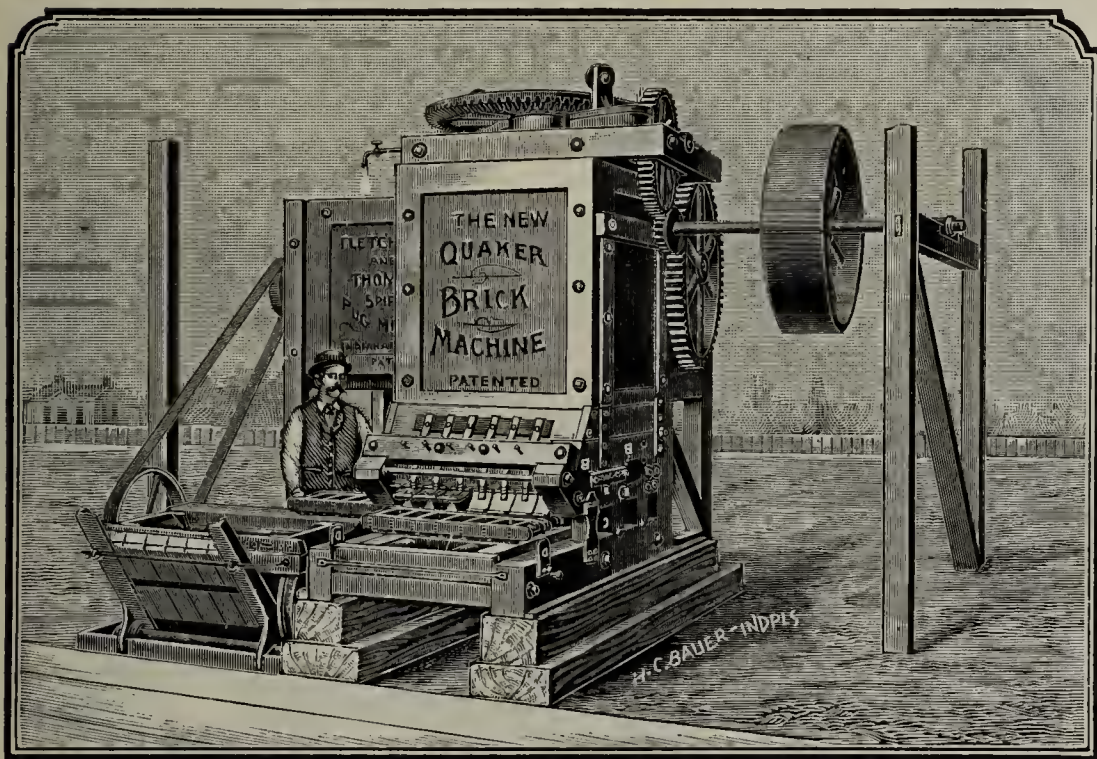
Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



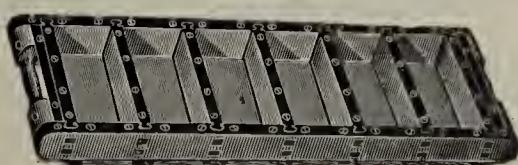
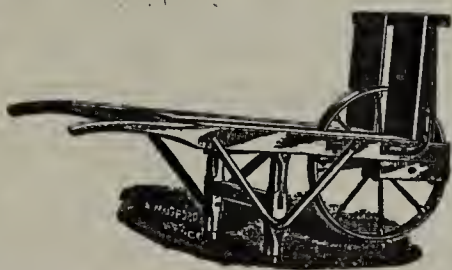
## Steam-Power Machines—Two Sizes

The "Regular" is the Horse-power Machine with necessary gearing for steam-power added.

The "Extra Heavy" is a much heavier, specially built machine, and has for years stood at the head of all upright, wooden framed machines.



THE combination of our "Extra Heavy Steam Power Machine" with a "Horizontal Pug Mill" makes an outfit that will take clay from the bank, and make as many brick per day as any gang can take care of. Has made 50,000 per day.



Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

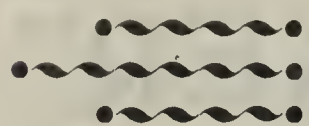
Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

## The Wellington Machine Co.

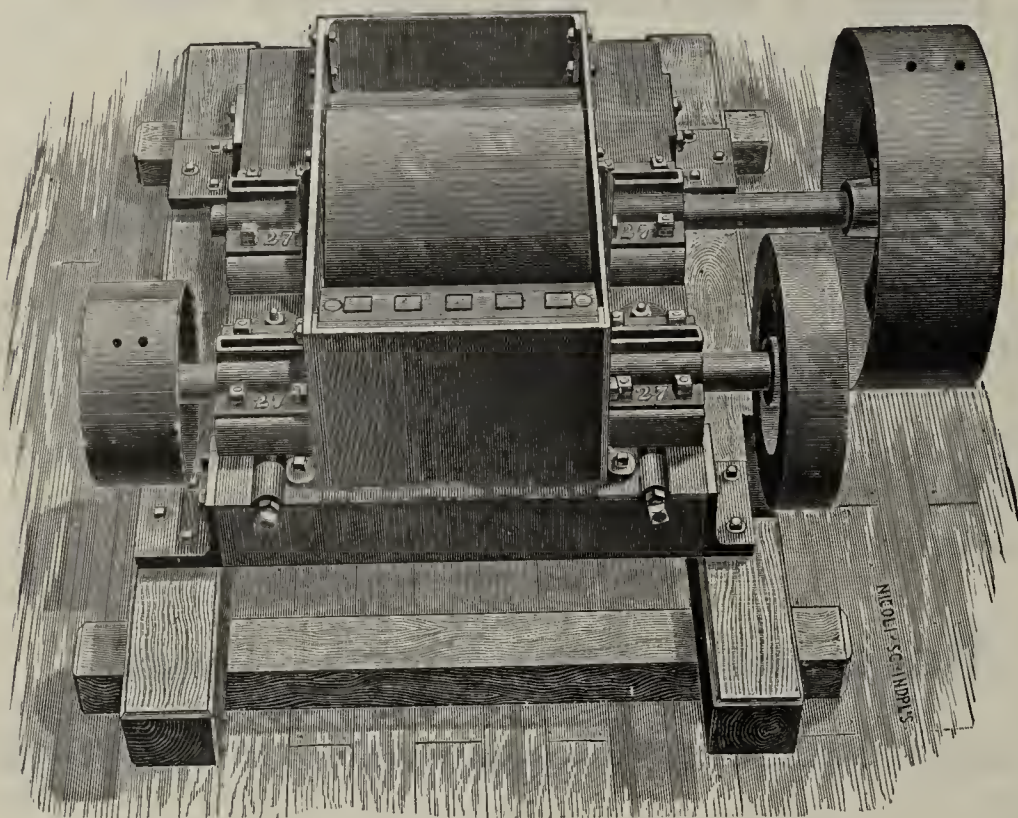
Wellington, Ohio.

(FOUNDERS AND MACHINISTS.)



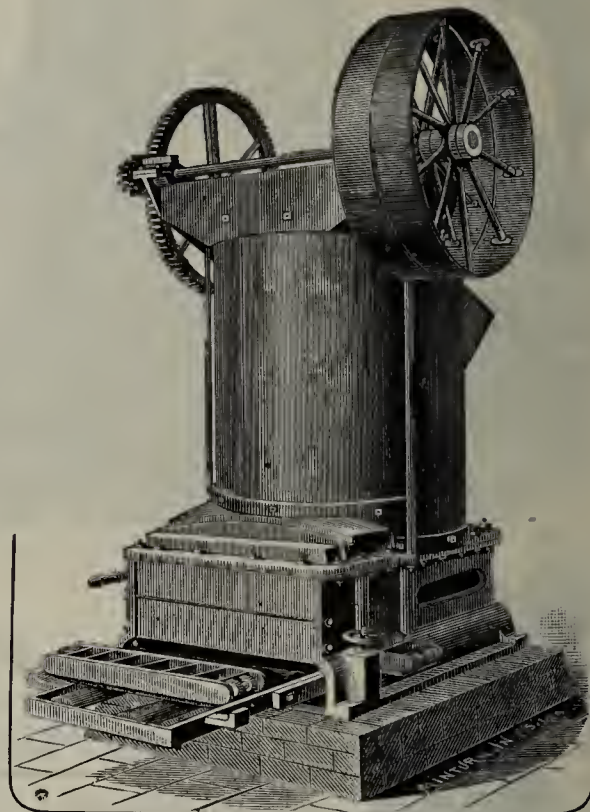


# GREAT BARGAINS IN GOOD



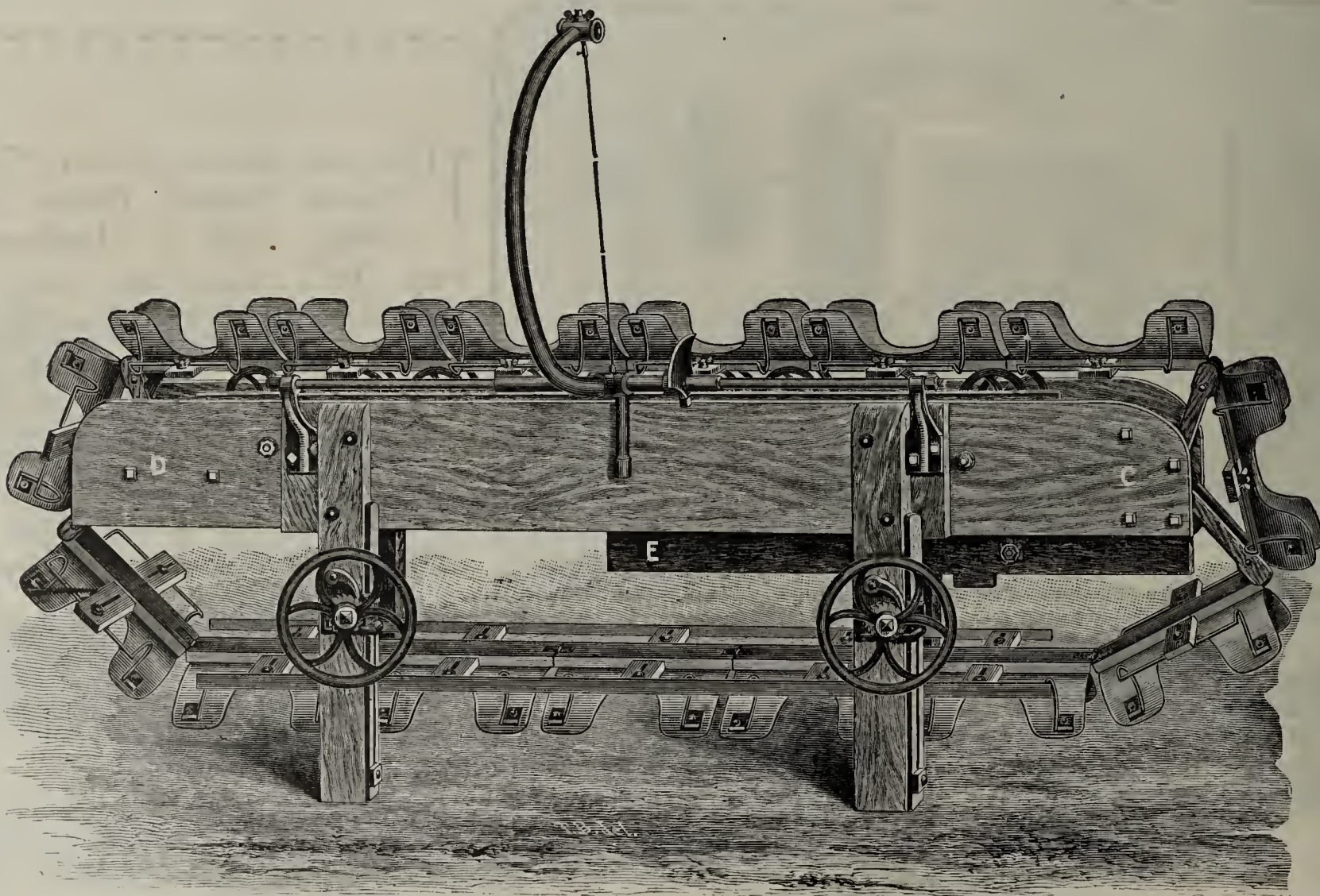
No. 1 Disintegrator.

This Disintegrator is plain, simple and strong, will separate the stone and will handle sufficient clay for 30,000 to 40,000 brick per day.



The Hoosier Brick Machine.

Machines for making sanded brick for both steam and horse-power. We have a number of these machines in stock and it will be to your interest to write us for prices before placing your order.



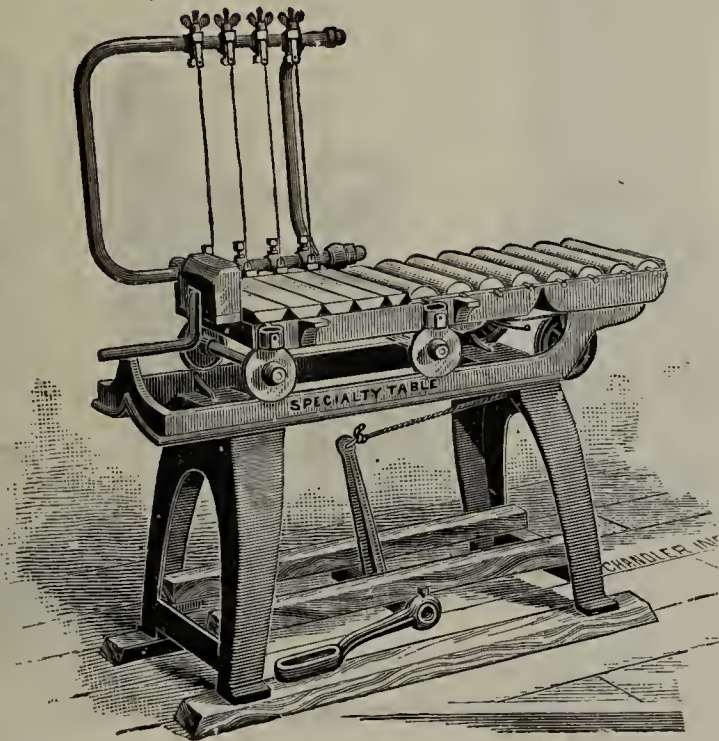
The Endless Belt Table (shown with No. 5 machine), is undoubtedly the best Tile Cutting Table ever made. It will carry tile from 3 to 12 inches. The No. 2 Table, which is only half the length of the Table shown, will handle tile from 12 to 15 inches, and delivers them on a pallet without handling.

Write us for rock bottom prices, address,

E. D. PUGH, Receiver,

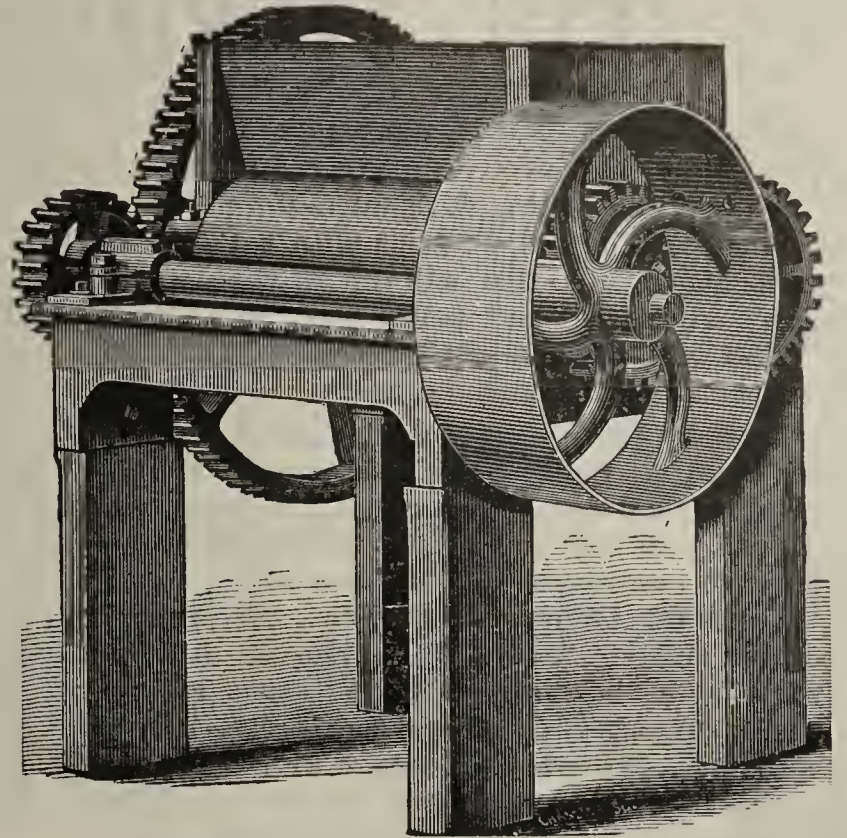


# BRICK & TILE MACHINERY.



Down Cut Table.

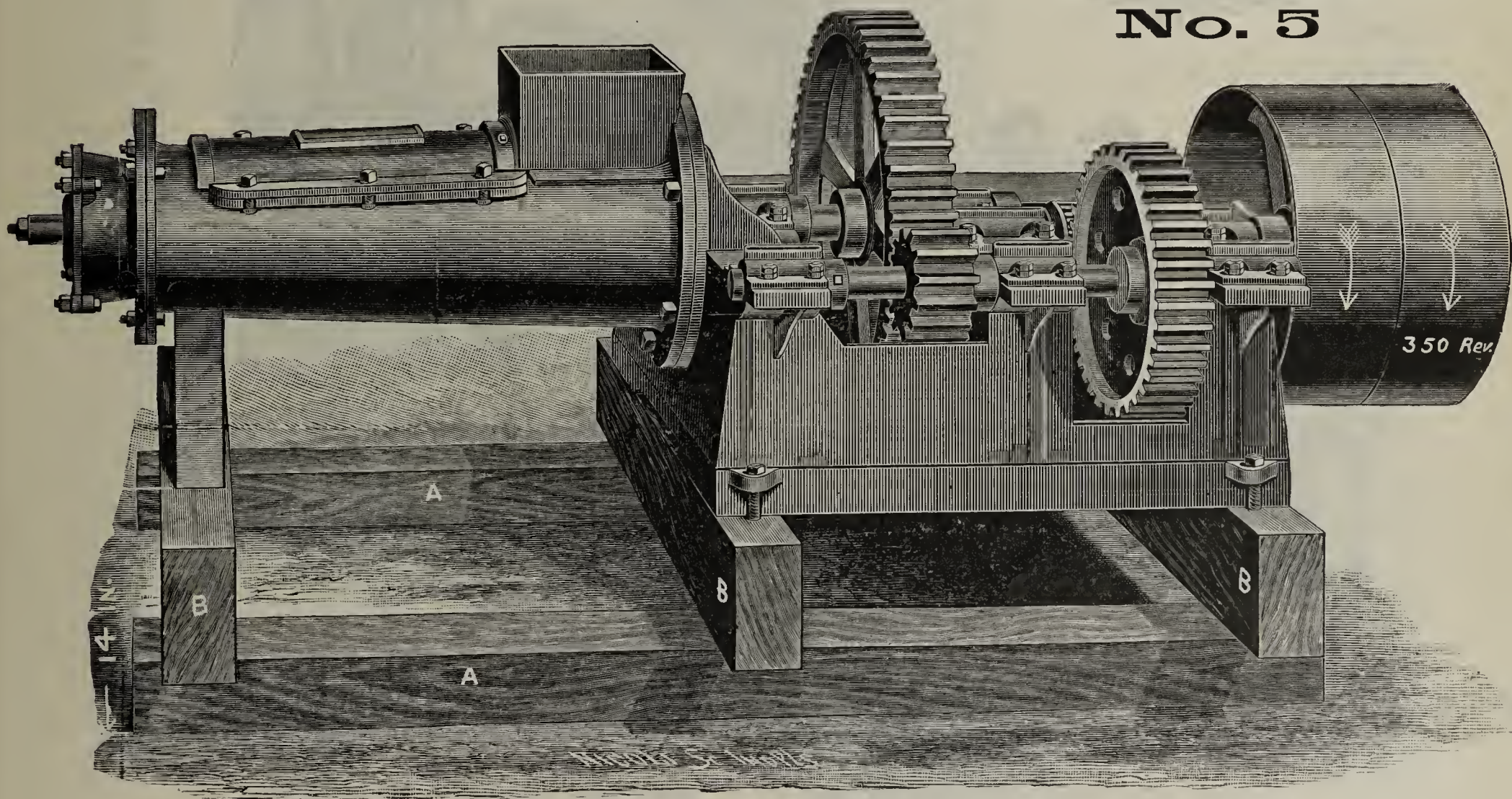
This is a Down Cut Table. It will cut 8,000 to 10,000 first-class brick in ten hours.  
Our Side Board Delivery Tables will cut and deliver on a board 25,000 to 30,000 brick in ten hours.



Clay Crusher.

We make this Crusher in two sizes. Both have chilled rolls, all set in a heavy iron frame. There is no better Crusher made than this.

## No. 5



We make this machine in seven different sizes. No. 5 (one shown), will make tile from 3 to 12 inches. No. 7, for light power. We have a number of these in stock that we will close out cheap. With this machine is furnished Endless Belt Table and Dies 3 to 10 inches. Write for particulars.  
Our No. 5 B and 6 B are machines for heavy work, where strength and large capacity are required. With these machines, Side Cut Lubricating Dies and Side Cut Board Delivery Tables are furnished in connection with Tile Dies when required.

# NOLAN, MADDEN & CO.,

# RUSHVILLE, IND.

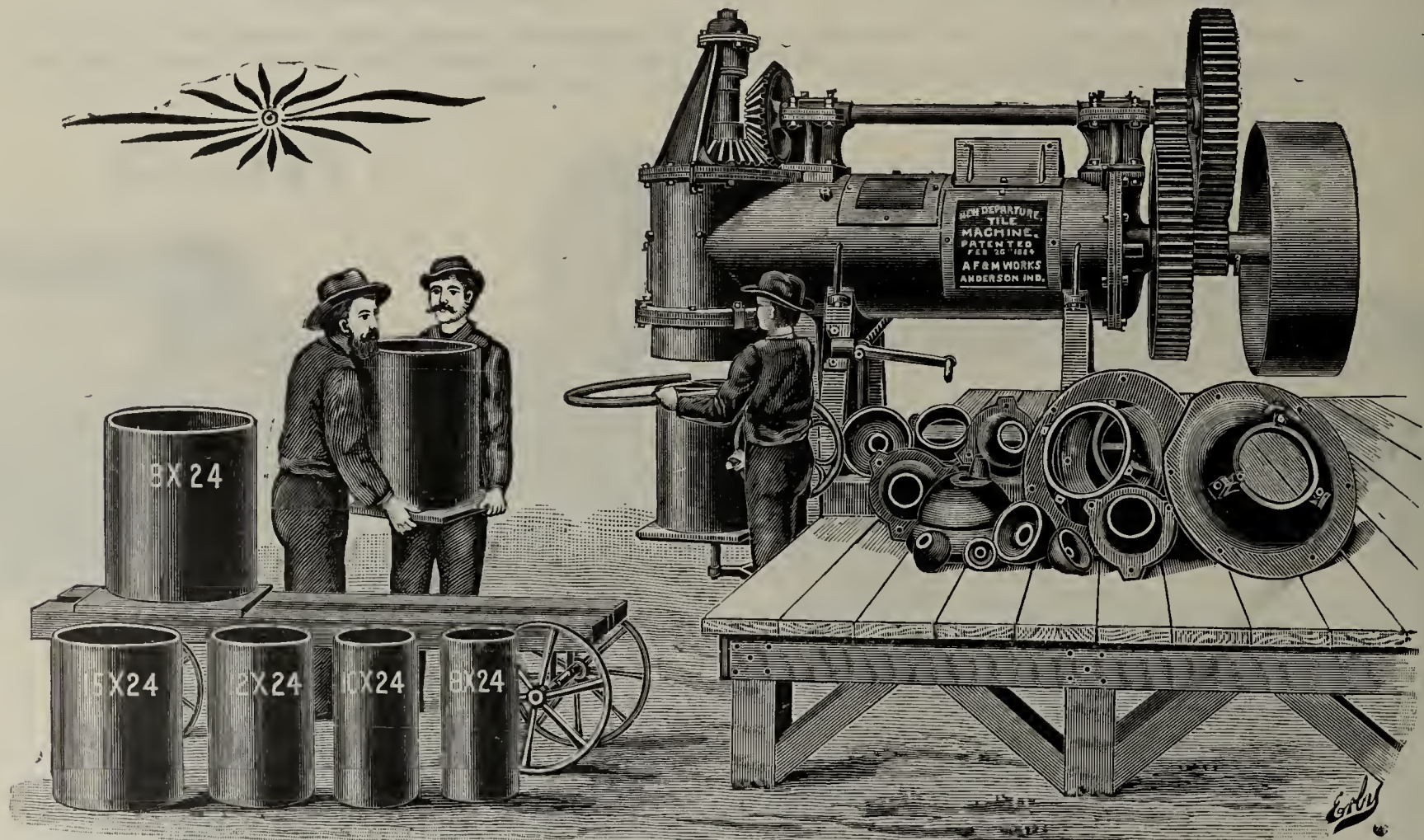
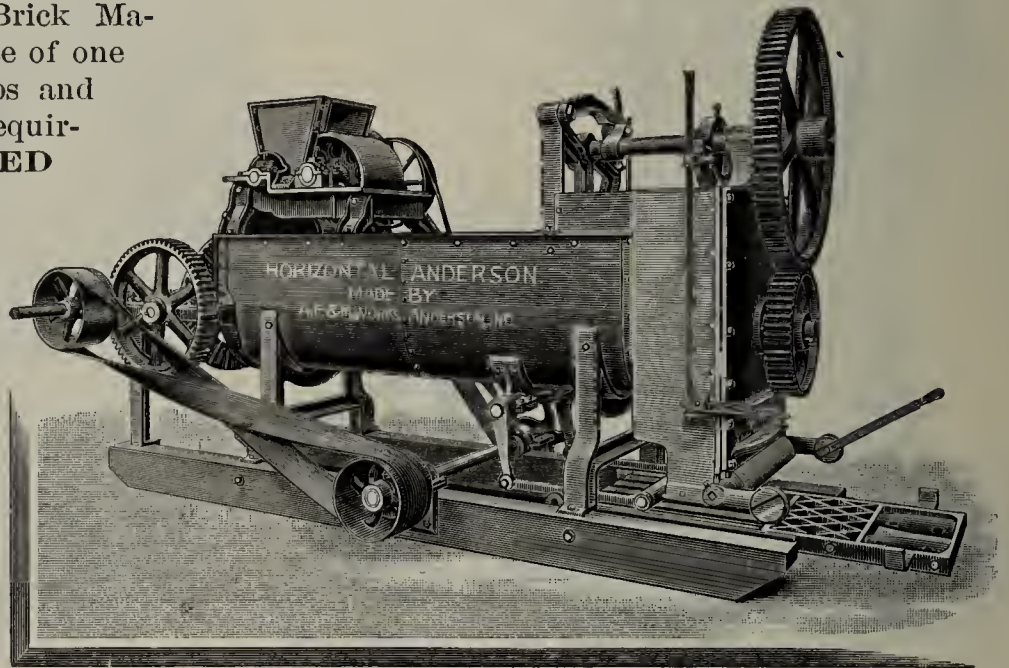


# A New Departure in Brick Machinery

## THE HORIZONTAL ANDERSON

OUR latest and most complete combination of Brick Machine, Pug Mill and Disintegrator for the price of one Machine. No outside Plunger with bothersome Gibs and Plates. A Machine that will run for years without requiring any adjustment and never leak. **UNEXCELLED** for **GRINDING** and **PUGGING** CAPACITY; simple in construction and durable.

This Machine is self-contained and requires no other Shafting, Pulleys, Hangers or even Foundation, other than that shown in cut. Manufacturers of Brick by the soft mud process will find it to their interest to investigate this Machine before making their contracts for new Machinery. Write for descriptive circular, prices, etc. We can save you money in the beginning, and make you happy in the end. Capacity equal to any other Machine on the market. We extend a cordial invitation to all prospective purchasers to pay us a visit and allow us to show them the Machine in operation.



### THE GREATEST ON EARTH

We have imitators but no competitors. The **NEW DEPARTURE** makes all sizes of tile from 3 inches to 24 inches in diameter in a manner that defies competition.

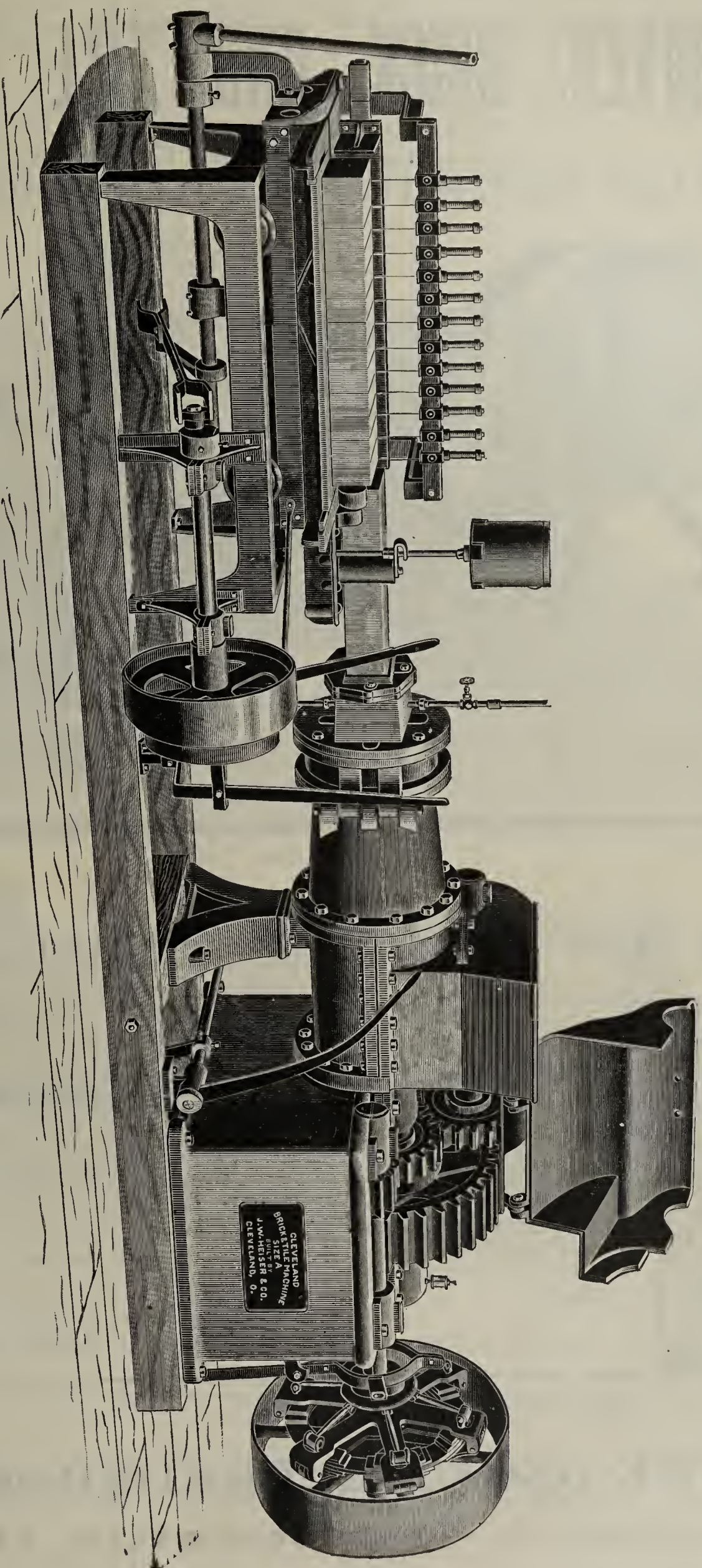
DOWN DELIVERY FOR LARGE TILE.

SIDE DELIVERY FOR SMALL TILE.

THE ANDERSON FOUNDRY & MACHINE WORKS, - - Anderson, Indiana.



# The "CLEVELAND" CLAY WORKING MACHINERY.



Size "A" Machine with Patent Board Delivery Power Cutting Table. Capacity from 25,000 to 40,000 Brick per day.

ALL OF OUR MACHINERY IS BALL AND PIN BEARING AND...  
GUARANTEED FOR ONE YEAR AGAINST WEAR OR BREAKAGE.

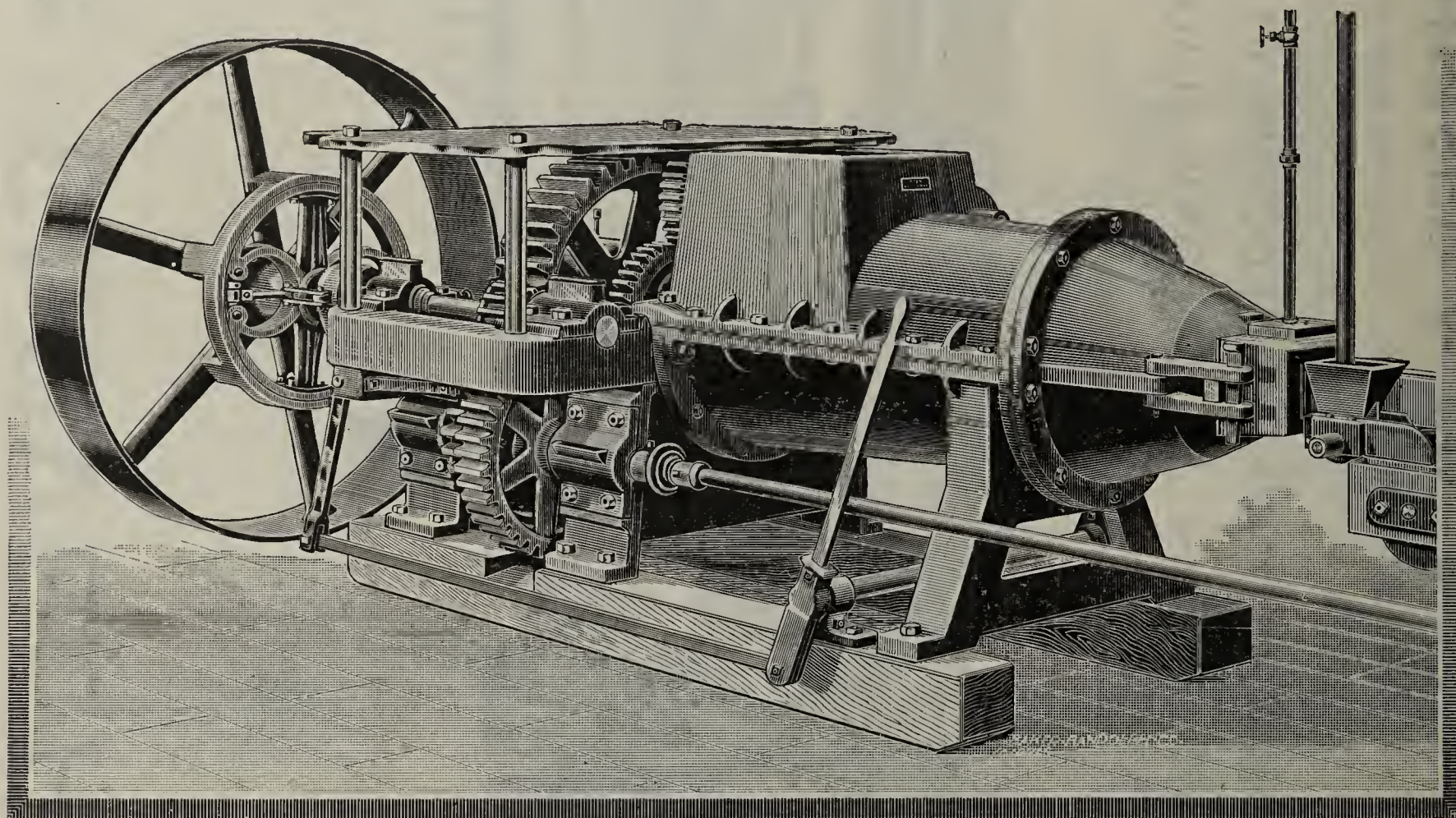
If you want superior machinery, improve your product, save money and have a balance on the right hand side of your Ledger, write to us for Catalogue and description of our machinery.

**J. W. HEISER & CO.,** Manufacturers of CLAYWORKING MACHINERY, Cleveland, Ohio.



# IMPROVED BRICK AND TILE MACHINERY,

MANUFACTURED BY  
THE DECATUR LEADER MFG. CO.



Auger Brick Machine.

WHAT THEY THINK OF US AT HOME. . . .

—OFFICE OF—

## The Tuttle Brick Company.

DECATUR, ILL., March 26, 1894.

THE DECATUR LEADER MFG. CO., City:

GENTLEMEN—The outfit of Brick machinery made by you for us gives entire satisfaction. We understand your automatic cutter is a recent design, and we would say that it deserves especial mention for its simplicity and perfect working.

Yours truly,

THE TUTTLE BRICK CO.,  
JOHN DILLER, Manager.

Our line is complete. Send for printed matter.

THE DECATUR LEADER MFG. CO.,

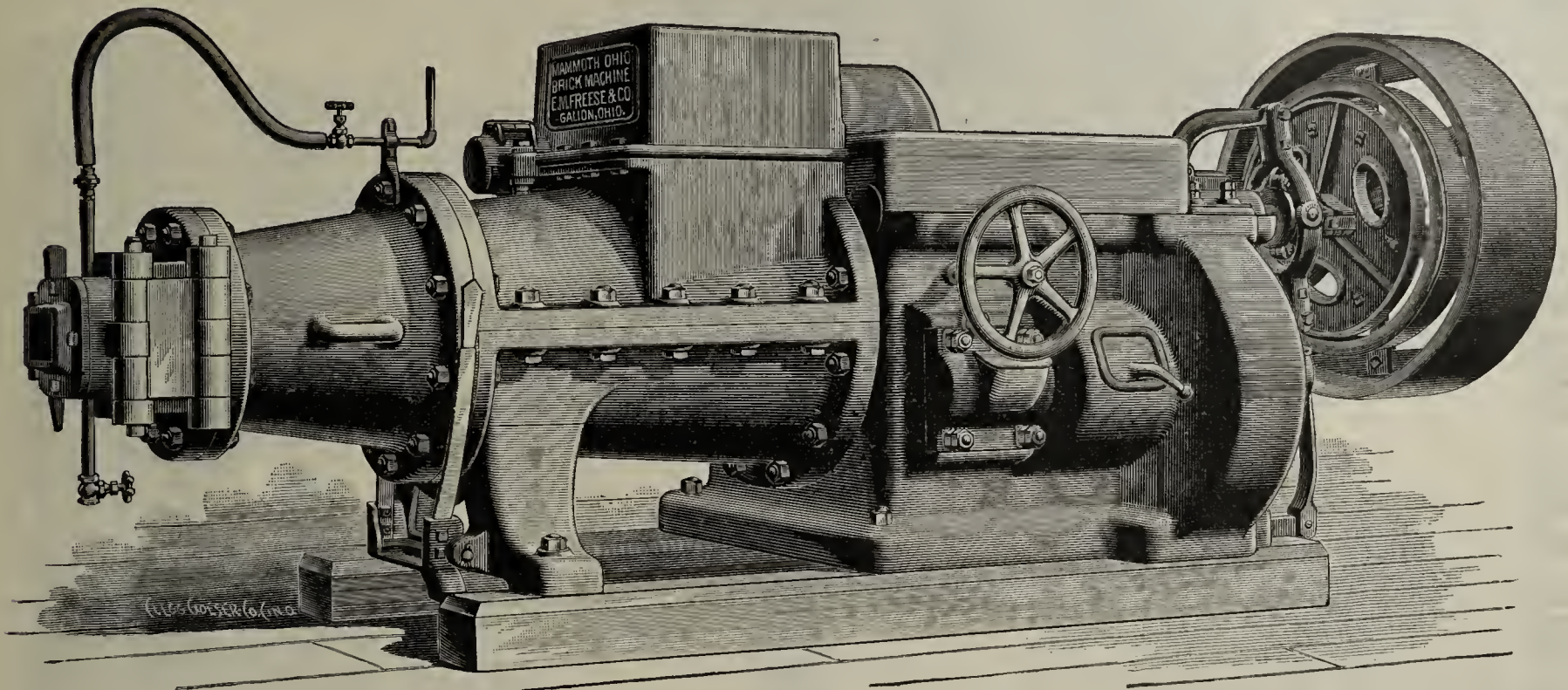
[Mention the Clay-Worker.]

Decatur, Ill., U. S. A.



# SUPERIOR BRICK MACHINERY.

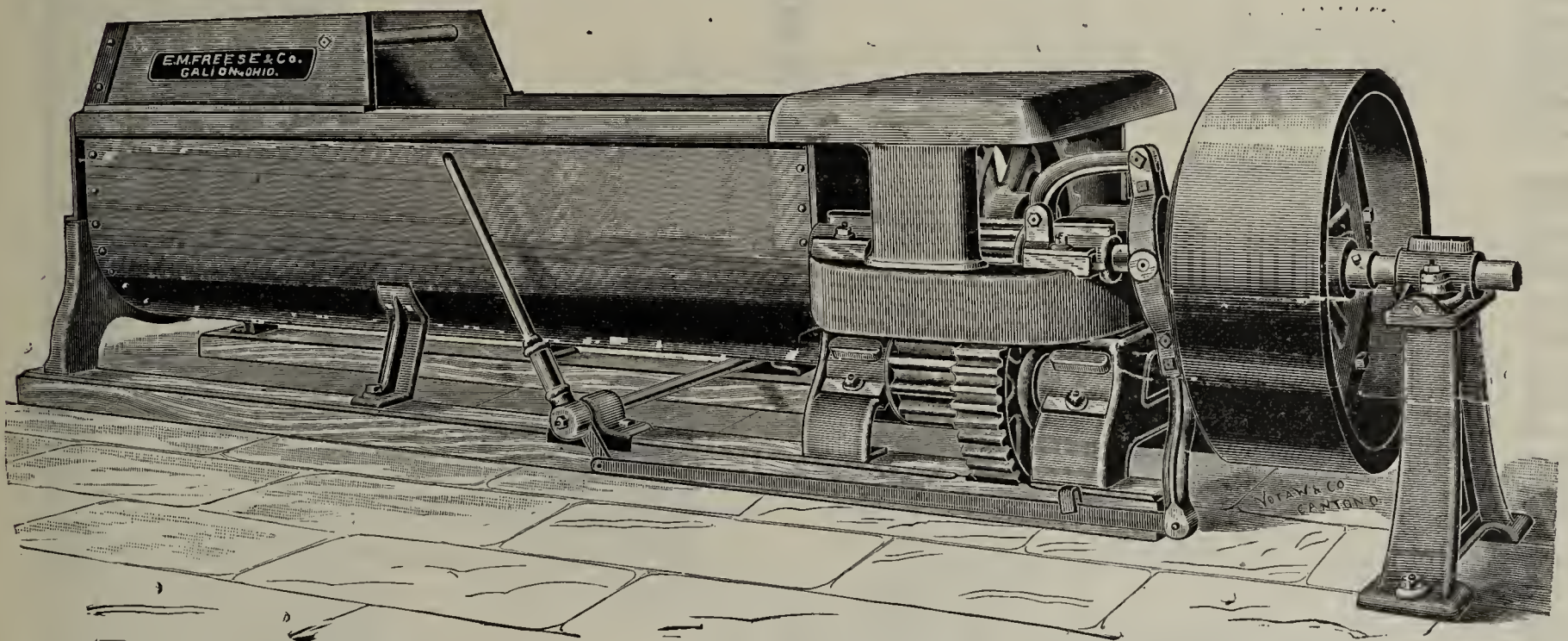
*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

## *PUG MILLS THAT PUG THE CLAY.*



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

IT WILL PAY~~~~~

ADDRESS E. M. FREESE & CO.,

~~~~~ GALION, OHIO.


NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

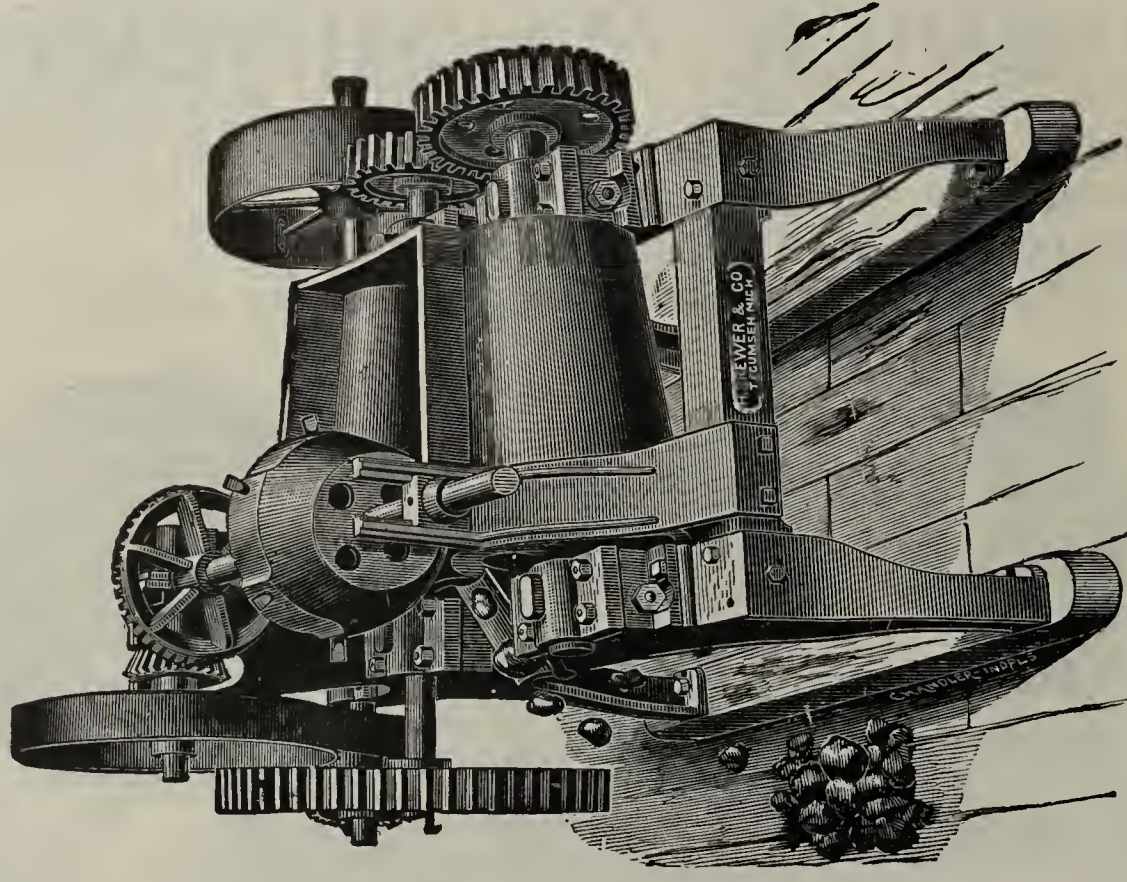
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

H. BREWER & CO.,

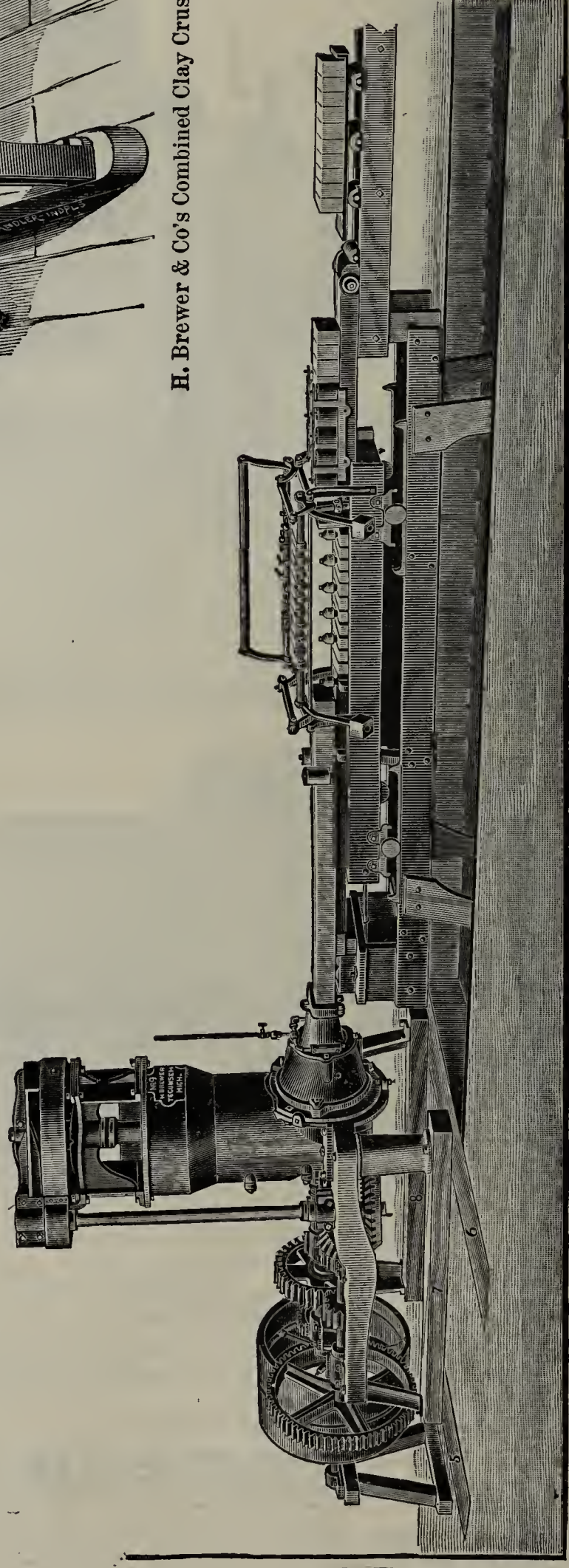
Tecumseh, Mich.

[Mention the Olay-Worker.]

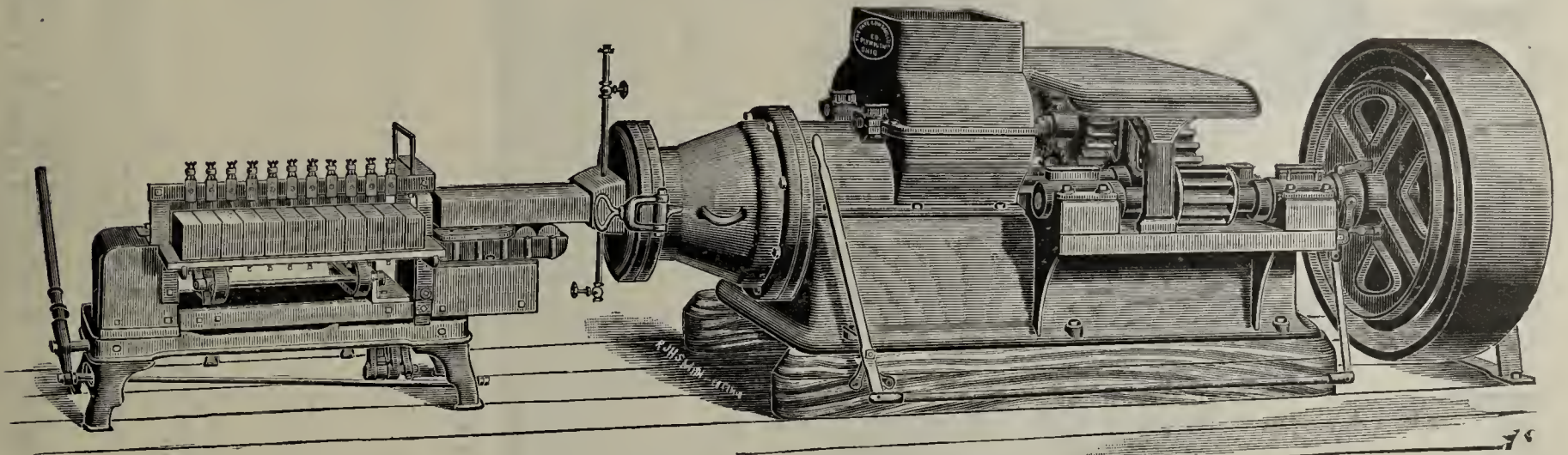


H. Brewer & Co's Combined Clay Crusher and Stone Separator.

The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.

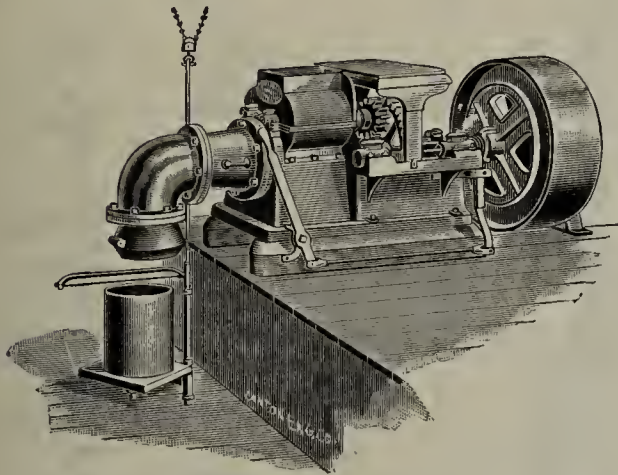


"PLYMOUTH" BRICK AND TILE MACHINES



"A" Machine, with Board Delivery Cutting Table.

COMPLETE, RELIABLE,
STRONG, DURABLE,
INCOMPARABLE.



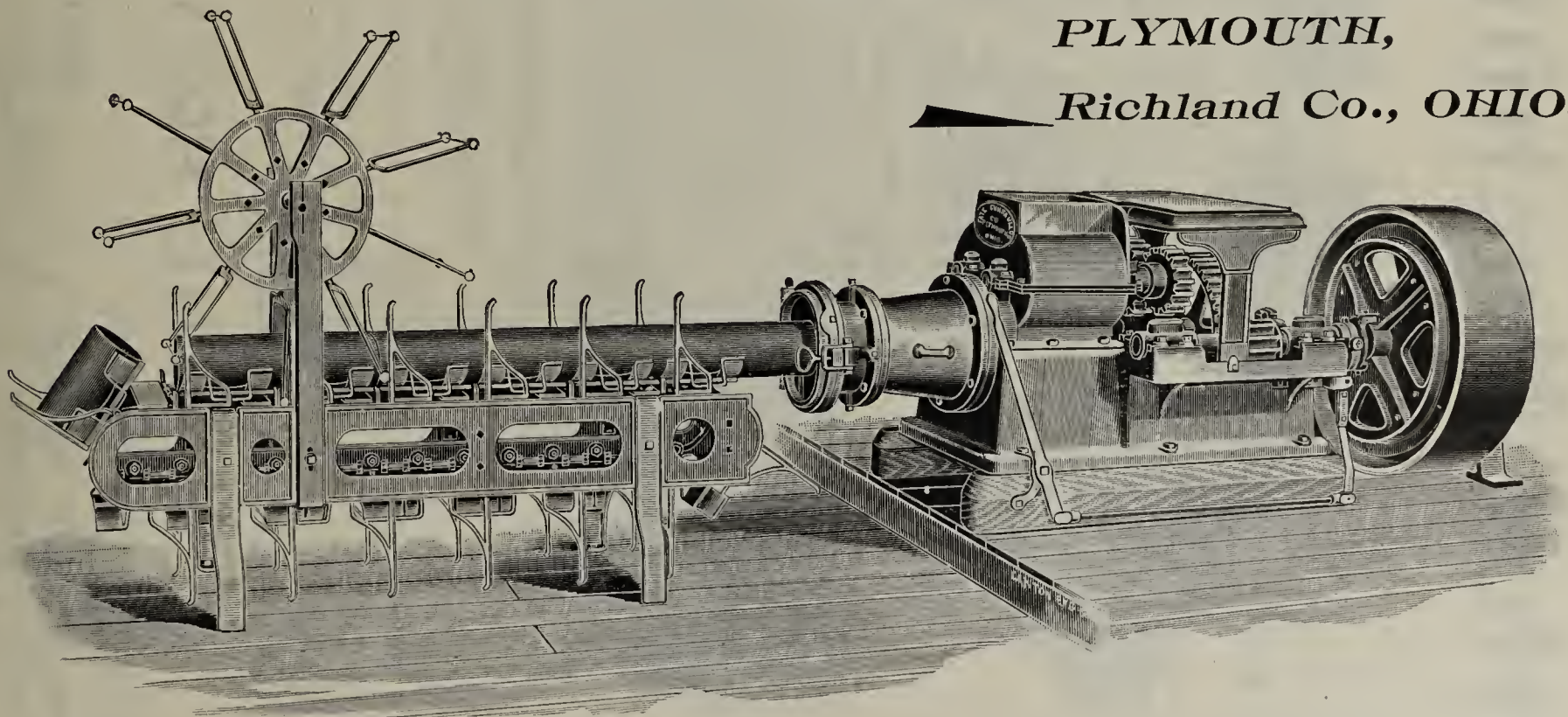
"D" Machine. With Elbow Attachment for Delivering Large Tile on End.

Send for Catalogue and Estimates On Entire Outfits

THE FATE-GUNSAULLUS CO.,

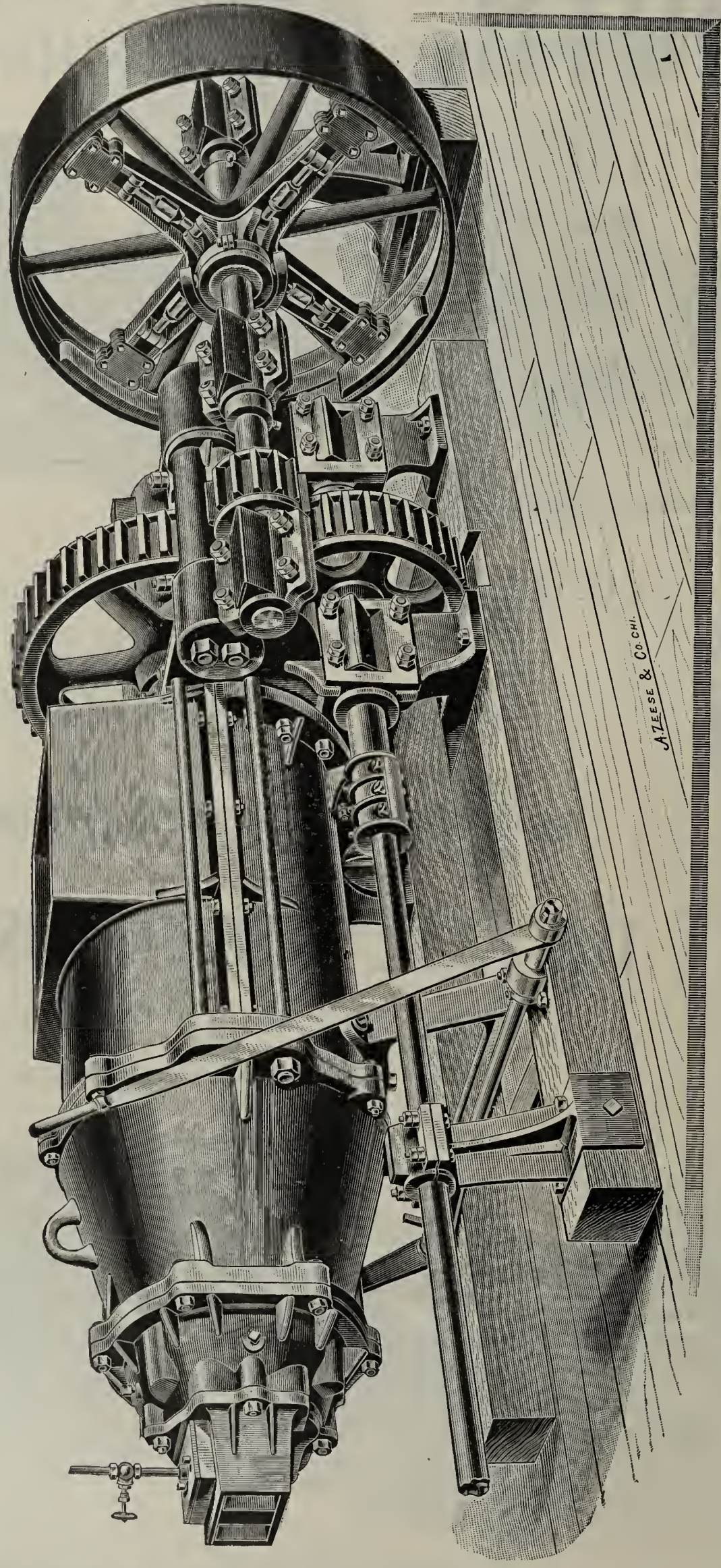
PLYMOUTH,

Richland Co., OHIO.



"D" Machine, with Automatic Cutting Table. For cutting tile from $2\frac{1}{2}$ to 8 inches; also building blocks.

Brick Machinery with a REPUTATION



Our No. 1 BUCYRUS GIANT BRICK MACHINE.

We construct our machinery on indisputable, practical, and scientific principles, consequently it withstands the most rigid and critical tests given it in every day work.

Our machinery has an enviable reputation for unequalled efficiency. When you purchase, be very sure you buy the best. We lead while others follow.

THE FREY-SHECKLER COMPANY,

MANUFACTURERS OF A

Complete Line of Clay
Working Machinery.

BUCYRUS, OHIO, U. S. A.

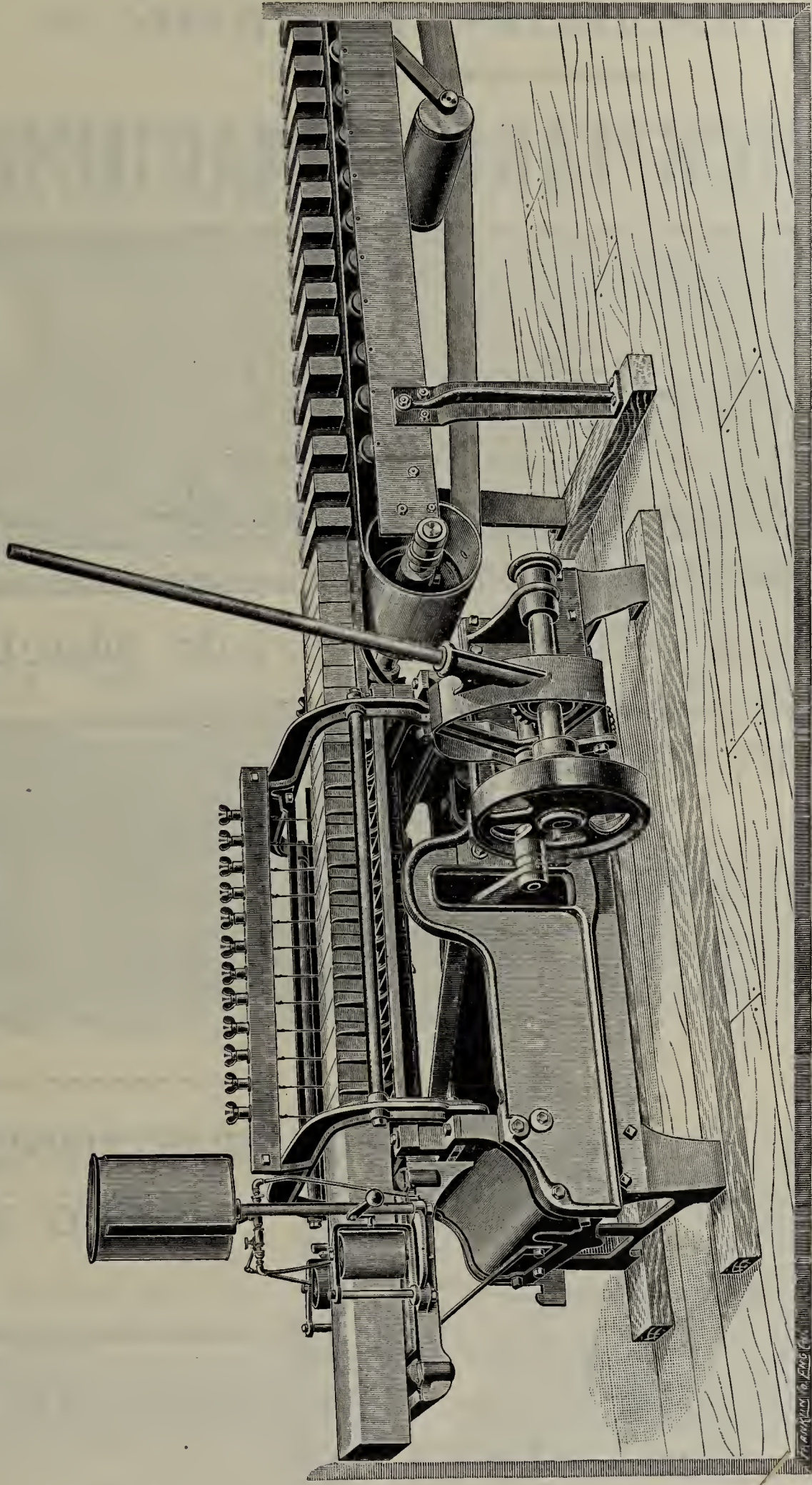
BUILDERS OF

The Bucyrus Steam
Tunnel Dryer.

—Send for 1894 Machinery and Dryer Catalogues.—

A CUTTING TABLE

THAT BEATS
THE WORLD.



OUR WELLSVILLE SIDE CUT TABLE.

This Cutting Table severs the column of clay at one movement of the lever, cutting both forward and backward ; thus doing away with the lost motion found in other Side Cutting Tables.

It certainly has no equal. We challenge any competitor to beat it, either in point of mechanical construction or its efficacy for making side cut brick. We guarantee its most successful operation.

Send for our 1894 Machinery and Dryer Catalogue

THE FREY-SHECKLER CO.,

Manufacturers of All Classes of Clayworking Machinery ;
Also Builders of the BUCYRUS STEAM TUNNEL DRYER

BUCYRUS, OHIO, U. S. A.

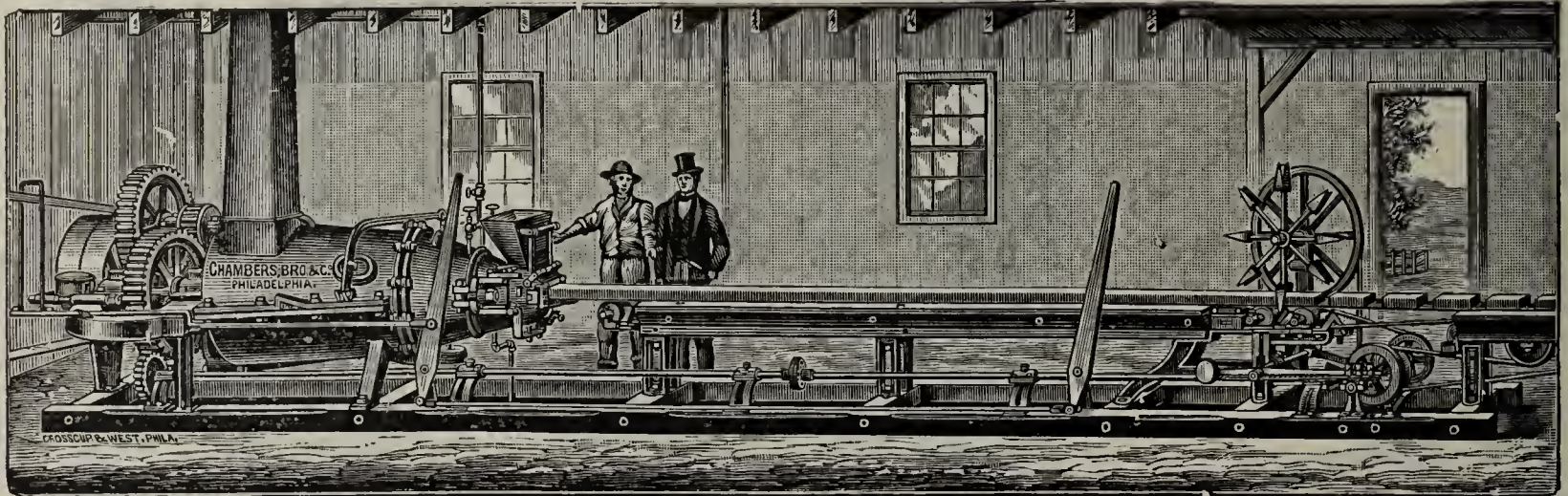
CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••



IMPROVED BRICKMAKING MACHINERY.



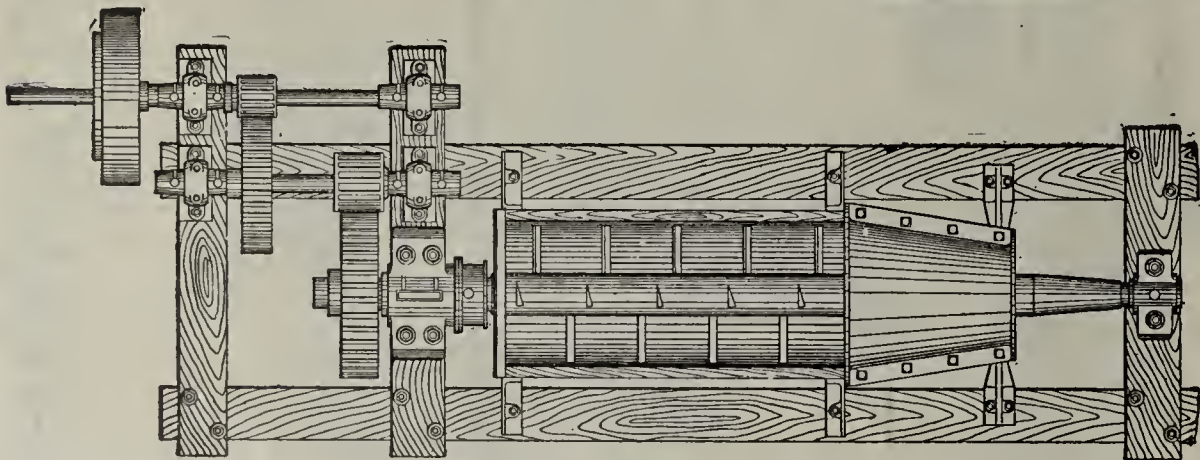
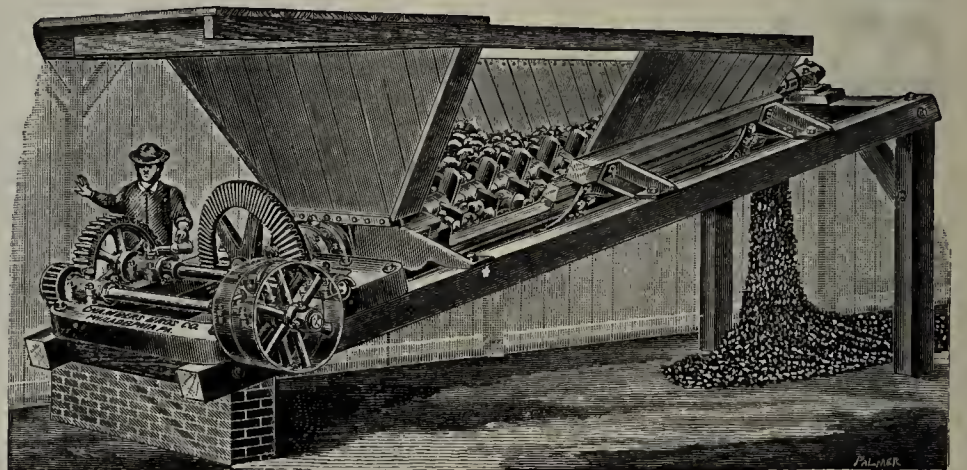
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]

CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

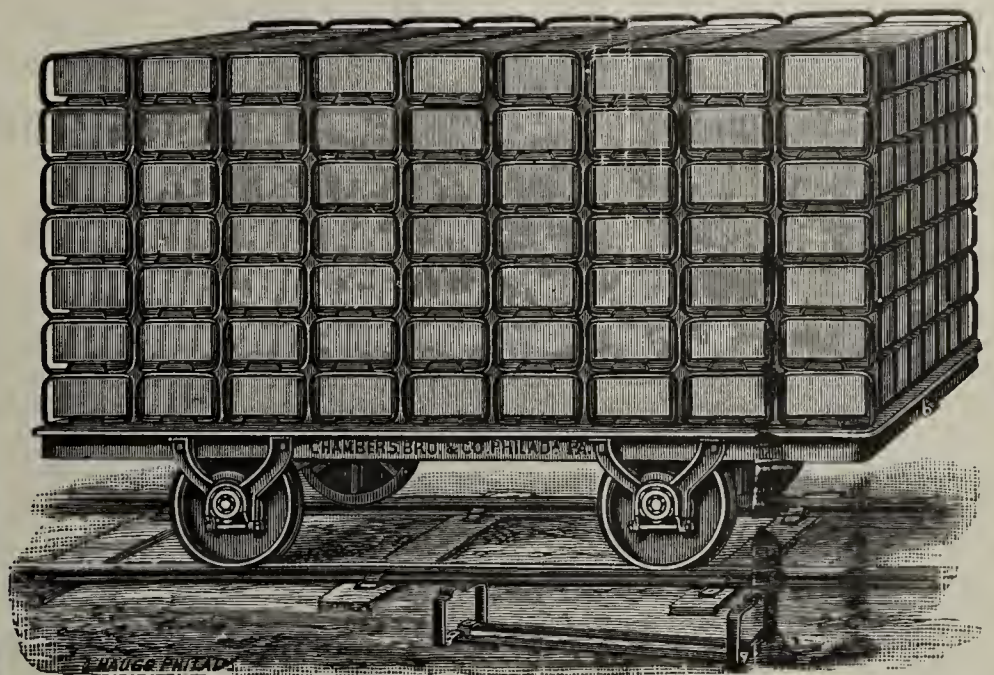
❖ PHILADELPHIA, PENN. ❖

IMPROVED TUNNEL DRYERS FOR COMMON BRICK.

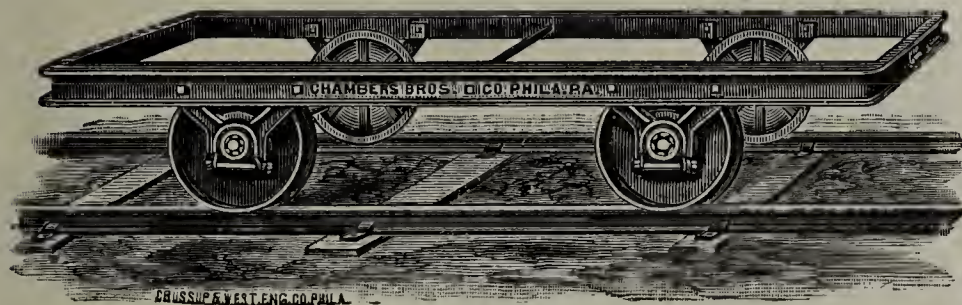
Cars and Complete Equipment

For Artificial Dryers of
all Kinds.

STEEL PALLETS.



CAR LOADED WITH 63 PALLETS AND 504 CHAMBERS' MACHINE BRICK.

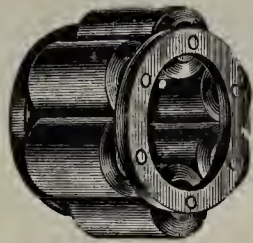


(No. 1 WROUGHT-BODY DRYER CAR.)



(No. 9 CAST-IRON PLATFORM CAR.)

The Anti-friction Cage Roller



Bearing used on our Cars.



(No. 3 CAR FOR PALLETS CROSSWISE.)



(No. 13 CAR FOR PALLETS LENGTHWISE.)

Send for complete Car Catalogue.

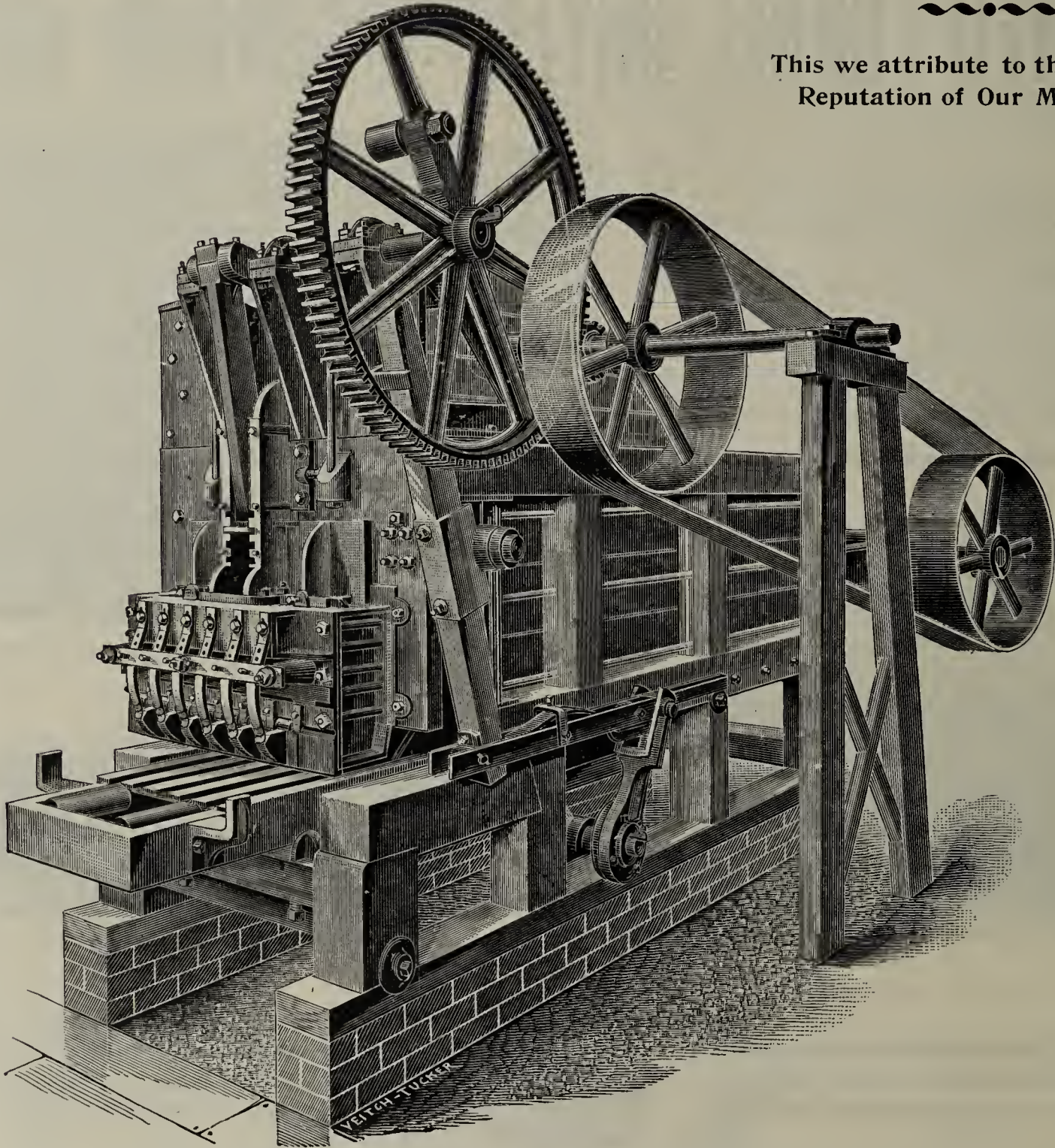
See ad. on front cover page.

[Mention the Clay Worker

Notwithstanding the Commercial Depression

We Have Done a Larger Amount of Business This Spring
Than in Any Previous Year.

~~~~~  
This we attribute to the Excellent  
Reputation of Our Machinery.



~~~~~ THE MOST CONVINCING FACT. ~~~~~

Every machine we have erected is still giving entire satisfaction.
We have letters on file which attest this fact.

☞ No second-hand "New Haven" Machines have ever been For Sale.

The McLagon Foundry Co.,

WATCH THIS PAGE.



NEW HAVEN, CONN.

A Wonderful Success

Is Evidenced By
The Subjoined
Letter Which
Should Be Read
By Every
Brickmaker In
The Land.



Reader if you want
thorough satisfaction
follow the example of
Taylor Bros., and get a
Big Wonder.



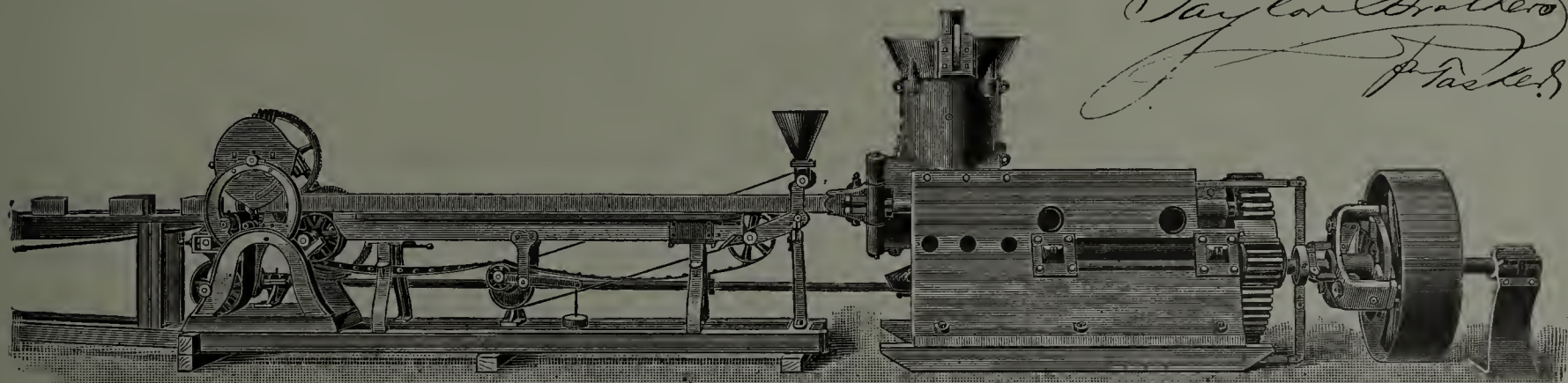
OFFICE OF
DON VALLEY
PRESSED
BRICK WORKS
TAYLOR
BROTHERS
MANUFACTURERS OF
FINE GRADE PRESSED BRICKS,
IN ALL COLORS & DESIGNS
FIRE CLAY FIRE BRICKS. SEWER PIPES &c

TORONTO, April 5th 1894.

Wallace Mfg Co
Gent^l Frankfort Ind.

We have pleasure in
enclosing you our cheque for
Big Wonder machine & as per
agreement. We are thoroughly
satisfied with its work, and we
want to advise, your price for
a duplicate machine with the
automatic cut-off.
Kindly acknowledge receipt, and send
the automatic cutter as soon
as possible.

Yours
Taylor Brothers
Frankfort



Big Wonder, Cunningham's Automatic Cutting Table and Sander. Capacity 60 to 75 M. per day of 10 hours.

We also manufacture the Little Wonder brick and tile machine and a full line of Pug Mills, Clay Crushers and Stone Separators, Hoisting Drums, Friction Clutch Pulleys and Wheelbarrows. Illustrated and descriptive catalogue free.

The Wallace Mfg Co.,

When You Send for Further Particulars
Mention the CLAY-WORKER

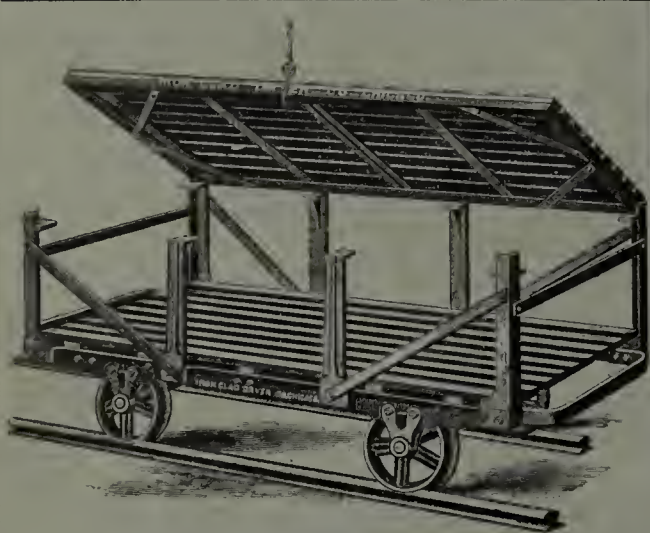
FRANKFORT, IND.

The LATEST IMPROVED

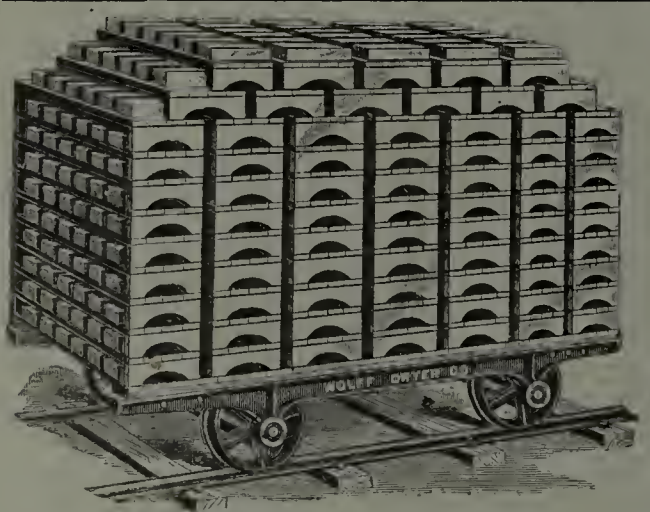
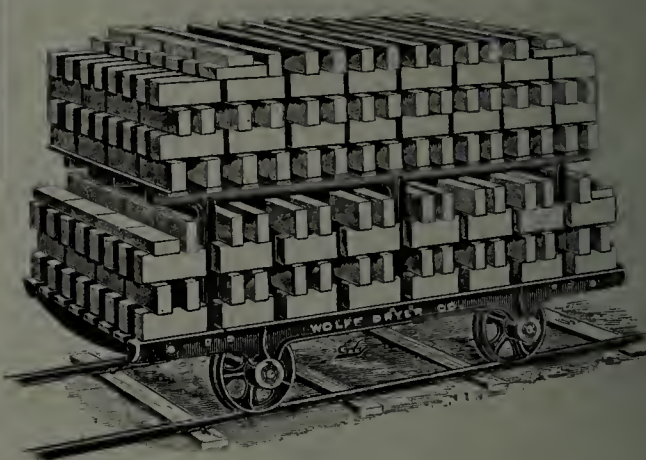


Brick Dryer.

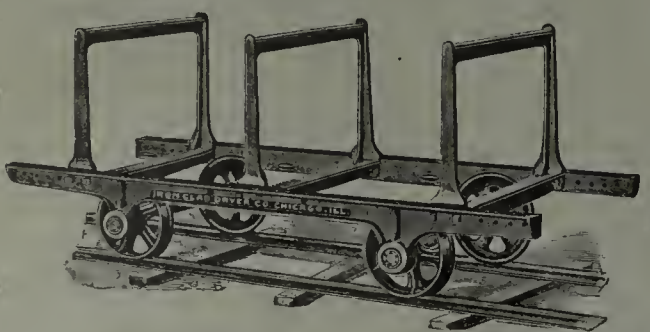
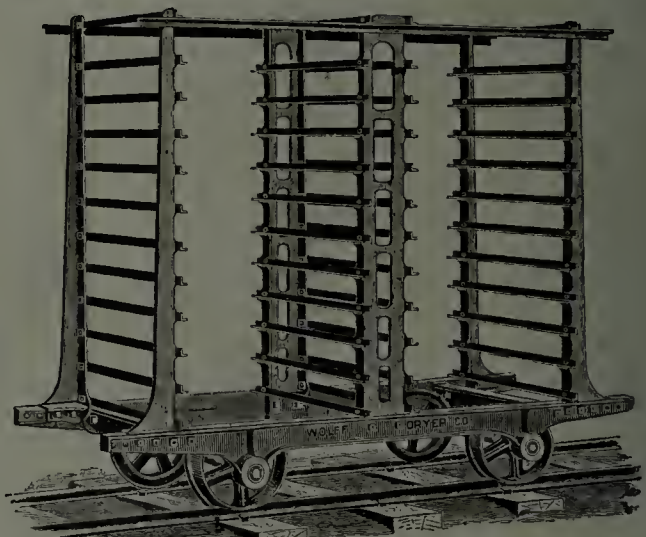
CHICAGO IRON-CLAD



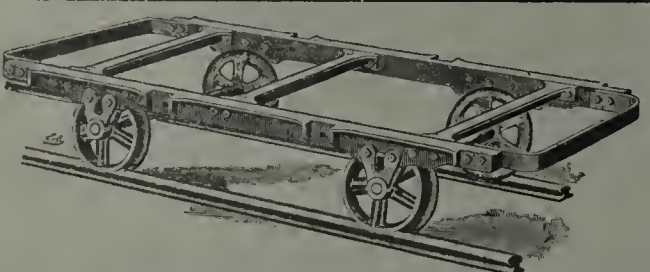
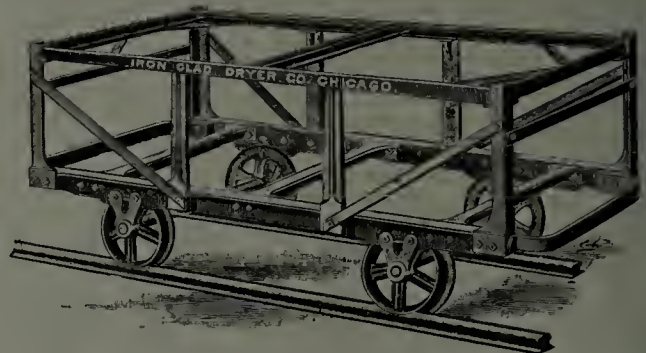
Tell your Neighbors,
Tell your Friends,
Tell Everybody,
To Buy



The Best Dryer—
The CHICAGO
... IRON-CLAD ...



When you
Buy our cars
you can run
day and night.



Before placing your order, write us for Illustrated Catalogue and any other information required.

WOLFF DRYER CO., 358 Dearborn St. Room 304, **Chicago, Ill.**



THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. XXI, No. 6.

INDIANAPOLIS, IND., JUNE, 1894.

\$2.00 a Year in Advance.

Brick Making Machinery,

A. K. FRANCIS.

J. B. RAUCH.

FRANCIS & RAUCH,

Manufacturers of

High • Grade • Building • Brick,

Sewer, Butment and Pave Bricks.

Vitrified Street Pavers a Specialty.

PINE GROVE, PA., May 9, 1894.

MESSRS. CHAMBERS BROTHERS COMPANY.

GENTLEMEN:—Please find enclosed our check for \$1,000 on account C-CD Brick Machine. We have made 200,000 street pavers on it and are glad to say that it works splendidly. We would not think of purchasing any but a Chambers, and when we increase our capacity will use another C-CD. It is precisely what we want in our shale clay.

Very truly yours,

FRANCIS & RAUCH.
T.

Chambers Brothers Company,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,

J. E. EASTES, Chicago Agent,

203 South Canal Street.

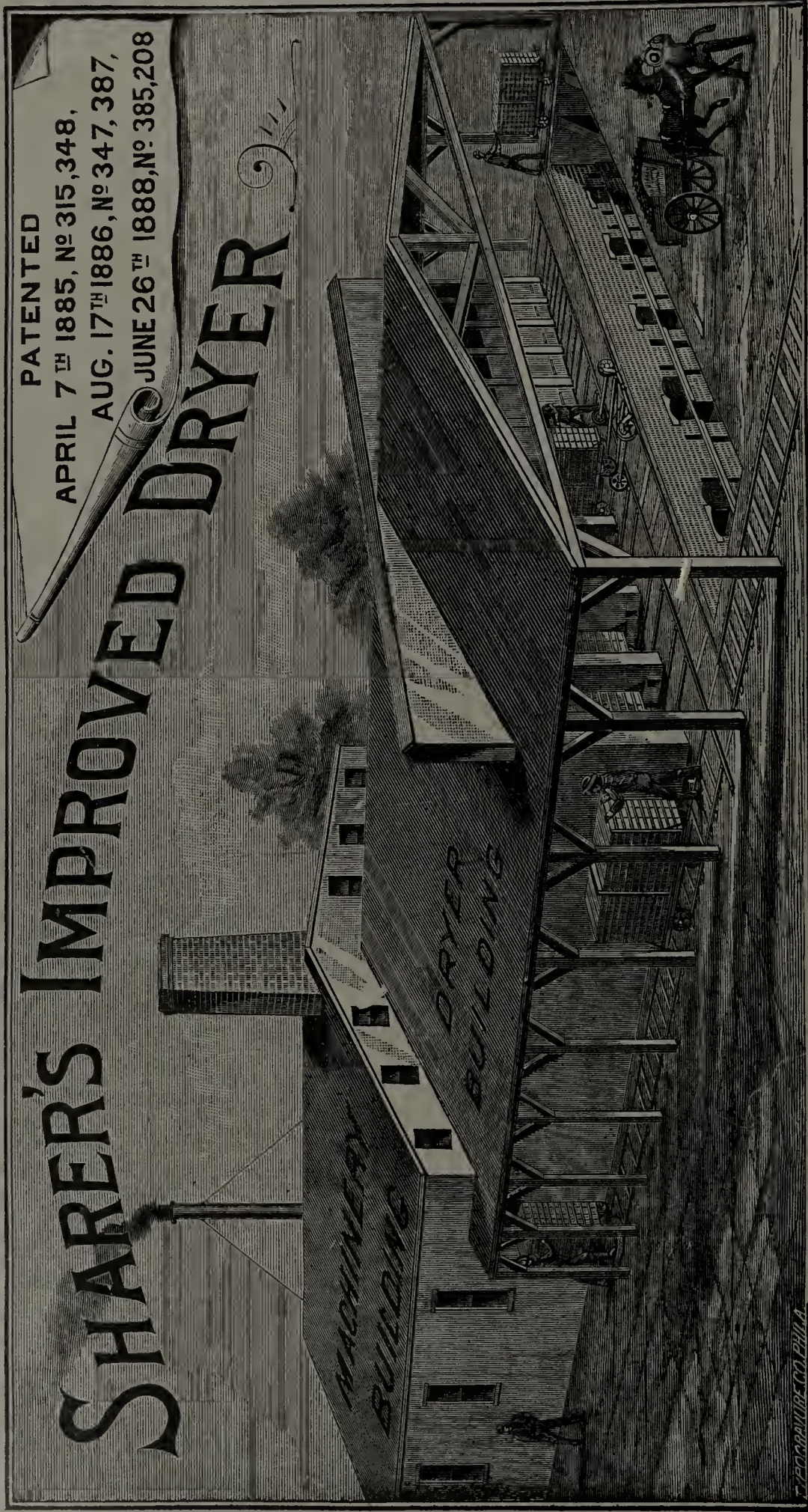
PHILADELPHIA, PA.

See ads. on pages 718 and 719.

THE SHARER DRYER AND CONSTRUCTION CO.,

BRICK MANUFACTURING EXPERTS.
CONSTRUCTING ENGINEERS. : CONTRACTORS AND BUILDERS.
COMPLETE PLANTS A SPECIALTY.

Owners of SHARER'S IMPROVED DRYER;
SHARER'S IMPROVED CALORIFIC KILN.



Builders of All Kinds of Dryers and Kilns for Dry clay and
Burning any and all Kinds of Clay Products.

Manufacturers of Cars, Transfer Cars, Turn Tables, Furnace Castings and Complete Dryer and Kiln Equipments.
.....Dealers in All Kinds of Clayworking Machinery, Engines, Boilers, Shafting, Pulleys, Etc.
New plants built and equipped complete in every particular. Old plants remodeled and modernized. Clays tested and analyzed. Plans and estimates furnished.
Information costs you nothing. Send for Catalogue "C."

SHARER DRYER & CONSTRUCTION CO.,

TORONTO OFFICE: 71 Adelaide, East, Toronto, Ont., Canada,
HUGH CAMERON, Manager.
Rooms 506 and 507, The Mutual Life Building,
N. W. Cor. 10th and Chestnut Streets,
PHILADELPHIA, PA.

For Clay Screens

..USED...

In Making Brick,
Tile, Terra Cotta,
etc., etc.

Also for Dry Pan,
Pulverizer, Chute,
Shaking and Re-
volving Screens.



Heavy Iron and Steel Plates

Punched for sizing
Coal, Coke and
Ores; Macadam,
Concrete, Railroad
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS
—USED FOR—

CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

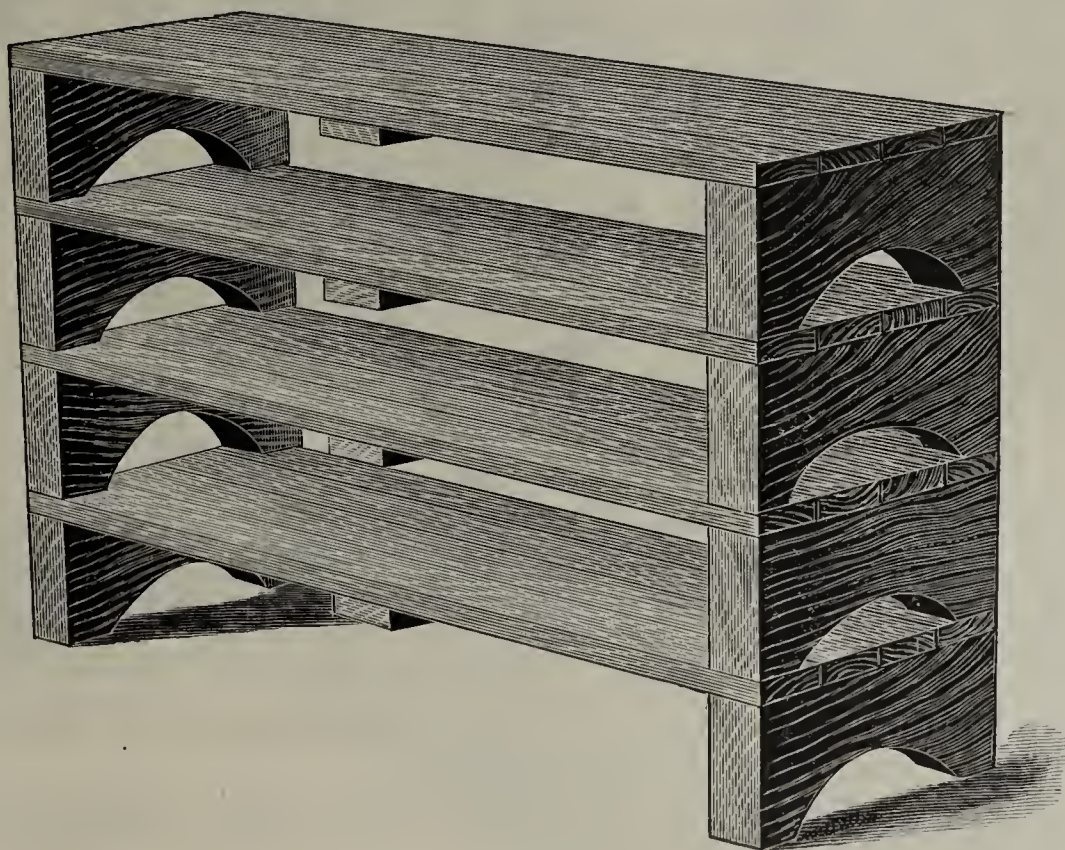
THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,
CHICAGO, ILL.

WOODEN BRICK PALLETS

WOODEN
BRICK
PALLETS



STYLE C.

WOODEN
BRICK
PALLETS

We manufacture all styles and sizes. Write to us direct for descriptive circulars and prices.

WM. B. MERSHON & CO., = Saginaw, East Side, Mich.

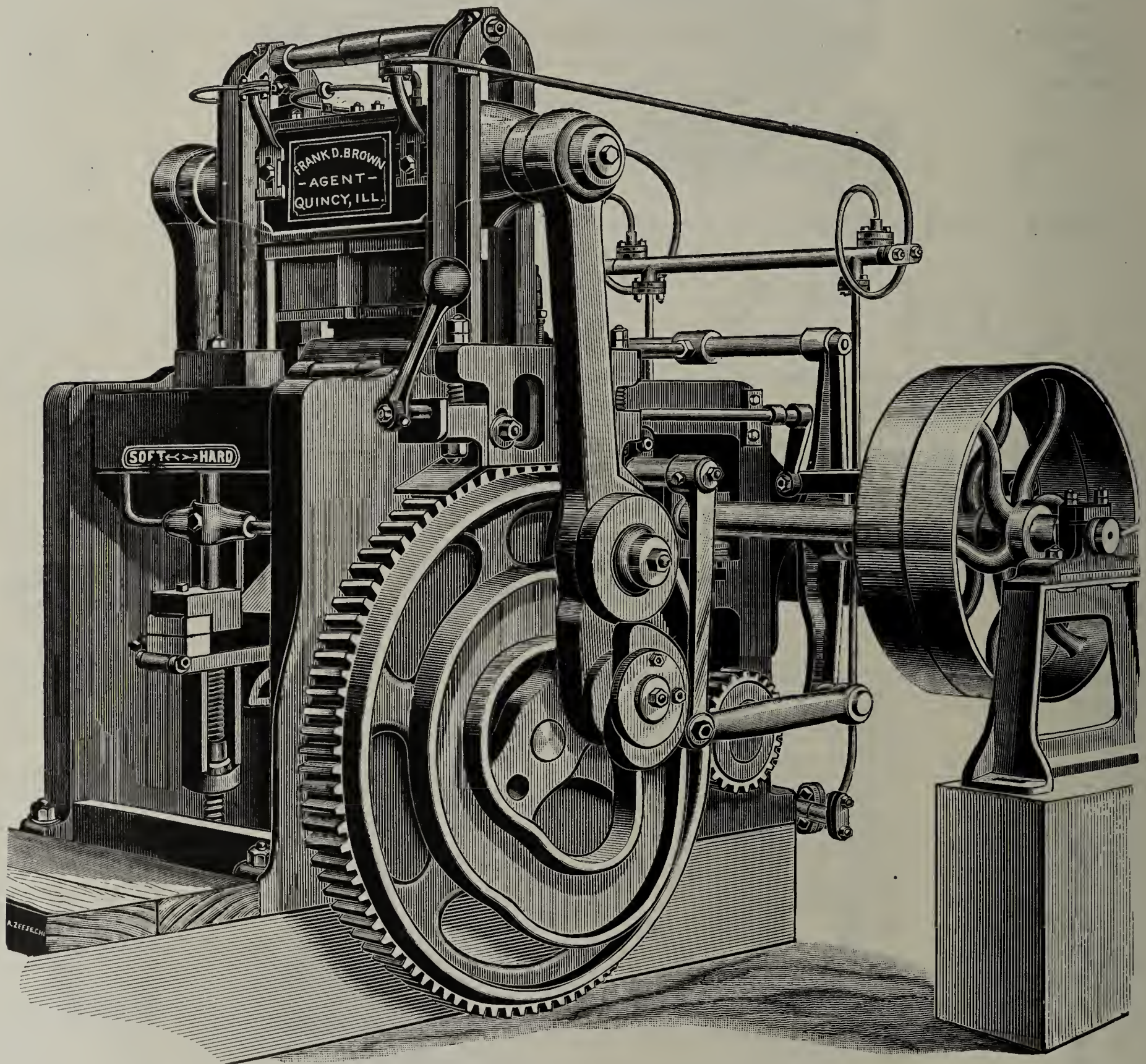
WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

•✱HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.✱•

Best, Cheapest and Most Durable Press in the World.

*—One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

FRANK D. BROWN, Room 18 Major Block,
Cor. La Salle & Madison Sts. **Chicago.**

The Ross-Keller Brick Machine.

(Triple Pressure)

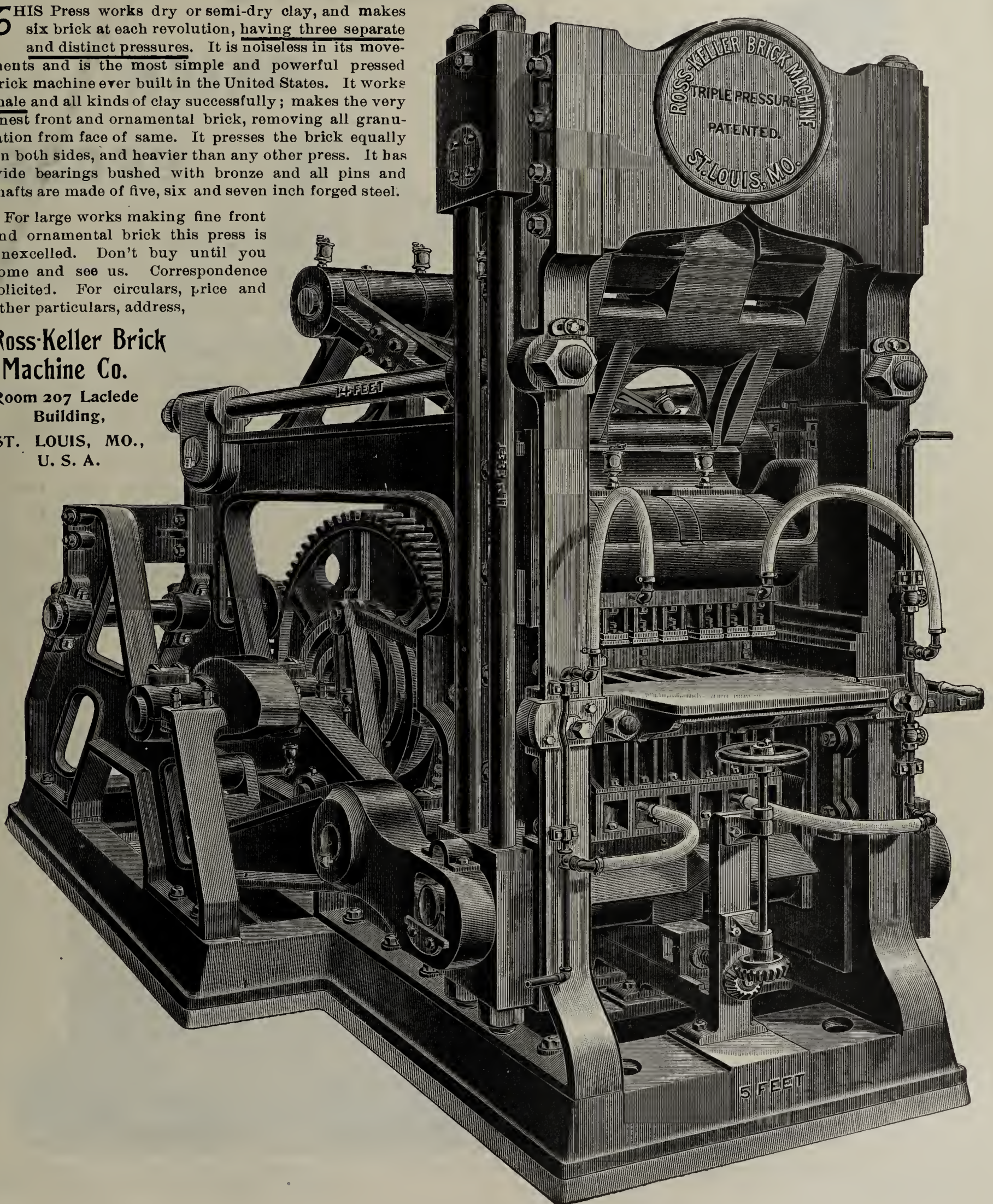
Weight 75,000 Pounds, Capacity 35,000 to 40,000 Brick Per Day.

THIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five, six and seven inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address,

**Ross-Keller Brick
Machine Co.**

Room 207 Laclede
Building,
ST. LOUIS, MO.,
U. S. A.



Fifty Thousand Dollars

For the **BOYD**

BRICK

PRESS

A TRUE TALE.

The largest brick plant in the world is
The Jarden Brick Co.,

—OF—

Philadelphia.

Not long ago they decided to put in a Dry Clay Plant. They traveled all over the country and inspected the various dry press machines at work. Then they put in a six-mold Boyd Press. They worked it for over seven months, and were so pleased with it

that they bought **five more** six-mold and **one** two-mold, Boyd Presses. They paid for all these presses. They knew what the Boyd Brick Press could do. They knew that no other press could compete with it. So in order to get the sole right to use the Boyd Brick Press in Philadelphia and for 50 miles around, besides the price of the seven presses, they paid us **Fifty Thousand Dollars** (\$50,000).

Their brick is acknowledged by builders to be "without competition" in their part of the country.

Need we say more?

Catalogue on application. Circular giving *fac simile* of medal awarded at the World's Fair to the Boyd Brick Press, free.

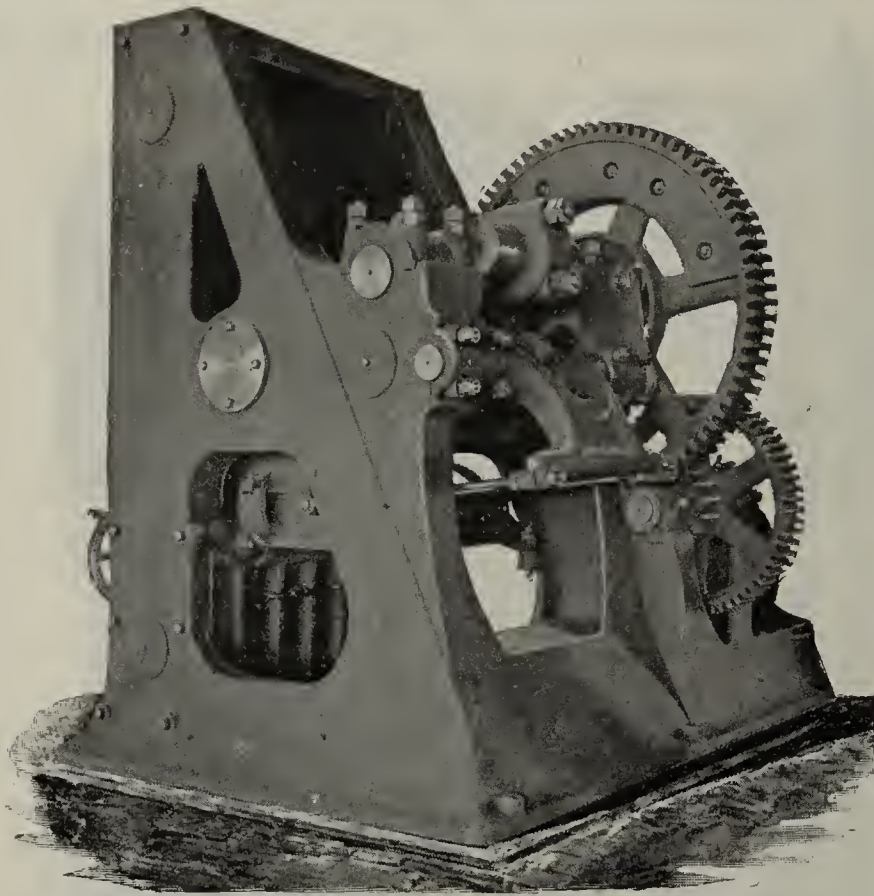
Chisholm,

Boyd

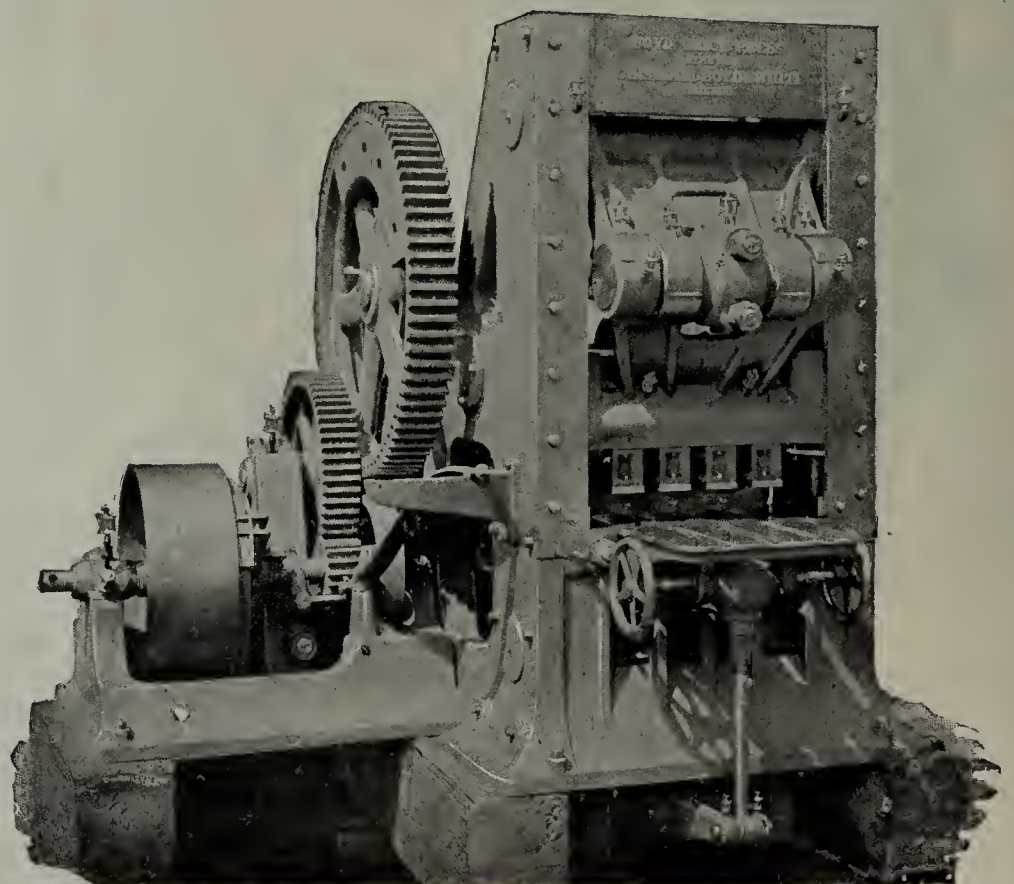
and

White,

324 Dearborn Street,
CHICAGO.



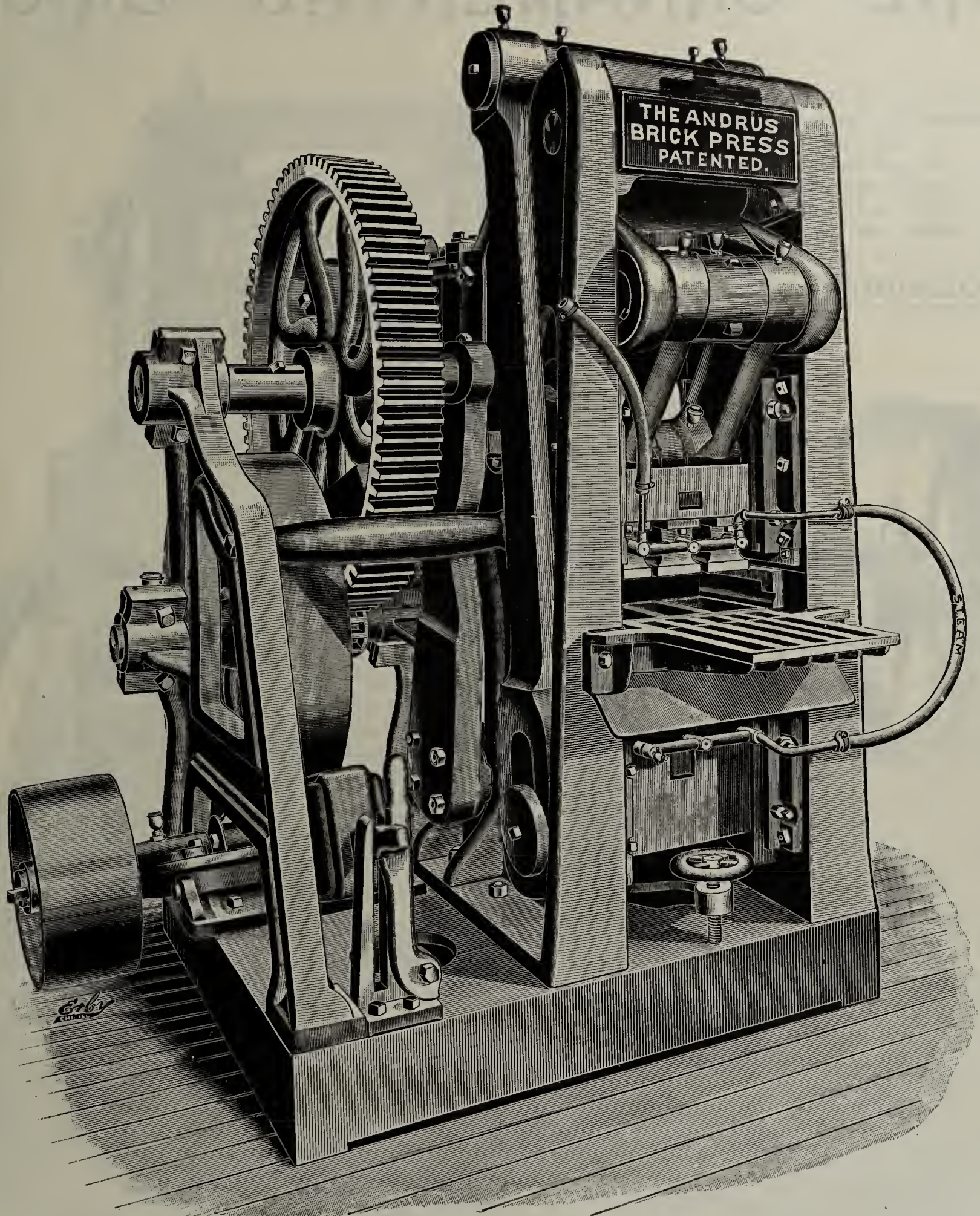
FOUR-MOLD MACHINE.
(REAR VIEW.)



FOUR-MOLD MACHINE.
(FRONT VIEW.)

The NEW ANDRUS DOUBLE PRESSURE 3-MOLD BRICK PRESS

Within the Reach of Any Responsible Brick Manufacturer.



Write for new Catalogue of our 3 and 4 mold Presses and new terms to suit the times. Address

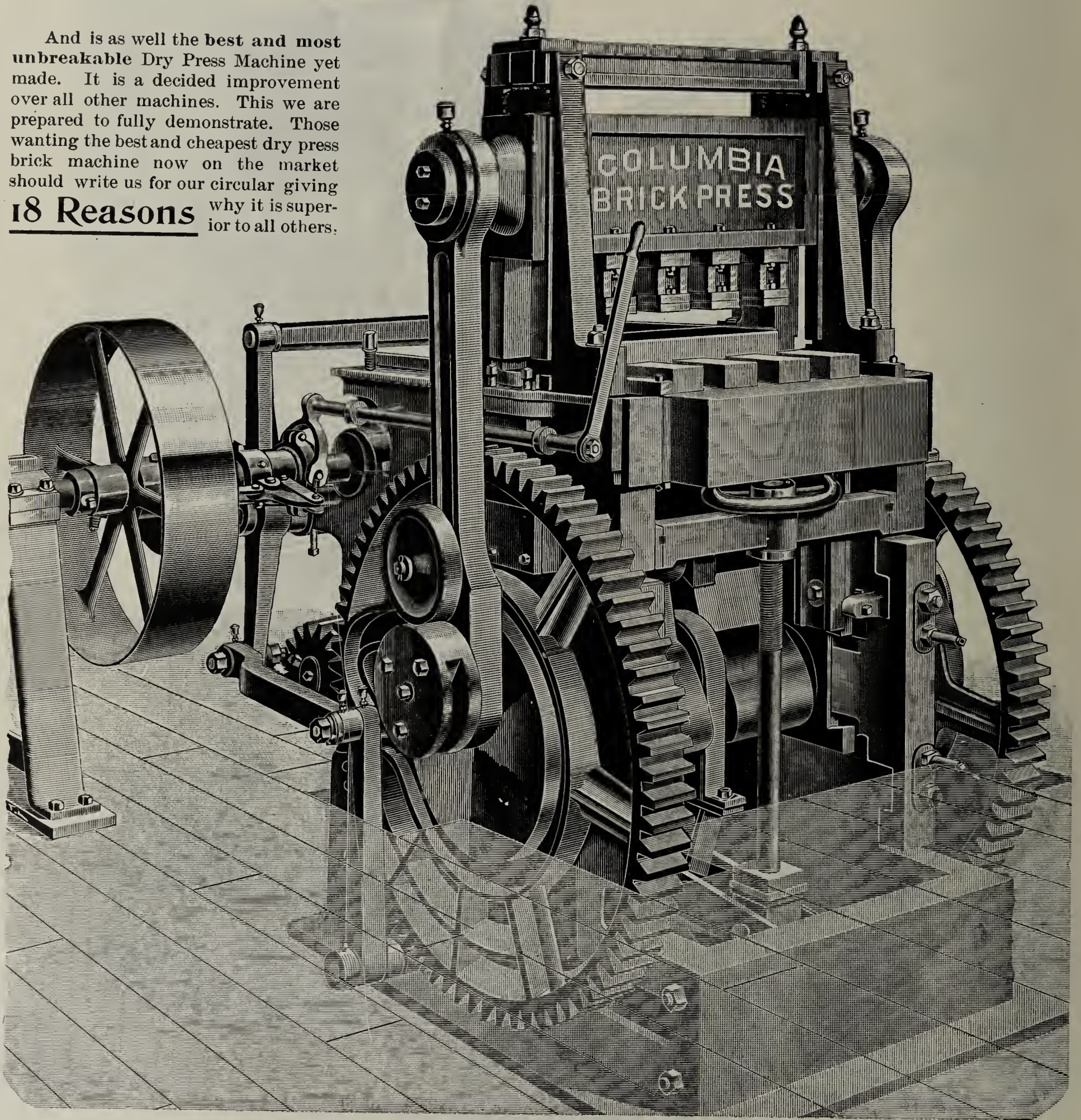
H. O. WHITNEY, General Agent,
General Office and Factory, KEOKUK, IOWA, **KEOKUK, IOWA.**

❖ THIS ❖ PRESS ❖

IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF

FINE ORNAMENTAL BRICK

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

COLUMBIA MANUFACTURING CO.,

Send your clay and we will test it and send you the results....

2119 N. Ninth St., ST. LOUIS, MO.



THE SIMPSON BRICK PRESS

Constructed According to Advanced Mechanical Principles.

All Parts Contain the Best and Strongest Material Procurable.

Its Product Always Commands the Highest Market Price by Reason of Their Hardness and Beautiful Finish. It Carried Off the Highest Honors at The WORLD'S COLUMBIAN EXPOSITION.

An Ideal Machine in Every Respect. We are Prepared to Construct Complete Plants of any Capacity.

The Simpson Brick Press Co.,

Agents For Canada :
Waterous Engine Works Co.
Brantford, Ont.

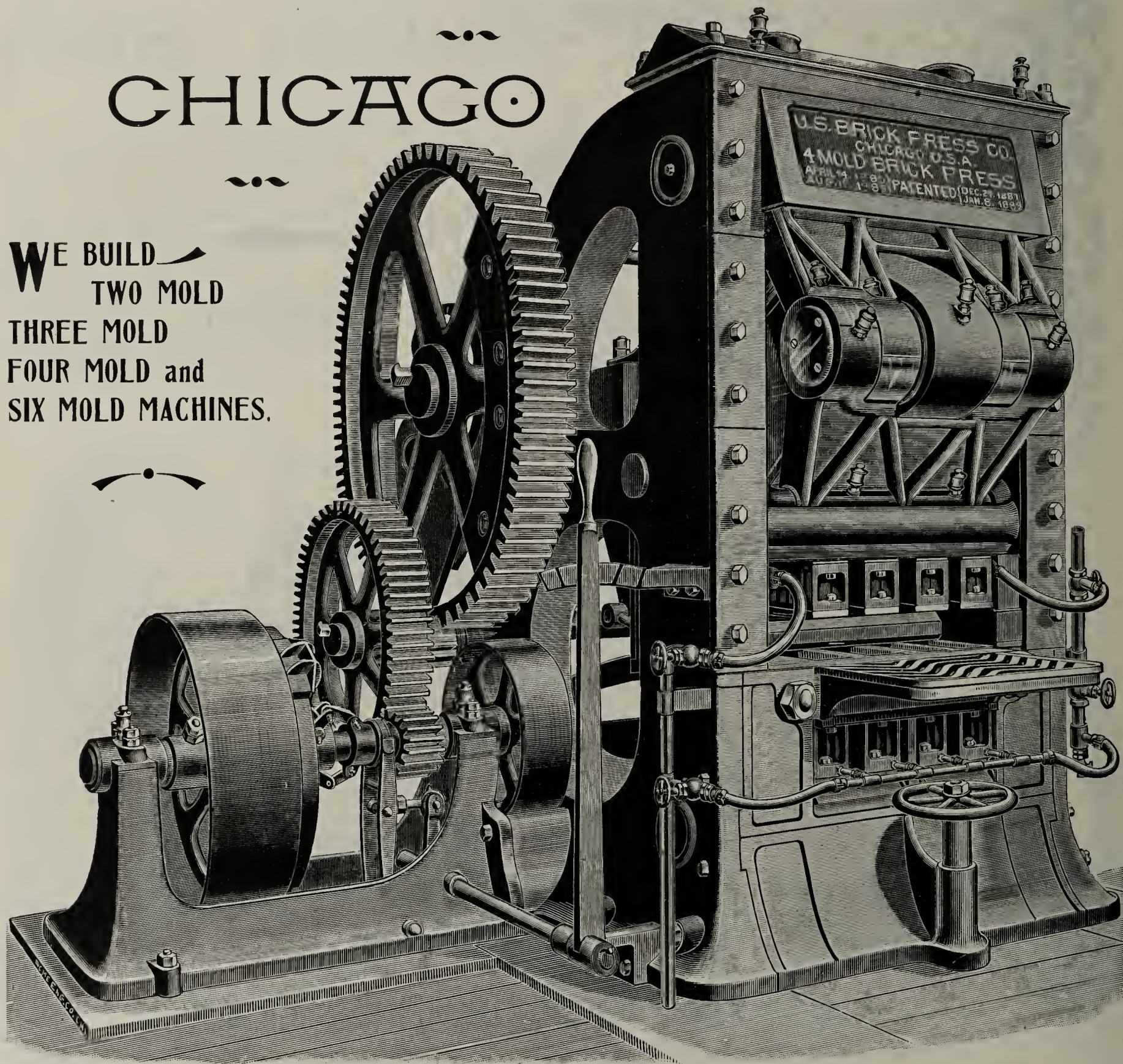
Chamber of Commerce Bldg.,
 CHICAGO.



U. S. BRICK PRESS

CHICAGO

WE BUILD
TWO MOLD
THREE MOLD
FOUR MOLD and
SIX MOLD MACHINES.



The U. S. Brick Press embodies all the requirements demanded by Pressed Brick Manufacturers.

EFFICIENCY, DURABILITY, EASY OPERATION.

LEAST COST FOR REPAIRS, NOISELESS IN USE.

PERFECTION IN MECHANICAL CONSTRUCTION.

The record of the U. S. Brick Press is proof conclusive of its perfection as a Pressed Brickmaker.
 For estimates and prices please address

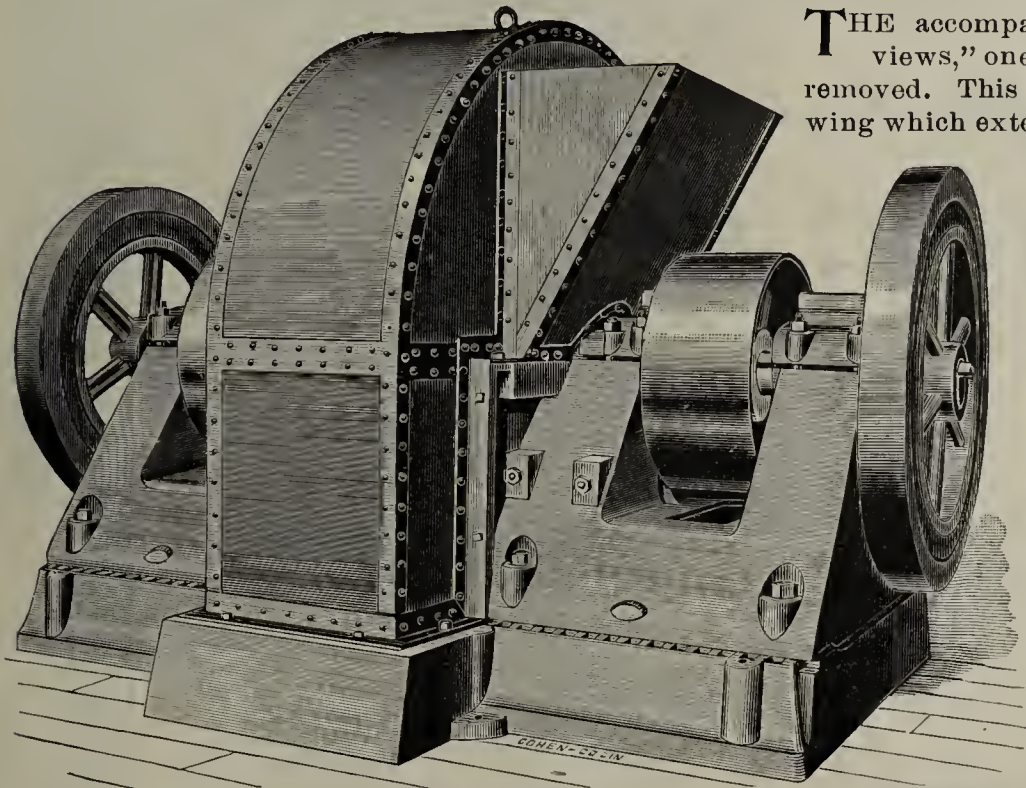
United States Brick Press Works,

OSWALD KUTSCHE, Proprietor,

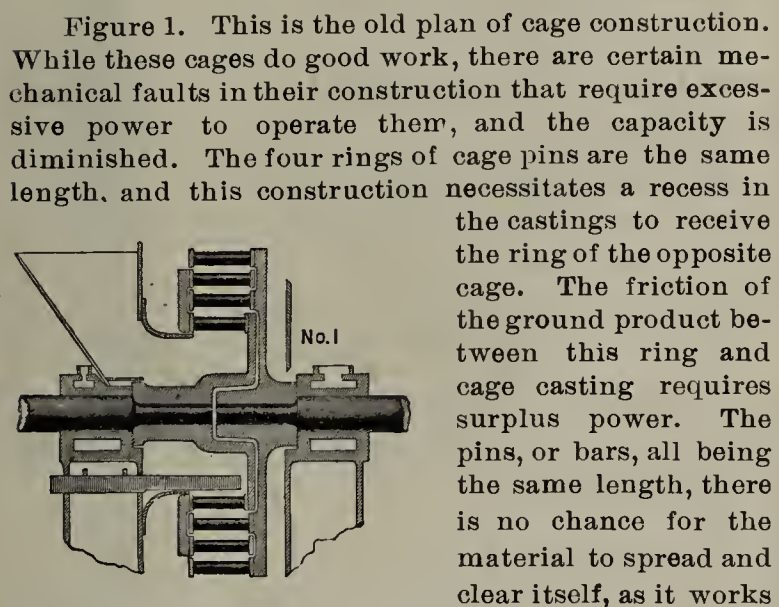
OFFICE: Unity Bldg., Room 1111-1113, 79 Dearborn St.,

CHICAGO, ILL.

Stedman's Improved Clay Disintegrators



PATENTED APRIL 10, 1894. Nos. 518,010, 518,011.



outwardly in the cages, and if the feeding is irregular, it constantly chokes the cages and checks the speed, so that as good grinding is not accomplished.

Figure 2. The construction of these cages is such that the best possible grinding can be accomplished, with little power and little wear and tear. We have what is called an increased clearance of the cages. (That is, they approach a conical construction from the center of the shaft to the circumference of the outside cage.) The inside row of pins is shorter than the second row, and the third and fourth rows increase in length over the second. By this construction there is no recess between the ring of one cage and the casting of the other, any material that works behind the rings being immediately thrown outwardly into the cage beyond, for it has a free discharge, and the centrifugal force it receives will not permit it to lodge between the ring and casting. This increased clearance allows the material, as it is fed to the cages, to spread and free itself, for it gives an increased grinding surface as the material works outwardly. You can feed the material as irregular or fast as you desire and it will not choke or clog the mill.

Parties who are familiar with the mechanical construction of Cage Disintegrators will understand and appreciate the merits of this valuable improvement. This cut also shows the construction of our journal bearings. The arrangement for oiling is the best and the journals are constructed dust tight, so that there will never be any danger of heated bearings.

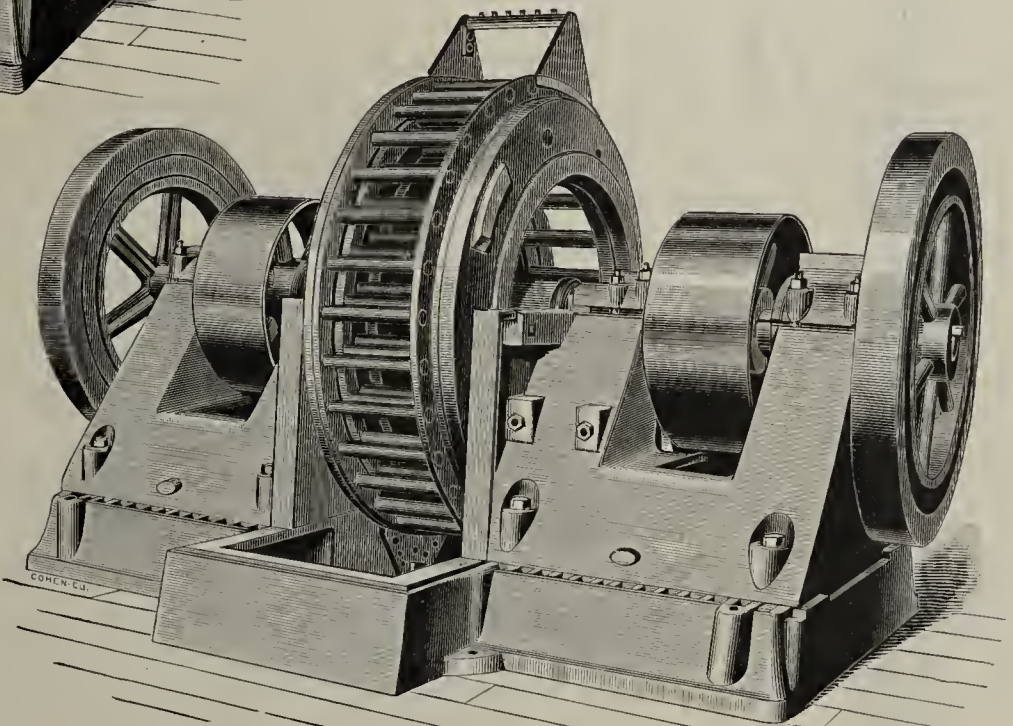
We can design these Improved Clearance Cages to fit the framework of any other make of Disintegrators, and will be pleased to correspond with any one who appreciates the value of this improvement, with a view of placing it on his Disintegrators.

Remember, with our Improved Clearance Cages you can do much more work with much less power, and greatly reduce the wear and tear.

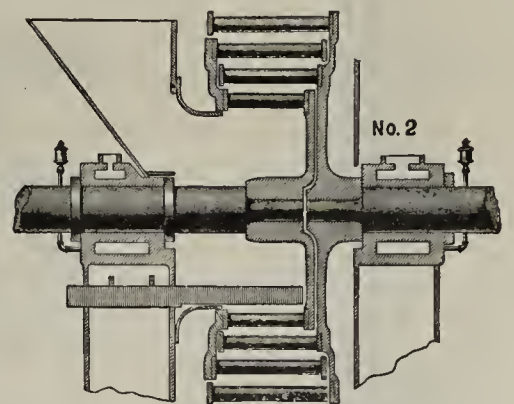
For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

THE accompanying cuts show our Improved Disintegrator, "two views," one with the casing over the cages, the other with the casing removed. This casing, which fits around the cages, has an extension wing which extends clear down to the base plate, so when you remove it from over the cages, they are presented in full view, and it is an easy matter, when slid apart, to reach the interior parts. Fastened to the outside revolving cage are two scrapers; the cross-bars of these scrapers extend some six or eight inches beyond the revolving cages, and revolve close to the iron casing that fits around the cages. This always insures a space of 6" to 8" between the cages and casing for a free discharge, and the action of these scrapers makes it impossible to clog in grinding damp clay. This is the most simple and practical method to overcome clogging in grinding damp clay, and brickmakers who have had experience with this class of Cage Clay Disintegrators will appreciate the value of this patented improvement. See cut below.

Improved Scraper.



PATEET APPLIED FOR.



STEDMAN'S FOUNDRY & MACHINE WORKS, Aurora, Ind.

— AN EXPLANATION OF — COLD FACTS!

Draw Your Own Conclusions.

IN the discussion of kilns in the N. B. M. A. Convention at Chicago, for special purposes, it was noticeable when an up-draft kiln was referred to, some one would remark that an up-draft kiln would not answer the purpose for the reason that the cold air coming in contact with the bricks in the arches would damage the ware." We wish to call attention of brickmakers to this point,

The bricks in the arches or bottom of our up-draft kilns are as thoroughly protected from cold air, as are the top brick in a down-draft kiln.

So much for this; now we maintain that we can obtain a more uniform degree of heat from top to bottom with an upward draft which is natural, than can be obtained with a downward draft, which is forced and unnatural, and with an arch over an up-draft kiln a larger per cent. of hard building brick can be produced; without an arch two courses only on top are salmon.

Now as to comparative cost of putting in the down and the up-draft kilns.

| | |
|---|----------|
| The average cost of a first class up-draft kiln to hold 200,000 brick, is | \$ 1,500 |
| The average cost of a first class down-draft kiln to hold 200,000 brick, is..... | 5,000 |
| Saving to the brickmaker in first cost on one kiln..... | 3,500 |
| Saving to the brickmaker on three kilns this size, (which are necessary for a small plant)..... | 10,500 |

We are ready to verify these estimates.

For the best and cheapest kiln in use to-day for burning building bricks, the "Morrison Up-draft Kiln" with late improvements is unrivaled.

If you have any doubts about it, address

R. B. MORRISON & CO.,

PROPRIETORS,

ROME, GA., U. S. A.

For further proof. —

The Eudaly Improved Down-Draft Kiln.

THE IMPERIAL SHALE BRICK CO.

TO WHOM IT MAY CONCERN:—

CANTON OHIO. April 20th, 1894.

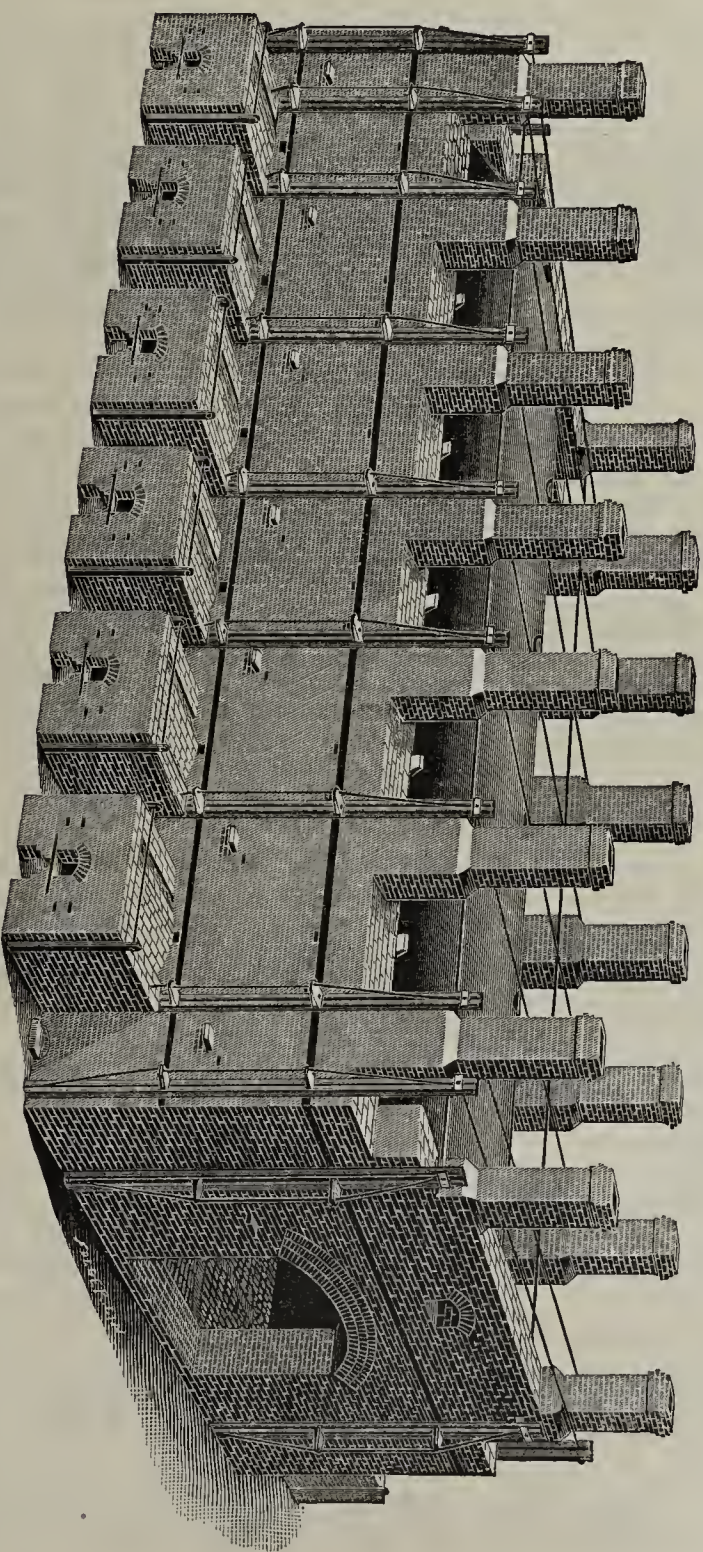
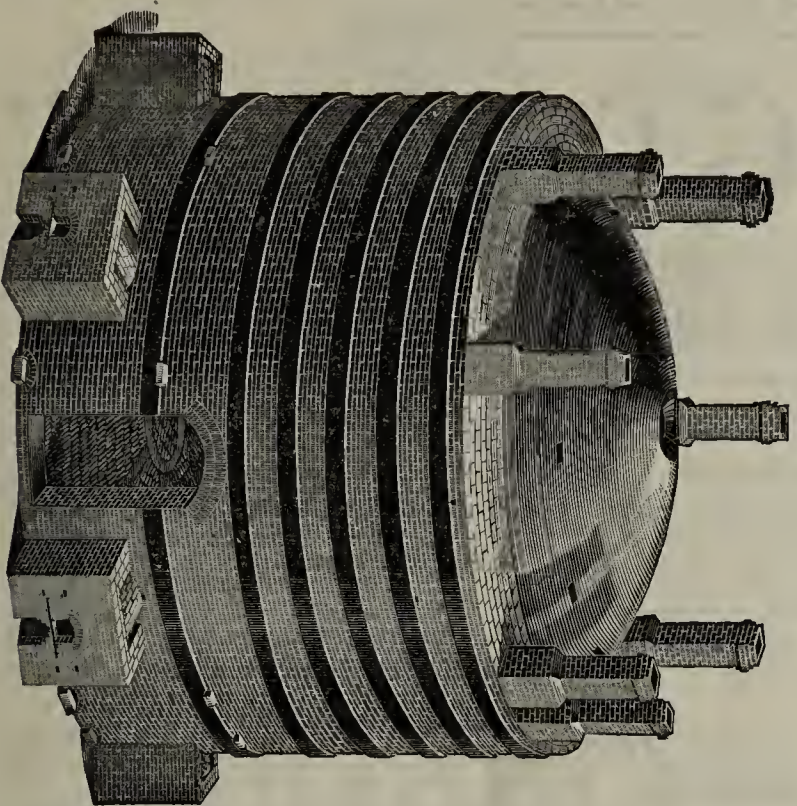
Unsolicited, we cheerfully bear testimony to the fact, that in the spring of 1892, we organized the Imperial Shale Brick Co., for the manufacture of shale paving brick. We at this time bought a yard right to build and use "The Eudaly Down Draft Kilns," at that time building three (3) large kilns 18x86. Since then, we have added many more.

In the fall of the same year, we commenced to burn brick, and from start to finish have had a continuation of good burns. As an economizer of fuel they are equal, if not better than any other kilns of which we have knowledge. Brick burned in the Eudaly Kilns are uniform in color from top to bottom—seldom have more than two courses of light burned, and frequently take street pavers from the bottom course. We are pleased with the Eudaly Kilns and cheerfully endorse them to the trade.

Very Respectfully,

THE IMPERIAL SHALE BRICK CO.,

E. D. KEPPLINGER, Sec'y & Treas.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

W. A. EUDALY,
64 Johnston Buildings,
Cincinnati, Ohio.

THE · KILN · OF · THE · PERIOD.

THE "PERFECT KILN."

Sercombe's Patent.

Designed on Economic and "Common Sense" Lines, for Burning Brick, &c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.
 Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

NOTE WHAT THE USERS SAY.

Sample of English Testimonials.

From Messrs. W. T. WRIGHT & CO., Albion Brick Works, Sileby.

SILEBY. July 14, 1892.

To MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT & CO.

Third kiln now ordered.

From Messrs. WILLIAM THOMAS & COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns.] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,

Fulton Fire Brick and Mining Co.

FROM CANADA.

TORONTO, February 28th, 1893.

MESSRS. SERCOMBE, OSMAN & WARREN.

DEAR SIR:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular (Extract.)

Yours truly,

CARROLL, VICK & CO.

N. B.—Messrs. Carroll & Co. are erecting one kiln, and contemplating erecting others.

References can be given to over Forty first-class firms already. For further particulars please apply to

SERCOMBE, OSMAN & WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER,

AGENTS FOR CANADA R. H. PYNE & CO., Yonge St., TORONTO.

W. H. KELSO, President.

PAUL BOEHNCKE, Treas. & Sec'y.

MAX A. TH. BOEHNCKE, Gen'l Mgr

P. O. Address:
Centinela,
Los Angeles County,
California.



THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:
Inglewood, California.
Tel. Address:
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,
No. 474,807, May 17th, 1892.

BOEHNCKE'S

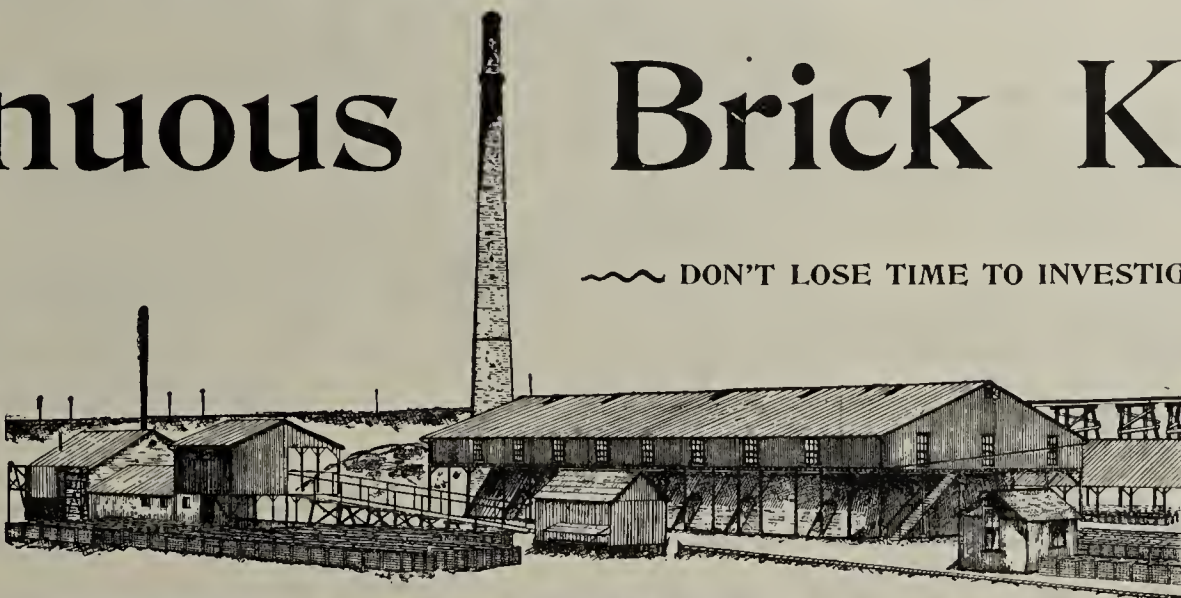
Several other U. S. Pat-
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UP AND DOWN DRAFT

Continuous Brick Kiln.

12 Kilns in Operation
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5 Kilns in course of
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East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

DON'T LOSE TIME TO INVESTIGATE.

Beware
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ments.

ADVANTAGES OF THE KILN.

1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
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4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

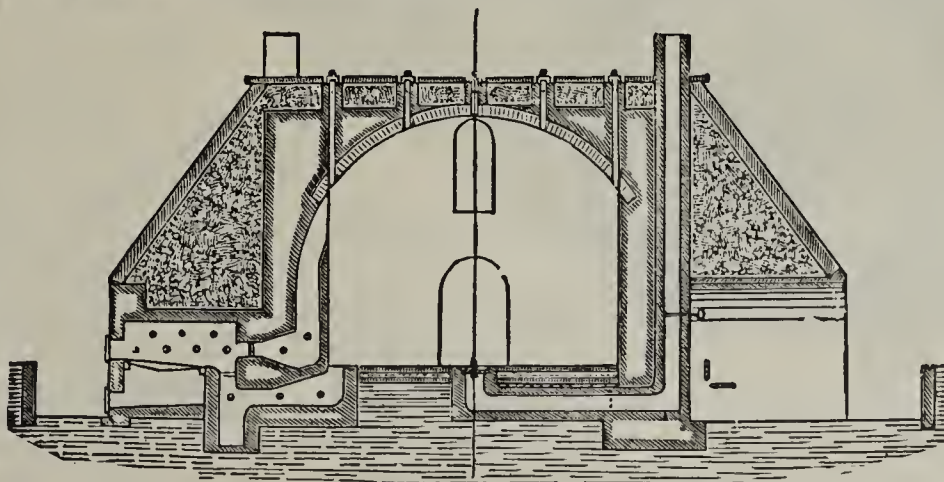
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COMMON SENSE KILN.



Patent No. 475,433.

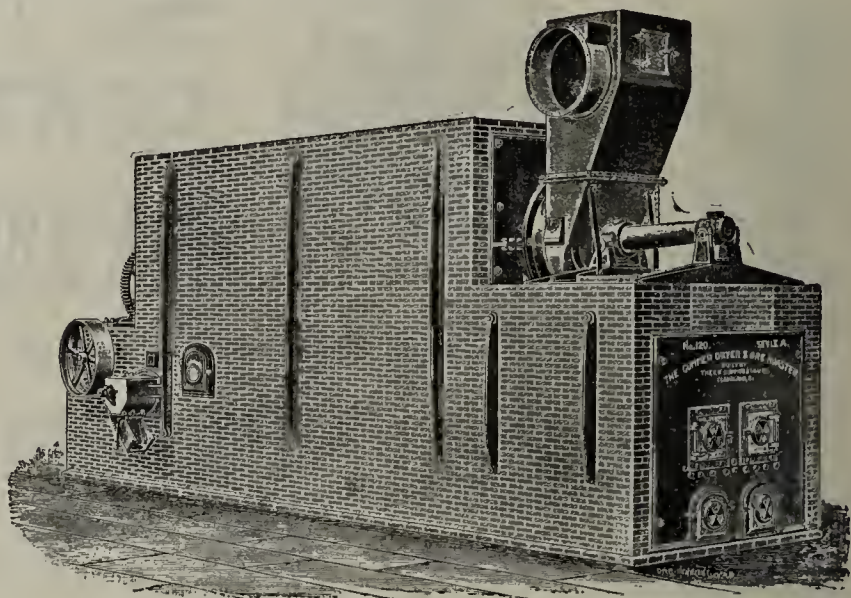
FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

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We have also Boehncke's Brick
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SIX SIZES MADE.

Prepares from 3 to 20 tons of clay per hour for dry pan or pulverizer. The clay is handled mechanically (without men) from bank to press or other machines.

NEW METHODS.

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Phosphate, Sand, Earths, Paint Stocks, Peat, Coal, Salt, Marl and Clay for Cement making, Chalk, Cereals of all kinds, Tankage, Night Soils, Animal Manure, etc., etc.

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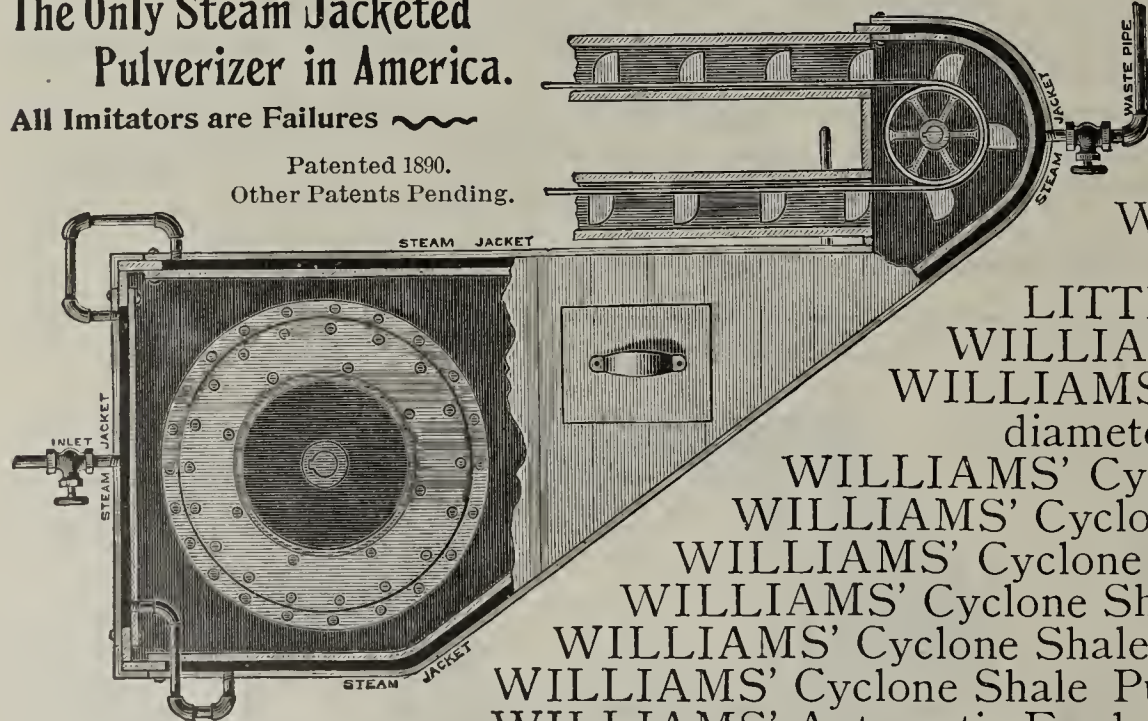
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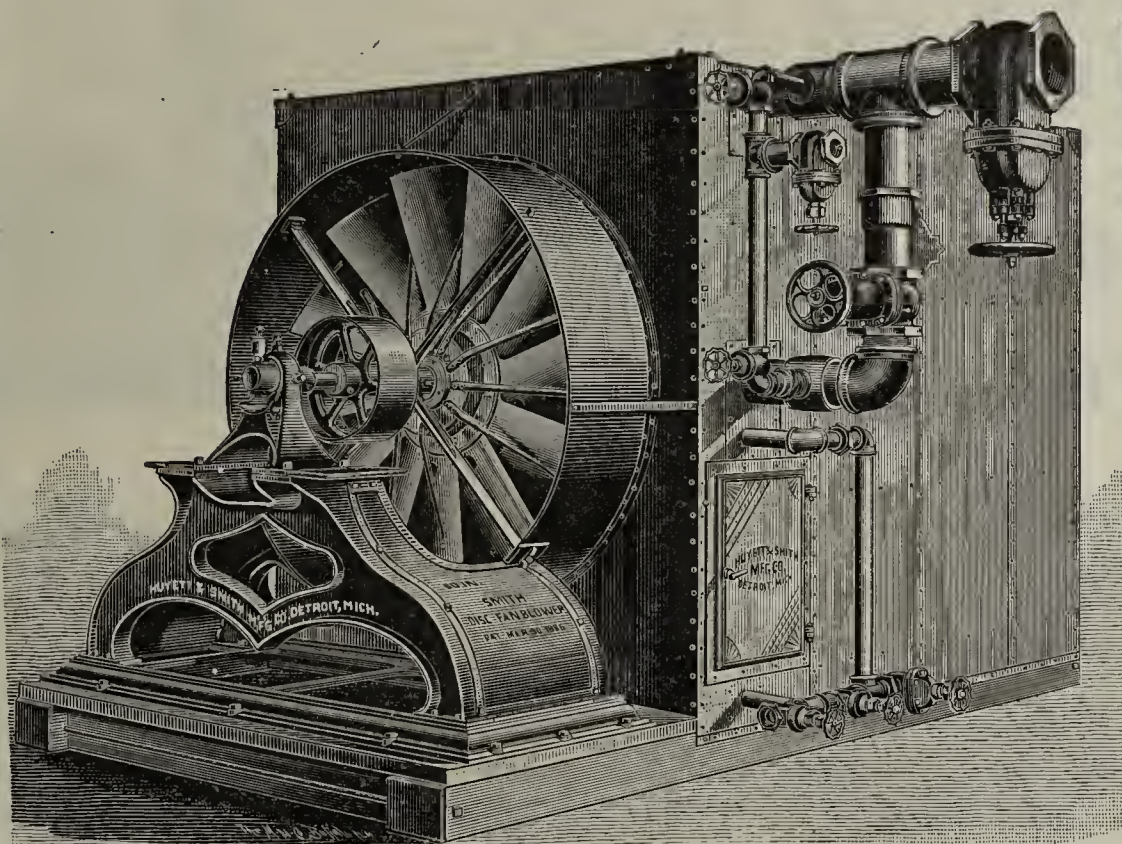
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We can help
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**Smith Hot Blast Brick
Dryer.**

We will cheerfully do so.

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**Huyett & Smith
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We are manufacturers of **BLOWERS**, and can **BLOW** as hard as anyone but prefer to let others do the **BLOWING** in regard to the **MERITS** of our **BRICK DRYER**; the following testimonial letter is but one of a large number we have on file.

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Gentlemen:—In reply to your inquiry about our dryer, we take great pleasure in informing you that the dryer that you sold us, with the guarantee of 40,000 stiff mud brick per day, is now drying from 55,000 to 60,000 per day, which amount we find that we can dry without forcing the apparatus. We use only exhaust steam in the day time and live steam at night, carrying about 70 pounds of steam. We shut our dryer down at 12 o'clock Saturday night and start at the same hour on Sunday night.

Having made a study of currents of air and personally examined several styles of dryers we consider that your dryer is the best on the market. We have also proved it to be economical and would cheerfully recommend it to any person needing a dryer.

Truly yours,

THE PHILADELPHIA BRICK CO.,
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Plans, printed matter, etc., furnished on application.

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The Standard Patent Forced and Natural Draft Brick Driers



Embody modern thought and ideas ; they are constructed on scientific principles ; they have proved eminently successful in every instance, for the reason that they are adapted to the drying of not only one but all kinds of clay.

They differ radically from other makes, in that conditions are alterable—not fixed—therefore any combination of drying influences necessary, can be brought to bear upon the product drying, to suit its particular nature.

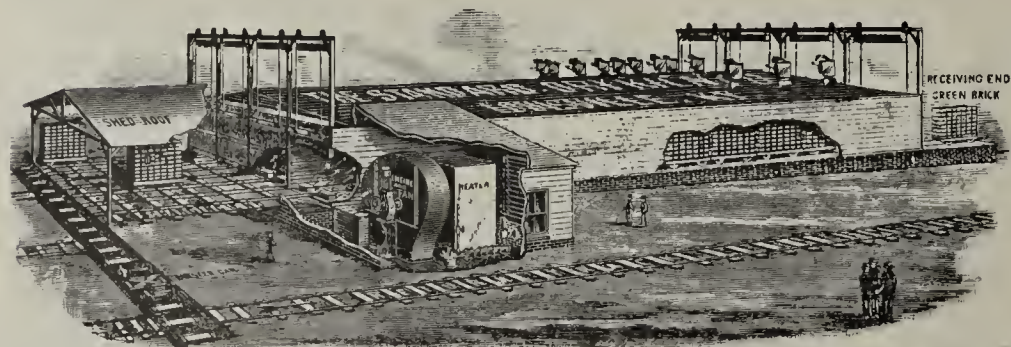
Furthermore, the air currents are under perfect control and each and every brick, regardless of its position on the car, is thereby subjected to air of the same absorbing power ; hence, the drying process must, of a necessity, be absolutely uniform.

The “Standard” Drier

Is undoubtedly the BEST which the market affords, and, consequently, must be the cheapest, as the best is always the cheapest in the end.

Investigate its merits before contracting elsewhere.

Can't we send you copy of our Catalogue and “Opinion of Users ?”



The Standard Dry Kiln Co.,

Builders
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INDIANAPOLIS, IND.
LOUISVILLE, KY.

THE CLAY-WORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXII.

INDIANAPOLIS, IND., JUNE, 1894.

No. 6.

Written for the CLAY-WORKER.

BRICK ARCHITECTURE.

A MODERN FRENCH DWELLING.

THE majority of the people of the United States and even the brick-makers do not appreciate what is being done in the production of artistic clay work of high character. They do not appreciate the artistic possibilities of that material. Even the mechanical possibilities, the mechanical excellencies are not properly estimated. The mechanical elements of clay work are far in advance of the artistic qualities, however. The world has never known better clay work of the various varieties than is

common in the American cities to-day, unless we accept the glazed products which have not yet reached the perfection known in the earlier Egyptian times. However, this is an historical detail into which we need not enter. We may assume in general terms that the best clay work the world has known is that produced to-day. We lack only the high artistic impulse, the serious desire to produce the beautiful. It is all well enough for us to say that we are ambitious to produce the truly beautiful, but something more than ordinary ambition is necessary. There is entailed first the earnest desire, and then the willingness to make certain personal

and commercial sacrifices. For the sake of the artistic, these things do not come without a serious effort and as well a serious impulse.

We have produced in the columns of the CLAY-WORKER many examples of foreign clay work, of which the one accompanying this matter is a typical example. Some of them are hundreds of years old, not one of them but what compares unfavorably with the work of our own time in the matter of workmanship, in the quality of material, yet all are superior to the work which we know when viewed solely from an artistic standpoint. There is a grade of composition, a happy combination of detail



A BRICK BUILDING NEAR TOURS—FRANCE.

and a pleasing result which is unknown to many of the structures of pretentious character, which are reared around us on every hand.

This unsatisfactory result, as viewed from the artistic standpoint, is largely owing to the low standard of taste of the general public. Our people have not given their attention to this sort of thing. They are readily effected by the pretentious, are disposed to accept designs of a loud character at the valuation of those who place them before the world. Our education has all been in material things. We estimate the value of brick by what they cost per thousand. We estimate the artistic excellence of a composition in brick by the ambition of its design, and not by its true merit. This is perfectly natural in a relatively new country where the trend of all affairs has been fixed by a strictly commercial ambition. It does not tend to the education of the higher senses or a nice distinction in regard to things artistic. How does this show itself in practice? Pick up the catalogues of the manufacturers of decorative brick work and see. It is the personal opinion of the writer that of all those engaged in the manufacture of decorative brick, there is but one concern which manufactures an egg and dart molding, which is otherwise than a very crude character upon this design, and we challenge a comparison of the egg and dart moldings made by the various establishments with typical examples of those belonging to the earlier period in which this form reached its highest excellence to disprove the impression.

This is true of other decorative forms of recognized excellence. Nearly all are clumsy, ugly caricatures or really beautiful forms. They serve to discourage those of really fine taste and fix a gross standard which cannot but depress the higher artistic sentiment which is latent in so many minds. The necessity for this plain expression is painful, but with the exception named, the character of the decorative brick work offered to the public, and which they innocently accept in many instances, is simply awful. It makes a mere disturbance upon the face of the walls on which it is used and adds nothing but expense thereto.

The people are not able to explain the failure. They know that they have paid the price of a good thing and only feel a blank sort of dissatisfaction, which finds its only expression in the con-

temptuous regard for that which pretends to be artistic. That which is truly artistic finds acceptance on all hands.

The design which we give this month is from a building near Tours, in France. It is a modern structure, designed in the style of Francis the First. One sees in that part of France exactly the same kind of details that are produced in this building. The same dormer windows, the same doorways, cornices and in fact the identical moldings and decorative design which is used throughout this building. Dormers of the kind here shown are found at Chenonceau, Amboise, Azay-le-Rideau and elsewhere. Other details are copied from Blois, and the general spirit of the architecture is of that period. The design is carefully reproduced and as we may see, in a manner that is very pleasing. There is nothing pretentious about the structure, but it is altogether a very satisfactory production.

There is a good deal of stone used in this example, but it illustrates what we have mentioned so many times before in the columns of this Journal, that the decorative stone construction of France is much better adapted to terra cotta than to stone itself. Stone is laid up in small blocks and the design is admirably adapted to reproduction in terra cotta and brick made in blocks.

LOUIS H. GIBSON.

Written for the CLAY-WORKER.

THE WORLD OF KERAMICS.

Unglazed Pottery — Patience Testing
Clay Owners — Decorated Beer Mugs
— Salt Glazed Ware — The Memorial Hall Exhibit — A
National School of
Ceramics.

Third Paper.



JUG in centre of the accompanying illustration is made of such clay as is now used in Milwaukee, Wisconsin, for the manufacture of flower pots by machinery. It shows somewhat its possibilities for art work. It was made simply to show quality of clay, like the other pieces shown at the World's Fair, and not for commercial purposes. This piece has neither glaze or color applied to it, being fired, or rather is, what any firer of decoration of

overglaze work on china would call underfired. It was fired in a little pot kiln, such as is in common use all over this country by lady amateurs. The ewer was as tall as the inside of the kiln and the firing was completed inside of an hour the heat producing varied and beautiful effects in the natural tone of the clay in so tall an object, the heat applied being so light and for so short duration, the article is graded in ware tones of color from brownish red at the top, through all its warm scale of color down to the most delicate creamy tints at the bottom.

The hanging bowl with three handles for growing flowers in a sunny window has a decoration in Hungarian design in reds and turquoise blue, which harmonizes beautifully with the creamy tone of the clay, showing what can be done with underglaze work in turquoise blue, not covering up the whole body of the art piece like the surface of enameled brick or common crockery, both very good things, like tiles in their way, and about which I have had many questions from enquiring minds unaccompanied by stamps for replies.

Among the people I have met, and failed to adore, is "the honest farmer" who sends you clay to test, from the farm he desires to sell, and forgets to prepay the express charges thereon, and the owner of a brickyard who wants to make enameled brick and art tile out of clay full of iron, and who uses postal cards for economy sake.

Of the mugs? Well, they speak for themselves, they are known to every Alte student as "Steins," and are the regular Milwaukee size, such as you will find in "Kunstlerheim" the well known morning resort here of German journalists, actors and artists, covered with inscriptions incised, and decorations in relief after the good old fashion which all those who have felt the cold steel, and the cold beer in a warm room with their corps will understand, without, ye helpe of ye Scribe. One was modelled by a professor of an American University, the other by a Spanish Noblewoman.

The tall spill holder for pipe lighters on the left of the bowl with the Hungarian decoration, shows the quality of the material for applied clay ornament on the body. This is the same decorative treatment used on the jar now in memorial Hall, Philadelphia of which the Philadelphia *Item*, of March 4, 1894, editorially says: "The fact that no less

an authority than Mrs. Candace Wheeler, of New York City in a recent lecture upon 'Decorative and Applied Art,' said that in all the Ceramic Art in America brought together at the World's Fair the only original thing came from Milwaukee, increases interest in that branch of art."

In describing she said: "It is a gray stone jar, and it is worth a cent a pound in its manufactured state, but the skill of the worker made it worth a thousand cents a pound." It is the property of the Pennsylvania Museum and School of Industrial Art, and is on exhibition in the Pottery Room at Memorial Hall. It was originated by Mrs. S. S. Frackel-

also, are artistically intertwined round the jar. The whole has a unique effect, which no doubt, inspired Mrs. Candace Wheeler to make her remarkable statement. When it is compared however, with the other shapes and designs which have been handed down from father and son "from the time when the memory of man runneth not to the contrary," its originality stands out in as bold relief as the olive decorations upon the jar.

The Frackelton jar is what is known as the salt glaze, which in itself is not a novelty, as it dates back to the early ages.

The bluish gray butter crocks of our

glaze" produced to date in America.

Mr. John T. Morris one of the directors of the Pennsylvania Museum, who is an expert in ceramic art and takes a great and enthusiastic interest in the Museum, purchased the jar and added it to the collection. He states that it was the first article sold in the Woman's Building at the World's Fair. If the publicity given to the jar, had been acquired prior to the purchase there is no doubt but what Mrs. F. would be several hundred dollars richer.

The pottery room in the Museum in Memorial Hall, as above stated contains specimens of domestic, and artistic work from the earliest times to the pre-



A GROUP OF HOME-MADE AMERICAN POTTERY.

ton of Milwaukee, and was on exhibition in the Woman's Building at the Columbian Exposition.

It is an olive jar and consists of three pieces. The lid which is decorated with several olives well modeled, the upper one serving as a knob or handle. The jar proper which is about thirty inches high is twenty inches in diameter in the widest part and tapers to about eighteen inches at the bottom. The feet of the stand upon which it rests have feline claws, to which wings have been added. There is a large olive in bas-relief in the centre. Three olive branches filled with the fruit, in relief

grandmothers and the old stone jug, that was the receptacle for the sweetened rum of the reapers are familiar specimens of salt glaze pottery. It is due however to an American woman to lift it from the obscure regions of domestic ceramics.

Under her skillful management, the advance in its manufacture and adornment has been wonderful. From an article of domestic use it has become a thing of beauty, and a joy to the æsthetic forever, and holds its own with the best European decorative establishments.

The medal was awarded it at the Columbian Exposition as the best art "salt

sent day, from the rude devices of the Aborigines to the splendid Frackelton jar.

Some of the other pieces shown in the photo are in underglaze color and the jardiniere on the left is the strongest piece of incised work shown. There is no doubt at all that the taste for Sevres will go on falling, particularly for those exquisite works which bring thousands of £, not \$, to-day. Their delicacy, smoothness, artificial grace and conventional regularity appeal to another generation. The very type and embodiment of the 18th century are they, whilst we are drifting towards an un-

known world of strange ideas, resolute only to escape from "the godless age." Imagine the philosophy of M. Zola, illustrated in Sevres! But towards that philosophy our minds are tending; and we grow impatient of the roses and lilies, piping shepherds, and doves, spotless or otherwise, the daintiness of garlands, the rosininess of cupids, gloss of texture, and soft delights of hue. Judged by the modern standard some of the choicer pieces, both of Dresden and Sevres are finikin, conventional, and overlabored, and far loftier, noble and more individual work is to be found in much of the pottery turned out every day from Berlin, Lambeth, Denmark, or Russia. Purer thought, stronger form, healthier every way. The frisch, frei, stark, und treu period in pottery, succeeding that of the snuff box of Mons l'Abbe', Rose du Barry, and Pompadour red. The raison de succe's perhaps in St. Petersburg, of the Frackelton salt glaze from the American prairies.

In closing I would strongly urge all your readers to not only visit the American collection of ceramics in Memorial Hall, but to take an interest in it otherwise.

The nucleus of the collection was formed through the liberality of Mr. John T. Morris, and in part gathered by Mr. Edwin Atlee Barber, to illustrate his "History of the Pottery and Porcelain of the United States." The World's Fair was a great opportunity to collect further examples of what has been done, but it is *what can be done*, which Mr. Morris had in sight, when he so nobly started what he hopes will be the "au drapeau!" for us all, scattered so widely apart as we are in this country, to rally to. Not now and then, not only in such an exposition as the United States Potters' Association, inaugurated in 1889 in that building in conjunction with the Pennsylvania Museum, and School of Industrial Art; but all the time, a reference place which shall be common ground, for every clayworker and "clay collector," if I may coin a term, to meet on. Not simply as in some institutions and the columns of some so-called technical magazines "open to subscribers only," but as the doors of Memorial Hall are this day, open alike to every American, to the poor visitor with his piece of raw clay in his pocket only, or the rich one with a good round subscription towards founding a National School of Ceramics.

Nor should this interest be confined

to those few of us, who have dared modestly enough in the past, to exhibit American clay and color outside these United States, for in another illustrated article I propose to say more about the effect of Hispano-Moorish Art, on native ceramics including decoration, hollow ware, brick and tiles.

Memorial Hall should become also the Mecca of Central and South America, for strong as the men of Runes and Sagas were, they made no impression on the native clay, any more than did "The Lost Colony" at Roanoke who went to Croatlan and whose leader, Sir Richard Grenville, returning, died in 1585. The men of that colony hated Spain as Raleigh hated her, and all she represented, and had little time for missionary work or potting with the odds against them at sea or land. Grenville himself being killed in action off the Azores after fighting his single ship against fifteen great Spanish Galleons for 18 hours, with his last breath in the heat and smoke of battle exclaiming, "Here die I, Richard Grenville, with a joyful and quiet mind for that I have ended my life as a true man ought to do, fighting for queen, religion and honor.

But they left no mark on native pottery any more than the present European emigration will, long after we all again return to that of which our pottery is made. The Spaniard on the contrary had that in his veins and thought which left his mark wherever he went from ocean to ocean, conquering or driven out again. That which, however, much he might decry, was in him, and of him, for life any way and in the work he left behind when he was gone. He might cast out the Moor, or burn him out by the fires of the inquisition in the public squares of Europe and Mexico, but the Moor left his mark on the Spaniard. Who left theirs in passing on the Moor? The Philo-Israelites have a theory. Do the deserted cities of Yucatan, the Mound Builders of Ohio and Wisconsin, the cliff dwellings of the old ones in Utah, or the 29th chapter of Ezekiel and the 15th verse solve the riddle? Like them too, the Spaniard has passed away. But the inner thought of Hispano Moorish Pottery, while it declined in Europe after the arrival here of Columbus, took firm root in America. RICHARD G. FRACKELTON.

A verbal "wiggle" to a "business bait" will often catch the eye and interest of a very cautious "fish."—*Ex.*

Written for the CLAY-WORKER.

THE CLAYWORKING INDUSTRIES OF OHIO.

Sixth Paper.

BY EDWARD ORTON, JR., E. M.

PREPARATION OF THE CLAYS FOR PAVING BRICK.

WE have seen in considering the selection of clays for making paving brick, that no line can be drawn between those needed for this purpose and those needed for making any other kind of vitrified clay ware. The same may be said substantially of the processes of preparation, which are common to many forms of clayworking, but which find perhaps their best development in the manufacture of high grade paving material.

There is more variation required in the treatment of different clays for making one kind of product, than between the treatments needed by two kinds of clay ware.

The shales and fire clays of Ohio, constituting the main source of clay supply, are both minerals of what may be called semi-plastic nature; that is, their original plasticity, which is inherent in them by virtue of their clay base, is to a large extent disguised by the influence of rock formation which they have undergone. They have been subjected to enormous pressure, the exclusion from air, frost and rain, and have been perhaps influenced by slow chemical changes in their ingredients. At any rate, both shales and fire clays, as they first are mined and brought to the light of day, are hard and rocky in nature, and give no indication of their clay nature. Both are to a certain extent affected by the exposure of the air and sun's rays. Clays generally slack and crumble very quickly, while shales are more tenacious of their structure.

The weathering of the clays which are to be used in making brick or sewer pipe is a question which has so far received but little consideration. Some factories working a very rocky fire clay, like those on the Ohio river between East Liverpool and Steubenville, have found it almost a necessity to get clay out some time in advance of its use. But in general the clays go direct from the quarry or mine to the machinery.

The general plan of developing the latent plasticity of the semi-plastic clays consists in grinding them to a comparatively fine powder while dry, and screening this powder to a uniform size, and

then by use of either pug mill or wet pans to knead and work the powdered clay with water till its particles become softened and cohesive.

The grinding is accomplished almost universally by a machine known as a Dry Pan. It is not necessary to describe to clayworkers the construction of this machine, as all are familiar with its general design. The clay is first crushed under heavy rollers, rolling continuously on their circumferences, on a solid floor or "dead plate." The crushed clay flies out to the circumference of the pan by centrifugal force, passing over the screen plates as it goes, and is gathered, after one-half of a revolution, by a scraper and again directed under the roller. So that the history of any lump of material on entering a dry pan is alternate crushing and screening at the rate of 60 to 70 times per minute, until it is reduced to a size where it falls through the screen plates and is removed from the pan.

No more efficient tool has ever been devised for its purpose than a dry pan. In one instance, in Ohio, two hundred tons of fire clay were ground in 10 hours in one pan. It was fed by gravity from an over head chute by one man. Under ordinary conditions, with fair clay and fair weather, a pan will grind from one hundred to one hundred and twenty-five tons in 10 hours. If the clay is wet or snowy or frosty or extra hard, the amount may fall to a half or third of this quantity, and of course if it is too wet or too plastic, it cannot be treated at all.

The clay as fast as it is pulverized falls through the screen grates and is collected by revolving arms or scrapers and delivered to the bottom of an elevator which carries it up a sufficient distance to give it the necessary "head room" for the following steps of screening, tempering and manufacturing.

Dry pans are made with either wood or iron frames. The old style pans used heavy oak frames, 12x12 timbers usually, and those who have this kind are generally very much in favor of them. They allege the following advantages:

1st. That they are less liable to breakage or repairs, because the wood cushions the constant shocks and jars, and saves the iron work from the crystallizing and wearing effect.

2nd. They cost less.

3rd. They require less mechanical knowledge in operating them, as they are not easily broken or damaged by use.

The newer style pans are made with iron frames. The following points of superiority are claimed for them:

1st. They require less power to operate them, for their bearings are all accurately made and fitted and cannot easily get out of line, while those of a wooden pan can never be kept in line long at a time, since the joints of the frame and the bolt holes will work loose, and the whole structure becomes more



WILLIAM CONWAY, BRICK MFR., PHILADELPHIA, PA.

flexible with every month's wear.

2nd. They occupy less room and are easier to get around and easier to feed, on account of the compact frames.

In point of capacity of output, nothing can be claimed for one type over the other, as the output is strictly in proportion to the weight of the rollers, the size and area of the screens, the revolutions per minute and the character of the clay to be ground.

The fineness to which it is advisable to reduce the clay, and the relation of this ultimate fineness to the grate openings in the bottom of the dry pan are matters of vital interest to the maker of paving brick. To grind clay costs

money, and the finer it is ground the more in proportion it costs. The capacity of a pan, all other things being made equal, varies as the square of the holes of its screen plates. That is, with holes $\frac{1}{4}$ inch diameter, four times as much clay will pass through as with holes $\frac{1}{8}$ -inch diameter, so that the importance of this point must receive due weight.

But, in order to grind a material effectively, it must be kept free from fine stuff, for if this is not done, the fine material cushions the blow of the roller, and allows the whole mass to pass under the wheels in cakes or plates without receiving benefit from the pressure.

Therefore, the mixture passing over the grates must be relieved of the fine material as rapidly as possible in order to allow the coarse particles to receive the benefit of the crushing effect of the rollers. The clay after passing through the pan, is conveyed to the screen, where it is accurately sized, and everything too large is returned to the pan for further grinding.

Now, it is obviously wrong to make the pan grates so coarse that a large proportion of the material would fail to pass the screen, for it is simply causing the work of elevating the screening for nothing. And, yet on the other side, it is advantageous to make the grates as coarse as possible in order to keep the fine material screened out as quickly as it is made. The correct proportion between the two screens, the one in the pan floor and the finishing screen above, can hardly be stated in general terms. The quality of the clay would effect the ratio somewhat, for the more

sandy the clay the easier it will screen. Probably in most cases, the material from the dry pan ought to be ground so fine that two-thirds of it will pass the finishing screen, and in many cases it is possible to increase the proportion to three-quarters.

There are three general plans of screening the clay as it comes up the elevators from the dry pan. 1st. The fixed inclined screen, 2nd, the rotary or revolving screen, 3rd, the shaking or vibrating screens.

The inclined screens are the simplest, cheapest and commonest type used. They are simply a box or chute about 30 inches wide by 10 to 20 feet long, the

bottom of which is composed of the screen material, either perforated sheet metal or wire screen cloth. The former material is much preferable, as it is smooth and affords no rough places for the clay to lodge or stick to in damp weather. This screen box is set at such an angle from the horizontal, that the clay being delivered at the top will slide down to the bottom. The flatter the angle the slower the speed and the larger proportionate amount of material will pass through the screen. This screen has in favor of it three good reasons; first, it is cheap; second, it is simple and readily repaired; third, it is operated without power. Against it the following points may be named: First, it requires a high building to give it the necessary head room, which is a grave objection in the case of small works whose buildings are all low; second, the quantity which the screen is capable of putting through is limited, and if the quantity of clay to be prepared is large, the use of a good many screens is necessary; third, it requires frequent brushing and cleaning, or it will become coated with fine clay, which prevents the operation of the screen entirely.

The problem of successful screening is one of the most annoying ones which a practical brickmaker has to meet. The whole plant depends on it, and any variation in weather is first felt at the screens.

There is hardly a sewer pipe factory in Ohio which has not at some time used a rotary screen, and very many of the brick works also.

There are always a considerable number kept in use among the clay works of the State, but the history of the screen shows it to be short-lived at any place.

There are many kinds or ways of applying the rotary idea: there are octagon, hexagon and cylinder screens, either set on a slanting shaft or else made conical, so that the clay will naturally work downwards to the outlet. There are screens with inside buckets to carry up the dirt and discharge it against the screening surface; there are screens with wire brushes, and bristle rollers and automatic knockers to keep the screening surface clear and free from clay. In spite of all the ingenuity lavished on the subject, the fact remains that there is no screen in the market or in use, which will continuously and automatically do its work. It is not infrequent to see a man or boy industriously at work beside a screen, which is fitted

with elaborate devices, supposed to make his work superfluous.

The facts as to the disadvantages of rotary screens are as follows:

1st. They use a great deal of power in doing their work.

2nd. They require more constant attention than a fixed screen.

3rd. They require much more expense in construction and expense in repair.

On the other hand it may be said, 1st, that by giving them the attention and care that they require, they can be made to do a large quantity of work per day. 2nd. They require but little space and but little head room, so that where they are used, the cost of the building may be kept down somewhat.

The vibrating screen, like the rotary, is an effort of the long suffering foreman to relieve himself of the annoyances of the old fashioned inclined screen. There is but one vibrating screen of any importance manufactured by a brick machinery firm in this State. The rest of the vibrating screens in use are home-made affairs. The vibrating idea, however, is immensely superior to the rotary idea. The screening surface is all in use all the time, and the power required to cause the screen to vibrate back and forth with a jar or jerk at one end of the travel, is much less than that required to keep a heavy cylinder in revolution on its axis, especially when from one quarter to one-half full of a damp mass of fine clay, which constantly adheres to the sides and is carried partly around before its weight causes it to fall back again.

The vibrating idea as practically worked out, takes one of two forms--a long screen box, inclined somewhat from the horizontal and vibrated longitudinally, or a short screen box inclined somewhat more and vibrated laterally. In the latter, the clay works back and forth across the screen by the power of the vibration and moves down and out by the force of gravitation, while in the former, the vibration and fall are in the same direction. The latter idea is best, as it uses all the surface of screen exposed with the minimum power for vibration and the main travel of the clay is by gravitation instead of power.

The aim in departing from the old and accepted fixed incline by the use of moving screens is to secure greater capacity in limited space, and to accomplish automatically what requires a certain amount of care and labor.

In one respect this purpose is accomplished. Any moving screen is more efficient than the fixed type, and of all described plans, the most efficient is the side to side vibrating screen with considerable angle of inclination. But in the second aim the saving of expense and attendants, time, all attempts are failures. There is no automatic device yet successful, and in the nature of the case, none is likely to be made so, for ground clay is like snow, it only requires a very small opportunity to allow it to pack and build up where its presence prevents the machinery from working.

The grinding and screening processes thus outlined constitute the most common and most successful and well nigh universal means of working a semi-plastic clay. But a supplementary device has begun to be lately applied which proves of much assistance in solving the problem mentioned in regard to the relative sizing of the dry pan grates and the finishing screens.

The new idea is to use a pair of high speed rolls working differentially, i. e., at different speeds of revolution, and just avoiding surface contact.

By use of such a plan, the dry pan grates may be left much coarser than would be otherwise feasible, and after the screens have separated the fine material, the tailings are sent to the rolls to be crushed instead of going back to the pan. This plan cuts both ways; it saves the dry pan and increases the output. The grains of clay coming between the rollers are ground rather than flattened, owing to the differential speeds. The value of the tailings crusher is seen at once by practical clayworkers, and it bids fair to find rapid adoption.

The degree of fineness to which it is best to reduce a clay before tempering it, depends of course on the quality of the clay itself. If it is a hard, brittle, flaky shale, which is little plastic at best, then fineness is a great aid in making it properly workable.

If it is a stony fire clay which remains hard while dry, and easily softens when tempered, then fineness is not so much of an object.

If the clays are full of iron ore or pyrites or limestone, then the finer the screening, the better will these impurities be disguised and incorporated into the body of the mixture. If the clay is naturally very plastic, fine grinding is not only useless, but a detriment, as it increases the tendency of the clay to laminate while passing the die, and to

bloat in burning. The effect of fineness of grain is so important and affects the product in so many ways that it will be alluded to in other connections from time to time.

PHILADELPHIA BRICK MANUFACTURERS AND THEIR PLANTS.

Mr. Wm. Conway's Yard.

ONE of the tidiest yards in Philadelphia is situated at 58th and Walnut Streets; a neat yard also bespeaks careful management.

This plant has a capacity of about 15 million per annum, made by a Chambers B machine and nine gangs on hand made, pressed and stretchers. The clay for the hand made bricks is

160 feet by 50 feet, and in the ordinary drying sheds. The hot floor is modeled after a dryer that was designed and built down in the "Neck" some 25 or 30 years ago, and is made much the same as that described and so highly spoken of at the Convention about 3 years ago by Bro. F. B. McAvoy.

The burning is consummated in Dutch kilns, five of which are 10 arch, and one 20 arch; this, I believe, is the only pattern of kiln used in West Philadelphia, the only difference appears to be in the number of arches and the length of grate.

The disintegrator mentioned above will bear having another word or two bestowed on it, for it not only tears and grinds up stock, but it throws out the stones which it cannot easily gripe and grind up.

and is admirably adapted for tearing to pieces lumpy tenacious clays.

Mr. Conway is a very firm advocate for, what by some would be called, "*excessive weight and strength*" in brick yard machinery, he fully indorses the maxim of the late Sir William C. Siemens, "Give every part sufficient strength to resist the abuse it is likely to receive at the hands of illiterate and careless workmen." He also is a firm believer in efficient management both in his yard and office—which by the way are models—as the accompanying photo will show. If any further proof is wanted, a visit to his works, and a chat with Mr. Chas. Addis, superintendent and Mr. Kimber, bookkeeper, will carry conviction. Mr. Conway pays very close attention to his business and is justly proud of his plant. He is a most kindly gentleman, as the student of physiognomy will see by a glance at his portrait on a preceding page.

Written for the CLAY-WORKER.

SETTING AND BURNING, THE MAIN THING TO BE CONSIDERED IN THE MANUFACTURE OF BRICK.

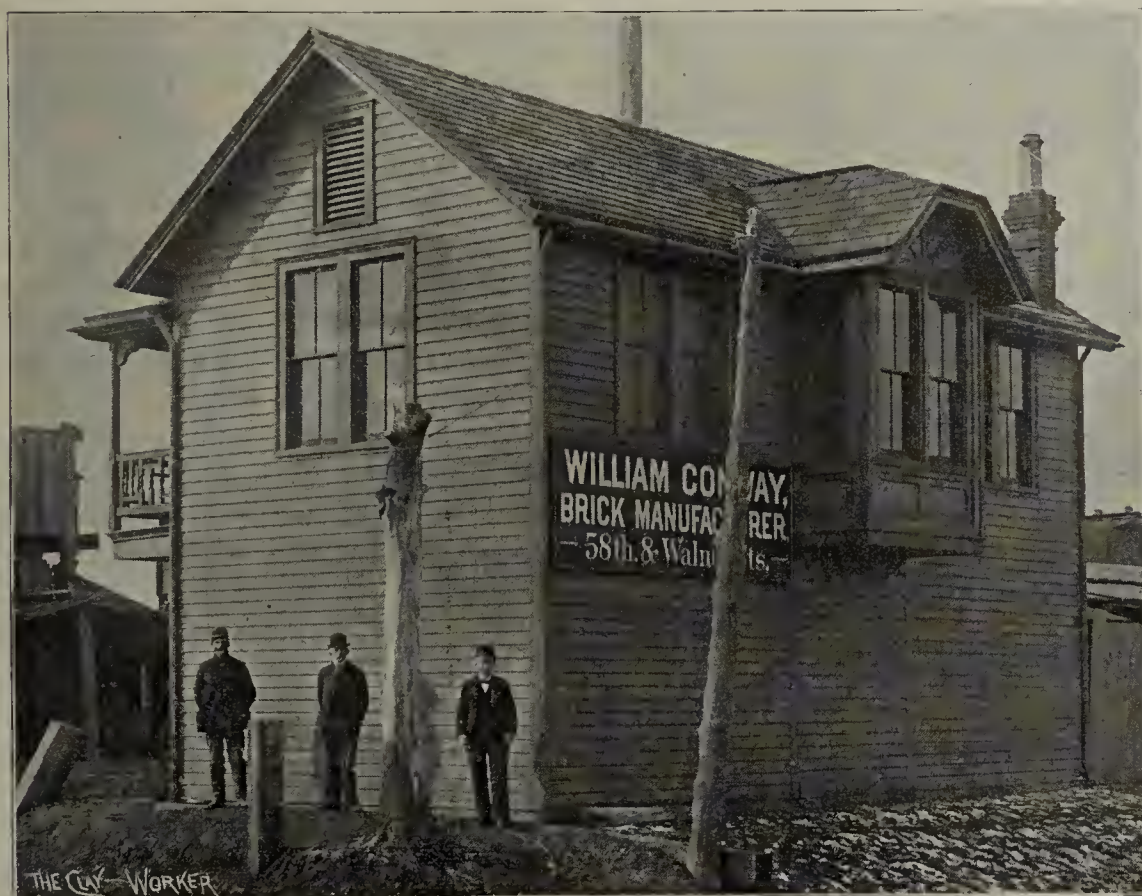
BY J. W. CRARY, SR.

COST, and perfect burning, are the two most important things for the brickmaker to study, and investigate. The brickmaker may act cautiously, and wisely in selecting the very best clay and machinery, and put every thing in the most excellent order for making brick, and be all ready to start and carry on the manufacture, excepting the right kind of skilled help, in setting and burning the brick, and all his work and expense is vain and useless, without this important adjunct. If perchance, the owner of the plant, is himself fully competent to the task of setting and burning, he can, by suitable help, successfully proceed with the work. But if he depends on hiring ordinary skill, he has made a costly mistake.

SKILLED SETTERS AND BURNERS ARE
SCARCE.

The man that has learned to set and burn brick, on some common old style brick yard, is apt to think that, "what he don't know about setting and burning, is not worth knowing." He will neither learn, or unlearn, anything more about brick, and his stupidity and self-conceit, are costly things at any price.

I would say to all who desire to manufacture brick, and are not experts, in



A COZY PHILADELPHIA BRICKYARD OFFICE.

tempered by three Carnell tempering wheels, driven by steam, and the brick pressed in three Carnell hand presses.

The clay for the machine made bricks is conveyed from the dumping pit to the top of the machine shed by a Chambers belt elevator, which delivers it into a disintegrator which drops it into a pug mill immediately underneath it, and the pug mill in turn delivers (the clay) into the hopper of the brick machine, all made and put in position by Chambers Bros. Co. The machinery is put in motion by a fine Westinghouse engine, 100 h. p. with two 75 h. p. boilers. The drying is done on a hot floor dryer,

The principles upon which it is constructed are eminently calculated to tear to pieces anything thrown into it. In rolling mills this same principle is carefully guarded against, otherwise, the iron or steel, as the case may be—is badly fractured and distorted. This mischief in rolling mills is the result of having rolls with a difference of surface speed; very little of it will spoil every piece rolled. This disintegrator has rolls with great difference of surface speed and supplemented by one of the rolls having six or eight steel bars protruding from its surface at equal distances apart, and extending the whole length of the roll,

the practical part of the business, don't spend your time and money, on brick machinery, brick kilns and driers, until you have first secured the services of what you know to be a thoroughly competent, and reliable, expert setter and burner.

SALARY IS NO OBJECT, WHERE AN EXPERT IS INDISPENSABLE.

A man that has the brain, muscle, skill and energy, to take charge of the setting and burning department of a respectable brickmaking establishment, is entitled to a liberal salary. \$2,000 to \$3,000 per year, with free house rent, or board, is little enough for a fully competent trustworthy man. I have been asked, "Where will you get the experts you recommend?" This is not a very wise question to ask in a country like ours, where price, or premium, will get anything human, in the shape of expert services, or device for labor saving or money making. If the services and character, of expert, intelligent brick setters and burners, were fairly and properly appreciated by the owners of brick plants, there would be a good and reliable supply. Brainy young men, would choose brickmaking as a profession, and if there were no regular schools for teaching the art and science of brick-making, a study of suitable books, with proper practice in the best brick works, would enable him to become an expert brickmaker.

Many who go into the brickmaking business, think that if they get the latest and best so-called brick machines, and kilns, setting and burning can be well done by any attentive, intelligent man, as those who have improved kilns to sell, claim that their kilns, give perfect control of the heat, burn but little fuel, and make ninety-five per cent. of the brick perfectly hard, with uniform certainty. This is especially so with the down-draft school. I have made up my mind, not to be surprised at anything, and if some fertile genius, should advertise a kiln]

THAT WOULD TURN ALL THE "WATER SMOKE" INTO WATER GAS,
(After fire was started,) and burn my brick in the kiln hard, at a cost of ten cents per M., I would not be surprised. I would not call this kiln "down draft" or "up draft," I would call it *pocket draft*; for like many of the fuel labor saving kilns, its most sensible and conspicuous draft, would be to draw cash out of the pockets of its patrons.

I do not wish to be understood as a

stickler for old ways, or a hypocritical opposer of new things, I believe in all sorts of progress, in all sorts of good things, and I would be pleased to speak well of every invention to improve and lessen the cost of clay goods of any kind.

I AM NOT IN THE MARKET TO LAUD, OR CONDEMN ANYTHING FOR PAY.

If any patentees in the brick line, think that I am their enemy, or that I am actuated by any gangrene, or selfish feeling, or that my writings come from querulous senility, they are surely deceiving themselves. True, I am an old man, but I am not too old to see my faults, or too blind to see some of the faults of my fellow men, but I never desire to speak of them, only when in line of duty, and in a proper and legitimate way, with no wish to condemn, or be censorious.

AS TO THE ONLY RIGHT WAY OF SETTING BRICK IN A KILN.

There can be but one opinion, and one practice, if success is attained. There may be a wide difference in kilns but in all cases, the brick must be set uniformly loose. Of course, there is a mean, or maximum rule for space between brick when set; it is always better to err on the side of loose setting than close setting. If brick are set too close, good burning is impossible; if too loose, then there is too much draft and loss of heat; about three-fourths of an inch is the right distance to set brick apart.

I have made many experiments in setting brick and have found that three-fourths to seven-eighths of an inch is the best distance to have between brick in a kiln. If the brick are $2\frac{3}{8}$ or $2\frac{1}{2}$ inches thick, and the courses set transversely in the kiln, five brick should be set on the length of two. Wet brick should never be set at bottom of the kiln, indeed it is better to have brick dry from bottom to top of a kiln. It is loss of time and money to put wet brick in a kiln. A few thousand of wet brick, set in spots near the top of a kiln, will retard the burning to the great loss of fuel and labor, and unless the man in charge of the burning is very careful and skillful, a few wet brick in the kiln may cause a bad burn.

As to burning brick, I have repeatedly given directions in CLAY-WORKER for burning an up-draft open top kiln. As to the down-draft kiln, I am not able to instruct those who desire to use it. It is for those who claim a great superiority for the down-draft kiln, to teach their patrons how to use it.

The down-draft kiln men claim that they have perfect control of the fire; that means that the up-draft kiln men do not have any way to control the heat. The down-draft kiln men, claim that they get a larger percentage of hard brick than the up-draft kiln men, and with less labor and fuel, all of which I deny, and ask for the proof by reasons and practice.

I HAVE NO QUARREL OR CONTROVERSY WITH DOWN-DRAFT KILN MEN.

If they can succeed in their line of action, I am content; but when they assert that no up-draft kiln, can be made to burn brick as good and cheap as their down-draft, I have something to say.

Bro. Morrison has some pertinent and cogent remarks in May CLAY-WORKER on this subject. I do not know that his improved kiln has been called in question, by any of the down-draft men, only in the general inferential way, viz.: that down-draft is better than up-draft. I believe Bro. Morrison, has an excellent up-draft kiln, I have not examined it, so as to form any positive opinion, but I know that Bro. Morrison, is one of the best brick thinkers and writers, that we have, and I do not believe that he would father a brick kiln, that was not a genuine, legitimate improvement.

As I have said in former writings, I now repeat that I have given the subject of brick kilns and burning, a great deal of thought, and made many experiments. I have had the down-draft idea; and the continuous, horizontal draft idea, I could find no logic in the down draft idea, but I saw advantages in the horizontal draft idea, and I made some experiments with it, that were successful; one advantage is that the brick can be set low, say 22 brick high in the kiln; another advantage is that there is no danger of a "water settle," and no "arch brick" to crush when at the fusible point. In fact the only objection I had to this idea, was, that I could not see the fire on top of the kiln, nor could I control the heat, as well in an up-draft kiln, so I stuck to the idea of "up-draft."

CONTROLLING THE HEAT AND DIFFUSING IT THE MAIN THING.

The old way of controlling the heat in an up-draft kiln, was to increase or diminish the fire in the "arches," and also by the opening or closing of the doors, but this was unscientific, and worked bad. If a draft of cold air was let in an "arch" to drive its heat into the arch next to it, the cold air would chill and crack the brick, there would

also be a loss of heat and time, so I took the only true philosophical way of managing and controlling heat in a brick kiln, which is to "damper" on top of the kiln, instead of the bottom. This may be done by putting on platting very tight at places that are well burned, and when the fire should be stopped from coming out.

BUT FINE DAMP CLAY IS BY FAR THE BEST DAMPER.

This is easy to get and handle, and an expert brick burner can put it on, or have it put on, at any spot where the fire should be stopped, with no trouble from heat, and the clay makes a perfect "damper." By this means the man in charge of a burning kiln has perfect control of the heat, there can be no increase of heat, where the draft is stopped and as soon as a place in the kiln is burned, it should be damped, tight with clay. This forces the draft to the unburned part. There may be a half dozen spots in a kiln that are burned, and it would be impossible to work the fires in the furnaces, or arches, so as to prevent over-burning of well burned parts of the kiln. The only true way, is to keep all the furnaces and arches, at the same uniform heat, and damper the top of kiln, to control the heat and draft. Some so-called brick burners, talk about setting or burning the whole kiln at once. I have never seen one so burned, and it is impossible to settle a whole kiln at the same instant, without melting parts of it, and making the settle very uneven. Some old fogies, as brick burners, think that the furnaces and arches of a kiln, cannot be kept at the same heat all the time, without causing too much settle, or over burning. This is because they do not study, or understand, the theory of heat.

IT IS OBVIOUS TO THE SENSIBLE THINKER OR INTELLIGENT MIND,

That the instant the draft of air is cut off, from either the bottom or top, of burning fuel, it partly, or wholly ceases to burn; so if a kiln be damped, at a point just above an arch, the draft of cold air in the furnace of that arch, is partly cut off, and the combustion of fuel is retarded; and while the heat in the arch is not apparently changed, the amount of oxygen consumed is less, and hence a decrease in heat as well as con-

sumption of fuel, so that damping the spots that are burned at top of kiln, has a three-fold advantage, viz: It prevents overheating at bottom of kiln. It diverts the heat from the bottom part (the already burned part) to the unburned and saves fuel, time and labor. It has another and very salutary effect, the damp clay forming a tight uniform covering of the kiln, after it is covered all over, the heat is diffused throughout the kiln and is held there so steadily, that the brick are annealed and are much stronger and tougher, than when covered only with brick "platting." It has been objected to covering with clay, for



MAX. A. TH. BOEHNCKE, GEN'L M'GR CENTINELA BRICK KILN & DRYER CO., CENTINELA, CALI.

the reason that when the kiln is cleaned off on top, much of the clay dust will fall down into the brick, and discolor them. Let the clay be fine and quite wet, not mud, but wet enough to cohere when pressed with the hand or feet, then when it is put on kiln, tread it down a little with the foot, and it will bake together like a cake, and can be all thrown off clean with a shovel, in throwing off the platting.

EMPLOYEES MUST USE THEIR EYES AND EARS.

The law requires that men shall use the senses with which nature has endowed them, and when, without excuse,

one fails to do so, he alone must suffer the consequences. For example, when an employe is of mature age and experience, the Supreme Court of Indiana holds, *Day v. C. C. C. & St. L. R.* (36 N. E. Rep. 854) the law never imposes the duty on the master of becoming eyes and ears for his servant, where there is nothing to prevent the servant from using his own eyes and ears to avoid danger.

A REMARKABLE CAREER.

THE subject of this sketch, Mr. Max A. Th. Boehncke, has lived an eventful life. He was born at Labian, East Prussia, in 1837, the son of a Lutheran country preacher, and grand nephew of the philosopher Immanuel Kant. After graduating at the Gymnasium (college) in Wehlan, he followed his elder brother, a sea captain, to sea, but was injured by falling from the bow of the ship, and had to leave the service. In 1856, he began farming for his health, and four years later entered the academy in Waldea, Prussia, for the purpose of studying chemistry and field engineering. He first became interested in brickmaking in 1861, when he took charge of a large brickyard connected with a 1,200 acre farm, where common brick and roofing tiles were manufactured by hand and burned in a Dutch kiln.

The following year, he was called to Southern Prussia for the purpose of arranging an 80,000 acre farm connected with large brick works for free labor. After the Russian government had dissolved the serfdom of the country laborers, he returned to Germany and engaged in the building business, working partly as practical mason and partly as draughtsman in the office of Mr. Teetz, a prominent architect in Berlin at that time.

In the year 1866, he started in business for himself on a small scale at first, planning and building several public buildings and a great many private residences and blocks. He afterwards became interested in the Miller gas kilns and also built the Casseler brick kilns.

In 1872, having started a brickyard of his own, he made the building of the Hoffman kiln a specialty. He met with very good success, and acquired an independence which was entirely swept

away by the failure of the "Ritterschaftliche Private Bank," in Stettin, in 1879. The next year he left Europe, using the last few dollars he possessed to cross the ocean, and nearly penniless, settled with his family in Omaha, Nebraska. The opportunities which this glorious country affords to every one who wants to use his muscles and brains, enabled him to secure employment on a brickyard.

He became a citizen of the United States, and in 1885 succeeded in building a continuous kiln and obtained patents on his improvements. At first, he built a new kiln each year and superintended the starting of it personally. He kept on improving his kiln and got out new patents in 1888, 1889 and 1892, and since the latter year he has been general manager of the Centinela Brick Kiln & Drier Co., of Centinela, Cali.

In 1892, the "Academic Iarisiennne des Inventeurs Industrials et Exposiate," at Paris, France, elected him an honorary and corresponding member.

He has written several articles for the CLAY-WORKER under pseudonym of "An Old Brickmaker," and has been a conspicuous figure at the last two conventions of the N. B. M. A., his quaint dialect and great good nature making him a pleasant button-hole talker.

Written for the CLAY-WORKER.

CHEMISTRY FOR CLAYWORKERS.

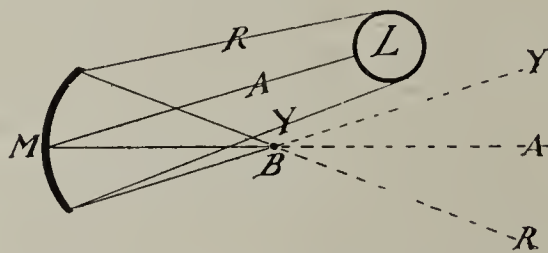
No. 23.

RADIATION, conduction and convection, are terms with which the average fireman, stoker and brick burner are but slightly acquainted, or in the majority of cases totally unacquainted, notwithstanding the important part each plays in the generation and application of heat, or, rather in the application of generated heat, which is the daily business of the craftsmen mentioned above and to whom it is practical information, infinitely more valuable than to the minister, the poet, the musician, etc., yet strange to say, these outsiders are much better informed on these subjects than the men daily practicing on them. However, it is somewhat consoling to observe that, though they ignore the recognized scientific terms they unconsciously obey some of the laws and supply terms of their own, arbitrary of course.

A good example of this occurs with the platting of every open topped kiln of brick or ware, the burner says he does

this, "to check the heat at the bottom and draw it to the top of the kiln." This or a similar expression describes in his language the change from convection to conduction of heat in the kiln. We will return to this example after briefly describing radiation, conduction, and convection in the order here stated.

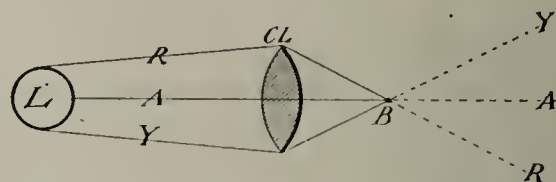
Radiation of heat and light are so much alike, that a description of one serves well for the other, and as light, or the radiation of light is so easily made evident to the sense of sight, we will take it to illustrate the radiation of heat which is not so evident to the senses. Taking then the light emitted by a candle, lamp, gas, or electricity, and it is easily seen that light flies off in every direction and with the same intensity in every direction, if there be no impediments in any direction. Heat is radiated from a hot body in precisely the same way, and both appear to be controlled by the same laws. If any obstruction be placed in the path of the rays of light or heat, such rays will either be absorbed, reflected, or deflected by the obstructing medium. If the obstruction be a highly polished concave mirror, the rays of light and heat will be reflected in convergent lines, and will terminate at the principal focus of the mirror in a spot of dazzling brightness and intense heat, especially if the rays are from the sun, and a piece of paper, wood, cloth, or some other substance is placed at the proper distance from the mirror to intercept the rays. If nothing is placed in the focus of the mirror, this concentration of light and heat occurs just the same, but eludes our sense of sight and feeling by the rays crossing each other and passing off into space in diverging lines. To those unfamiliar with the subject an illustration will be necessary.



Here let L be a luminous and hot body, and R. A. Y. represent rays of heat and light falling on the mirror M. and being reflected, they converge and meet at the point B. this is the bright and hot spot mentioned above, when, however, nothing is placed here to intercept the rays they pass on as indicated by the dotted lines Y, A, R.

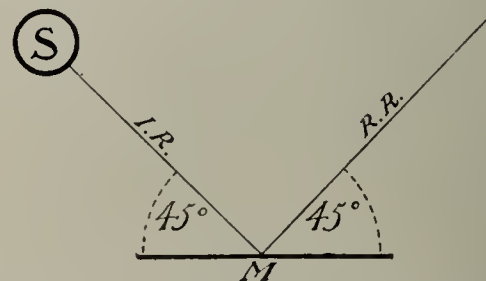
You are all familiar with a burning

lens, but perhaps not so familiar with the burning mirror of which the above is an example. The burning lens produces the same or similar results by *refraction* of the rays instead of *reflection* of them as by the mirror. The rays of light and heat pass through the lens and converge to a point in the focus of the lens; a simple figure will illustrate this:



Here CL is the converse lens, in this case a double converse, the other letters have the same signification as in the previous figure; precisely the same result will be obtained at B, if the focus of the lens and mirror are equal.

It will be found that radiant heat and light, in both the examples above obey the same law in simple reflection by a plain flat surface, which is thus stated. *The angle of reflection is always equal to the angle of incidence.* A very simple figure makes this clear.

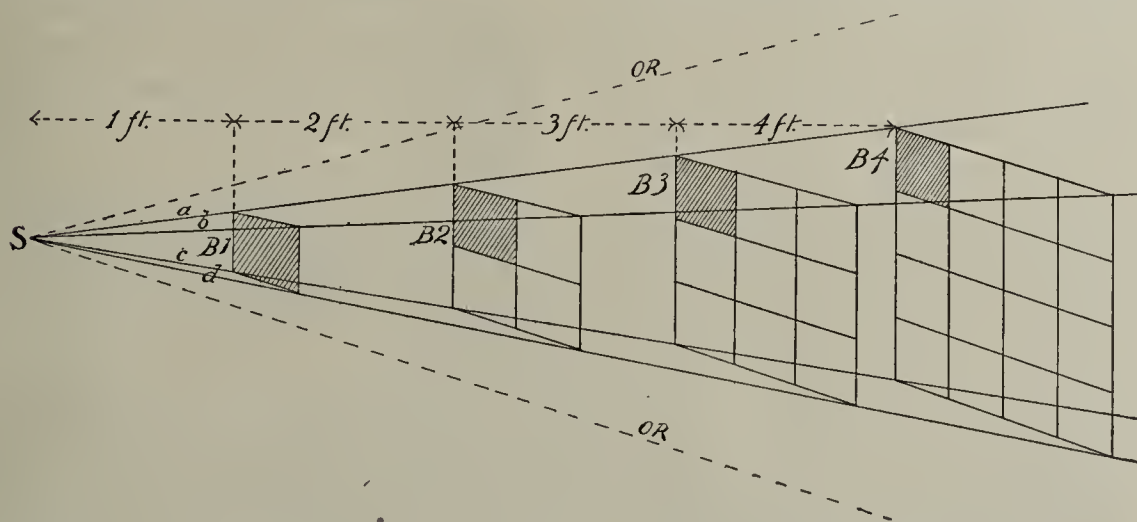


Let S be the sun, and M, a plain mirror lying flat on the ground, IR rays of light and heat coming from the sun at an angle of 45° to the mirror, these would be called *incident rays* and when they fell upon the mirror they would be reflected in the direction of the line RR and would thence be called *reflected rays* and invariably at the same angle with the reflecting medium as the incident rays. The angle chosen in this example is 45°, but any other angle would do equally as well, for if the incident rays fall on the mirror at an angle of 60°, the reflected ray will be thrown up at an angle of 60°. Billiard players recognize this law, although many of them may be unable to state it, except in their own terms.

If there is one law of radiant heat of more practical use and importance than another to the burner of clay goods and in fact, to all in charge of furnaces, it is this. *The quantity of heat decreases as the square of the distance from its source increases.* Those readers who never waded into arithmetic as far as "square root"

may not be able to fully comprehend this law, and for them the following examples are given.

Ex. Take four brick—or any other articles—of equal size and shape and place them, the first, one foot distant from a hot stove, or, any other source of heat, place the second two feet away, the third three feet, and the fourth four feet, then the first brick which is only one foot away from the source of heat, will receive four times as much as the second, nine times as much the third, and sixteen times as much as the fourth. This example explains the law, but what about its veracity? Is this a law or only an assertion? A few straight lines only are necessary to clear the matter up.



Here let S be the stove, or source of heat, radiating it in every direction, let the shaded squares marked B1, B2, etc., represent bricks, or blocks at distances marked, not from each other, but from S, thus B4 is four feet from S, not from B3, and the same of the others; lines a, b, c, d, represent rays that only just escape over the four corners of the brick; all the rays within these lines are caught by the brick B1; the dotted lines OR stand for outside rays, which never come near the bricks, so cannot affect them in any way; the same may be said of all rays outside the lines a, b, c, d, the rays inside of these lines only are effective as radiant heat, so far as the bricks are concerned. It will be seen that the lines a, b, c, d when they arrive at B2, enclose a square equal to four times the square of B1, when they reach B3, the square enclosed is nine times that of B1, and when they arrive at B4, sixteen times that area (B1) is enclosed. Now it is evident that if we remove B1 we must place four brick at B2 to receive all the rays of heat that were intercepted by B1 before its removal.

Again, if we remove all obstructions from B2 it would require nine bricks at B3, and repeating the process, it will re-

quire sixteen bricks at B4, as shown by diagram. It is further evident then, that if it requires sixteen bricks at B4 four feet from S, to intercept all the heat received by B1, at one foot from S, that each brick at B4 only receives 1-16 of the heat one would receive at B1, or, in other words a brick at B1 will receive 16 times the heat of a brick at B4 and the same of B3, it would receive only the 1-9 of B1, etc. This applies equally to light, the same diagrams and reasoning applies all through. If you are reading your book or paper at a distance of four feet from your lamp or gas light, and move to within one foot of it you get sixteen times as much light, no trifling matter for dim sighted people.

Other laws of radiant heat are:

1. *Heat radiates in straight lines, and in all directions equally, when surrounded by undisturbed media.*

Under these circumstances a thermometer will indicate the same temperature at the same distance, above or below or on any side of the source of heat, and

2. *The temperature at any distance is proportional to the temperature at the source.*

The theory of exchanges is, that as we know of no body or substance at the temperature of absolute zero, all bodies emit heat of some temperature and at the same time receive heat from bodies by which they are surrounded. If the sum of the heat emitted from a body is greater than that received, that body becomes cooler, whereas if the sum of the emitted heat is less than that received, that body becomes warmer; and if the heat emitted and that received are equal, the temperature of that body remains stationary.

There is a prevailing but an erroneous opinion that heat has a preference, or a tendency "to rise," but as you will see above, the law of radiant heat disclaims any such preference or tendency of heat; the mistake occurs by attributing to heat what is really accomplished by

the atmosphere. For example, in an up-draft kiln; the same agency, however, gives it a preference, or tendency, to drop in the down-draft kiln, while in the continuous kiln its tendency is horizontally, with a considerable mixture of both the up and down tendency. All this, however, is caused by disturbing agencies to be noticed presently.

Radiation of heat is effected by various circumstances and conditions, some bodies are better radiators than others, while the same body may be made a good or bad radiator by a change of conditions on its surface, thus, a bright metallic vessel containing hot water will be a comparatively poor radiator, but if its surface be sullied it will radiate much better; while if the surface be smeared over with a coating of lamp black it will become a very good radiator. If you now coat this same bright vessel say one-fourth of its surface with lamp black, another fourth with paper, tarnish by some means another fourth, and leave the remaining fourth highly polished, now present these portions successively to a thermometer, and the various readings given as each portion is presented is a fair indication of the comparative radiating power of each.

WM. WAPLINGTON.

Written for the CLAY-WORKER.

HINTS ON BRICKMAKING.

No. 88.

BY R. BRICK.

WATER SMOKING AND PLATTING.

SHOULD the platting while water smoking be as open as the setting? Some practical men think it should, so as to allow the moisture to escape without hindrance. The writer's experience leads him to believe that the platting should be closer than the setting. There should be sufficient space to make necessary draft, yet there should be enough hindrance or resistance to escape at the top, to cause heat to distribute itself uniformly over the whole top.

If the space at the top is equal to space below, wherever the brick are dry heat will gather and escape there, leaving other places cold. Too much space between platting will cause cold spots on top. Nothing tends to equalize heat in a kiln more than a close top. It is true there must be more space while water smoking, than when settling. By having close platting and setting, ten

per cent. on end while drying off, gives enough escape; then when kiln is dry and hot, close these brick down. If the flat brick are straight so they make a close pavement, when all are down, there is no trouble about cold spots.

There have been many articles written in the CLAY-WORKER about cold spots and how to remedy them, my advice is to close the top tight; when a cold spot occurs fire slowly, and wait until the whole top is heated. It is simply generating heat faster than it escapes and the result is, heat is forced into every part of the kiln. Uniform distribution of heat is, in brick burning the great economic point. If the distribution is unequal, then we have some brick overburned and others underburned, or we burn one part of the kiln first and waste time and fuel burning the last lot, that should have been finished with the first lot burned.

The same holds good in water smoking; if one-half of the kiln dries off 24 hours before the other half does, there is 24 hours waste of heat on the part that is dry first. In most cases color is the most important thing in brick. Water smoking has much to do with appearance of brick when burned. Wherever brick have been heated too much in drying off the effect is plain on the burned brick, they may be whitened all over their surface or partially but even where it can scarcely be distinguished, it mars the clean bright appearance a brick should have. Where brick are set damp there is danger of their crushing, if too much heat is applied.

Hence, it is necessary to exercise care and vigilance in drying off. The first twelve hours the fires should be kept burning and no more, then increase them gradually. There should at no time during water smoking be a strong fire for even a few minutes, rather let the fires burn low at intervals, to drive heat to center and to top; some even leave their kilns at bed time and fire no more until next morning. This is too long between fires, allowing the bottom of kiln to get cold and requiring extra fuel to restore heat. Many times when the last fire for the night is put in, too much fuel is put in, and the bricks are overheated in this way.

It is true that nearly all risk of injury in water smoking can be avoided by setting only well dried bricks in the kiln, and this is the proper way to do. But in practice, we often depart from

this safe path and put in some that are only partially dried. It is probably best to set the damp bricks toward the top, where they have least weight upon them. It is a great mistake to set a whole arch of damp brick from bottom to top in a kiln among dry brick for when this is done we must either damage those damp brick by heating them fast as the others, or keep the whole kiln back 24 hours on account of one damp arch. Hence if it is necessary to set some damp, they should be distributed among the dry brick, which will absorb a portion of the moisture from the damp brick near them.

In some cases the brick are injured by moisture that comes from the kiln bottom. Of all the dampness that worries the brick burner, there is none so bad as a wet kiln bottom. Even after the brick are dried and fire through the top, the arch will be kept dark in the middle by dampness rising from the ground and the bricks cannot be brought to the desired heat until moisture ceases to rise.

For these reasons the kiln ground should never be allowed to get wet, the roof should be put on soon as kiln is cool; this protects the kiln as well as the kiln ground. Where brick are set on damp ground the bottom course and in some cases the second course also are ruined or badly damaged. Even if they are burned hard they will be "shaly" and unfit for market. Then we should, to avoid unnecessary risk and expense, set dry brick on a dry kiln bottom, and protect them with a good roof and walls from rain and moisture.

Some thing more than a roof however is necessary to keep a kiln bottom dry. It should be higher than the general level of the ground around it and surface water should be drawn away from it as fast as it falls. If water is allowed to stand near a kiln it will pass under it, and be carried up into the kiln ground by capillary attraction. Some make the mistake of putting brick bats into a kiln bottom and covering with clay. If there is any moisture below the kiln they will rapidly conduct it to the surface, and they also permit passage of air through them. For these reasons they should never be used in a kiln bottom. Clay well packed makes the best bottom, and should be covered by a pavement of brick on edge. This gives a firm dry air tight bottom, and will allow bricks to burn hard, even the bottom course.

There should be a pavement of hard straight bricks on top to protect kiln from driving rains and leaks, one that will give the burner a firm footing when he is on the kiln while drying off, and when closed down prevents waste by too great quantity of escaping heat, and at the same time protects top courses of brick from cooling effect of the atmosphere.

It would seem that this plan for top and bottom of kiln would be safest and best. After all these precautions have been taken it is always best to take time in drying off as it insures good results, and costs no more for fuel.

MISSOURI CLAYS.



HAVING been requested to write concerning the clay deposits of the Rich Hill coal fields, I will gladly endeavor to comply. I have been asked many questions about our clays. One correspondent asks: "How much heat will the fire clays stand?"

Now, I can only state, that I have exposed some of these clays to a white heat with the following result: A loss in weight, slight contraction, increased solidity, glazed surface, and in one instance the clay was blistered, in another it melted; all was changed in color. Therefore, I think these clays will endure a high temperature if properly prepared.

In 1887 I made several experimental tests, when I was preparing for the publication of a Geological work upon the Rich Hill coal fields, and I learned by those tests:

First. That there were various kinds of clay in this region, from a soft, unctious, plastic variety, to that of a stony hardness, of various colors, with properties ranging from that of common brick clay, to that of clay suitable for some of the finer articles of clay ware.

Second. These clay beds belong to the middle coal measure rocks, and are found at the base of the measures, just above the sub-carboniferous rocks. Therefore, some of the beds are shaly and bituminous.

Third. Some beds contain a large per cent. of kaolin, with a small per cent. impurities, and are good carboniferous clays.

Fourth. Some beds are remarkably free from alkaline constituents, but contain a large per cent. of silicious sand,

while other beds contain a large per cent. of potassa, soda, and lime, and others contain a large per cent. of iron. The former are the under clays of the coal beds, while the latter are clays lying near the surface.

The beds just beneath the coal are usually hard and stony, while those just above are usually shaly, and are comparatively free from impurities. Both beds are rendered plastic, and improved by weathering.

Fifth. By properly preparing and mixing these clays, and by gradually driving off all water and gases, by a well regulated heat, slowly and gradually increased, they may be made into many different kinds of brick, as well as a good quality of clay ware. Such as building brick, vitrified brick, floating brick, fire brick, cream colored brick, tiling, and many kinds of clay ware of

making common building brick, they use all the clay from the surface down to first coal seam, and the coal is used for fuel. The clay is about 15 feet in thickness.

Thus using about three varieties of clay in common brick, which makes good quality of brick, there being no waste in these brick, as there are practically no soft brick. The drab, shaly clay, just above the coal is used in making vitrified brick, while the buff clay near the top of same strata, is used for tiling, and it makes a good article of tiling.

This clay works easy, dries quick, does not crack in drying, and burns to a smooth glazed surface, and is self-glazing, making beautiful and durable building material and tiling.

This Company is doing a good business and making a good article of brick

TECHNICAL EDUCATION.

How the German Brickmakers Accomplish It.

It would doubtless interest Bros. Morrison and Crossley, as well as other members of the N. B. M. A., who have been considering and discussing the educational question, to know what has been done along this line by the brick manufacturers' association of Germany. It is evident that some action will soon be taken by our National Association, perhaps at the next meeting, preparatory to the establishment of a training school for brickmakers, or, in conjunction with other associations, a general technical school for clayworkers. It is not my purpose here to discuss this question, but to furnish from the experience of our craftsmen in Europe such observations and data as may be of service to the promoters of a higher and more scientific education for the coming generation of brickmakers in America.

Perhaps the most valuable contribution upon this subject at the present time will be a translation of the last announcement of the *Brennereursus*, as it appeared in the *Thonindustriezeitung*, the official organ of the German Association of Brick Manufacturers, one of the editors of which, Prof. Dr. Seger (who died October 30, 1893) was an instructor in the school.

Since 1888 the German Association of Brick, Lime and Cement Manufacturers have provided each year a three months' course of instruction, with the object of giving to practical burners an opportunity to acquire a theoretical knowledge of their calling. This *Brennereursus* has not had, up to the present time, the successful results anticipated, as only a small percentage of the students have been really practical burners. A large number have come with the view of perfecting themselves in theoretical knowledge that they might enter upon the management of factories in some suitable position offered to them. In so much then has the *Brennereursus* been of use to the industry even though the number of students has been so limited.

At the last convention of the Association in March 1893, Mr. Ruehme brought forward the proposition to extend the course for burners into a general technical school for clayworkers, and a resolution authorizing the executive committee to take the necessary steps to attain this end was carried. But, of



WORKS OF THE RICH HILL (MO.) VITRIFIED BRICK AND TILE COMPANY.

good quality. This is a fine field for the potter.

Sixth. These clays, situated as they are, in the midst of an unlimited coal deposit, lying just between the clay beds, so all can be mined at once, renders them easy and cheaply worked.

When these facts became known, it was not long until the Rich Hill Vitrified Brick and Tile Co., (D. H. Wilson, Pres., T. B. Farmer, Sec'y), was organized with twenty thousand dollars capital, for the purpose of working these clays, and I am glad to say that practical work has shown these clays to be all that was claimed for them. They are making the best of vitrified and building brick, and tiling. The Company has put in an 80 horse-power engine with two boilers, and a 9-foot Frost dry pan, and Kells & Son's brick machine, a Raymond & Co's repress and a Stevenson & Co's pug mill. The dry house is 48x80, with a capacity of about 50,000. When

and tiling, and will soon be one of the best paying plants in the State.

Rich Hill, Mo. D. HADDOCK, M.D.

A NEW KIND OF BRICK.

THE following paragraph comes from a reader in Mississippi who says he thinks it is too good to lose. He didn't state the name of the paper from which it was clipped. That is immaterial however, for it will probably go the rounds of the local papers and be commented upon as a matter of much importance.

CLAY FOR PETRIFIED BRICK.

Jackson, Miss., May 29. — (Special.) — Wm. Drake, of Milwaukee, Wis., passed through Jackson to-night en route to Stonewall, Miss., to examine and analyze clay there thought to be suitable for the making of petrified brick. If found suitable a company will be organized to manufacture these brick, which they will offer to New Orleans contractors for paving purposes.

course, this cannot be accomplished at once, for the procuring of suitable rooms, competent teachers and all the appliances, apparatus and other means of instruction requires much time and deliberation, as also how the school is to be organized and maintained and the necessary capital provided. The old *Brennercursus* must therefore, remain for a while only perhaps with an extension of the curriculum.

The *Brennercursus* has had the following plan of organization. At the beginning of September all persons that had registered for the course were summoned to Berlin. A course of lectures was provided upon the composition of the different fuels and the theory of combustion, also upon the changes which clays undergo in the process of burning and the effect of the gases on the clay and to what extent they influence color, the chief impurities of the gases and how their injurious effects can be prevented, and lastly upon the water smoking. These lectures were delivered by Prof. Seger. The different systems of kilns were explained to the students by Architect Hotop—excellent drawings being used for reference. Excursions were made throughout the session to the brickyards in the vicinity of Berlin and the phenomena there observed explained.

After this part of the course the students were distributed among the 25 or 30 brickyards, of the greatest variety of raw materials and manufactured products, which were placed at their disposal by members of the association. For from eight to fourteen days they were placed upon the working force of the kilns in order that they might test in practice the knowledge which they had acquired in theory. All questions concerning doubtful points in the processes were submitted by the young men in writing to Prof. Seger and after their return to Berlin were discussed by him in a series of lectures.

This year it is intended to add to the course of instruction two other subjects: The Construction of Brick Machines and Bookkeeping for Brickyards.

The *Brennercursus* is conducted under the following regulations:

1. Every member of the Association is entitled to register one or more persons for participation in the three months course, for the training of brick burners.

2. Only such persons can be admitted to the course as have acted as burners

for at least two years or have been employed in some commanding position upon a brick yard, or in some similar place with the management of kilns and have exhibited special intelligence and attention to duty as well as a zealous interest in understanding the science of burning.

3. The applications for the term from September 1st to November 30th must be made on or before the 15th day of August through the secretary of the Association to the board. Proof must be furnished that the candidate has been employed at least two years as a burner with testimonials of his efficiency as such. The sum of 30 M. (\$7.20) must be paid to the treasurer of the Association and a certificate presented that the applicant assumes the cost designated in article 6, for the living and travelling expenses of the candidate during the three months.

4. The admission of the candidate is decided by a special committee composed of the president, the secretary and a member of the board. Rejected applicants can again apply to the board.

5. Those admitted to the course receive before the end of August a program giving information of the place, day and hour that they should present themselves for the lectures and of the plan of distribution upon the different brick yards. Candidates must sign an agreement to comply with the excellent regulations of the board.

6. The participants in the course for the training of burners must bear the expenses of living and traveling. Further expenses (the fee for the lectures and the compensation allowed in article 7) are paid out of the association treasury.

7. To those brick yards and works which afford to such persons for the object of their training an attendance of 14 days there is paid out of the association treasury the sum of 10 M. (\$2.40) for each participant. It is left to the owners of these establishments to transfer the money thus received to the burners' fund of the manufacturers association for the benefit of the sick, or to employ it for any other similar purpose.

8. It is the duty of the owners or managers of these works to place the participants in this course with their head burners or corps of burners, to give them the opportunity of taking part in the setting and drawing of the kilns and in the burning of one chamber or kiln, to give them the necessary ex-

planations, and, whenever it is practicable, to let them work with their men, and lastly to submit to the board through the secretary a certificate of the conduct of each student and a statement of the impression made by his manner of entering upon and performing the work during his stay.

9. It is the duty of the participants of this course during their attendance at any of the works to conform to all the regulations of the respective departments and to perform all work assigned them to the best of their ability. They are to hold in view only the specific object of their visit and to avoid as strictly as possible entering any other department of the works, or without special permission to take knowledge of any contrivance therein which the owners may be unwilling to have known outside.

10. To violate this intent or to give just cause for complaint the participant may, by the decision of the committee mentioned in article 4, be deprived of the privilege of continuing the course, and in such case the admission fee will not be refunded.

11. After the completion of the course each student will receive a diploma certifying as far as possible the degree of his qualifications for the practice of the art of burning—based upon the certificates of his attendance at the works and of his attendance at the lectures.

Persons not wishing to take the practical course at the factories can attend the lectures by paying an admission fee of 15 M. (\$3.60). W. D. RICHARDSON.

Going Into the Brick Business.



A Green Old Age.—From the Book-Keeper.

Written for the CLAY-WORKER.

THE BEGINNING OF A NATIONAL CERAMIC ART IN AMERICA.

BY EDWIN ATLEE BARBER.

IN newly settled countries the mechanical arts are transplanted from older centres of civilization and continue to flourish with little change, or gradually decay, as the case may be, until a new race of artisans springs up, and under changed conditions invents new processes or develops the old on original lines. This is especially true of the potter's art, and the history of the United States, in this respect, is the history of the world.

As early as 1684 we find that English workmen were brought to this country to make, at Burlington, N. J., a white ware similar to that which had recently been introduced into England, and nearly a century later, in the year 1770, British potters were making in Phila-



Pennsylvania Slip—Decorated Plate, 1814.

delphia a ware closely resembling that produced at the Bow works.

About the same time, or in the middle of the eighteenth century, the German settlers in Eastern Pennsylvania were following in the footsteps of their ancestors by producing the same rude slip-decorated earthenware, which had been made in the fatherland for many years, and so closely was the process followed that the identical inscriptions and decorations were reproduced. This ware continued to be made with no improvement until about 1850, when the production seems to have entirely ceased.

As illustrations of this class of pottery made in this country we figure two examples from Montgomery Co., Pa., one being a pie plate with red intagli design of a stag on a white slip surface,

and around the margin the following incised inscription:

*"Ich bin gemacht von hafner sin
Wan ich ver brech so bin ich hin,
Nov. im jahr 1814."*



Pennsylvania Slip Shaving Bowl, about 1830.

The date is November, 1814. The second example is a shaving basin with a segment cut from the edge for fitting the neck of the shaver. This is decorated in the same manner and contains the inscription:—

*"Du bist von der art
Das du host drei har ambart,"*

Having been made about 1830, at the same pottery. Both specimens are exhibited in the Pennsylvania Museum, Philadelphia, and are excellent representatives of old German art.

About 1832 French potters were fabricating, at the Tucker factory in Philadelphia, a hard porcelain, almost identical in body, shapes and decorations, with that which was being manufactured by the French establishments. A plate of this character, ornamented with conventional spi-



Tucker Hard Porcelain Plate, Philadelphia, About 1832.

der designs in gold, is also in the Pennsylvania Museum. So closely, indeed, did the Tucker porcelain resemble the French ware of that period, that much of it to-day, is difficult of identification.

Until about the middle of the present century the staple goods of American potters were cream ware, Rockingham, yellow, parian and bone china, all more or less resembling standard English wares. Not until 1849 does there seem to have been any serious effort toward originality in body or glaze, when Mr. C. W. Fenton, of Bennington, Vt., commenced the manufacture of his "Patent Flint Enameled Ware" at the United States Pottery in that town, but this was in reality only a fine variety of Rockingham. The bulk of the products of that factory were made of English bodies, and the greater portion of the patterns employed were produced from old



Parian Pitcher from Old English Mould, Bennington, Vt., 1846.

English moulds. Parian ware, which had been made in England for some time previous, was first made in this country, at these works about 1846, and the pitcher here shown was evidently cast from an English mould, which had been brought over by one of the emigrating potters, as indicated by the relief design of knights in combat.

Daniel Greatbach, an English modeler, was employed at the Jersey City Pottery, between 1830 and 1845, and executed, while there, a large number of artistic designs, but many of these reveal the English influence, and there is little doubt that some of the moulds used there were brought from Staffordshire potteries where they had done service for some time previous. Little seems to

have been produced in the early years of the Jersey City Pottery of an entirely original character, but old English designs were reproduced extensively, often, however, in a modified form, such as Toby jugs, Apostle pitchers and figures of Christ.

The English potters seem to have largely re-established the art of their own country here, but at a later day Greatbach designed many new patterns, which were produced extensively at Jersey City and Bennington.

The Centennial Exposition of 1876 marked the actual beginning of an indigenous ceramic art in the United States, and since then our potters have turned their attention more directly to the development of new wares and characteristic designs and decorations. In 1884 English and Irish workmen were imported to instruct us in the mysteries of the Belleek ware, but since then several of our foremost potteries have continued experiments in this direction, until to-day we produce an egg-shell ware, so far surpassing the original Irish fabric in body, in glaze and in delicacy of modeling, as to place it among the original American products.

In the Rockwood pottery we have a characteristic art ware superior to anything of an analogous nature made abroad, and substantially different from any other faience produced in the world. New bodies are being invented, and new glazes compounded and experiments are being conducted by many investigators in the field of ceramics. We are on the eve of the establishment of a national ceramic industry.

The discoveries of Mr. and Mrs. Frackelton in salt glaze decoration, and Mr. T. A. Brouwer, Jr., and Mr. Edward Lycett, in metallic lustres, are only the precursors to greater achievements in the future. Our potters still continue to imitate the best that is produced in Europe, but while competing with foreign factories, they are also exerting themselves toward the development of new fabrics, and the influence of the World's Columbian Exposition will make itself felt in the evolution of a native American art, which shall receive recognition from the civilized countries of the globe. We have passed through our apprenticeship in the processes of other nations and are now establishing ourselves in the marts of the world as *American potters*.

Mighty Dollar! thy shining face
Bespeaks thy wondrous power;
My pockets be thy resting place—
I need thee every hour. —Exchange.

Written for the Clay-Worker.

CONVENTION BRICK DUST.

Fourth Sifting.

NOW there comes a stout form, a florid face, a pair of keen "Irish blue" eyes, hair and whiskers covered with brick dust, at least they look that way. You have already guessed right, it is "Thom" Flood of Philadelphia. You may be sure where he is, not only dust but sand is elevated for Bro. Flood despises a dull time and will not be a party to anything of the kind.

When a storm threatens the harmony of our deliberations, Friend Flood don't wait to pour oil on the troubled waters, but seizes a club and beats them down, there is no doubt about his doing this effectually at Chicago. In a speech he combines the oratorical fire of Patrick Henry with the wit of Prentiss. He is the liveliest quaker of the whole lot. Long live Chaplain Flood.

Now appears the swarthy features of Friend Purington, who has already been "sifted." We will just inquire, have you ever met D. V. after a years separation, in the lobby of the Convention Hotel and grasped his hand, felt his friendly slap on your back, heard his hearty greeting, and looked into his beaming eyes? If so, you have your money back on that trip, then and there.

There appears in the distance a dim shadowy form. It seems tall and majestic in mien and as it draws nearer, rather "hungry looking." Ah, that ample smile, and bashful glance seem strangely familiar. Now he slowly turns his head with that well known dip to the front, the ample smile grows ampler. A gentle zephyr wafts the cloud aside and now we see clearly the face and form of W. D. Gates, one of the most popular and interesting members of our association, one who gives us wisdom spiced with rare humor. While he don't belong to the "botton hole" gang, he manages to get more information through the button hole than any body else.

The fellow that got Gates into that evening dress cutaway—claw hammer—controversy, ought to receive a leather medal. Bro. Gates used to talk through his hat, or any other fellow's hat for that matter, but now he uses the button-hole medium. When he shall cease to be Gates of Terra Cotta, may he dwell

within the Gates of Pearl, and he probably will, for that winning smile will surely charm good St. Peter.

Speaking of button-hole members, there is my excellent friend Wheeler the Carthaginian who possibly never occupies the floor, but attends each convention, and every session, and misses nothing. If, however, you wish to get some special information you will not ask him in vain, for he is not only well posted, but will take pains to give you all the information you are looking for. Bro. Wheeler is a successful brickmaker, and a valuable member of the association.

While we are in Missouri, will refer to my friend Williams of St. Louis, another quiet member, who manages one of the largest dry press plants in St. Louis. The writer had the pleasure and profit of a visit to the plant last winter, and will ever remember with pleasure the kindness and courtesy of Bro. Williams, who cheerfully furnished valuable information. If you ever go to St. Louis, be certain to go to the Union Press Brick Works and call on Mr. Williams.

This illustrates the advantages of membership in the N. B. M. A. What you learn at the meeting is not all there is in it. When traveling you are not received on the plants you may visit as a stranger, but as a friend and brother. In all the principal cities you will find members of our association.

Again, being acquainted with brick-makers in all parts of the country, and having learned of their mode of manufacture, when you want any information on a special subject, you have only to make you wants known by letter and you are promptly furnished with reliable information. We are just beginning to realize the possibilities of our Association and its benefits are innumerable. When this fact is better known our membership will soon be double its present number. CHARTER MEMBER.

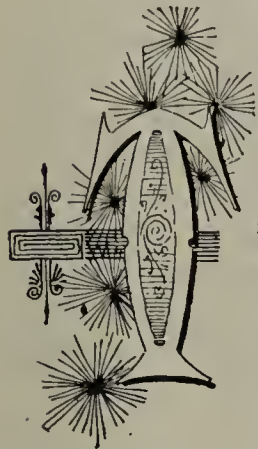


If you don't advertise
You get behind.
If you get behind
You go up, see! —Printers' Ink.

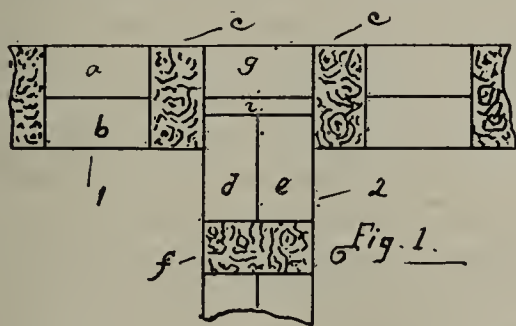
Written for the CLAY-WORKER.

BRICKLAYING.

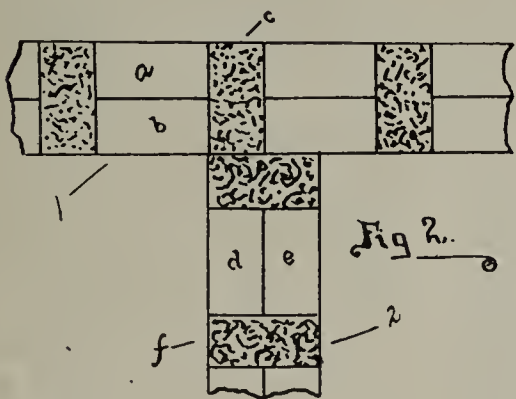
Seventh Paper.



THE two illustrations represent two courses in a nine-inch wall built in Flemish bond, and with a "return" in the centre or middle portion. Such a return has already been described, and is the ordinary one where one wall meets another and is incorporated or bonded with the same. And from a bricklayer's standpoint, there is some considerable importance in the proper construction of the return wall, as at that point there is opportunity for poor bonding to make its weakness apparent. The slight settling of one wall over the other will cause rapid cracking to occur at the point of union of the walls, and in much of the ruinous construction of the present day, the first signs of bad workmanship made themselves apparent at the beginning of the return wall.



The first course in the nine-inch wall is shown in Fig. 1. The wall 1 is right and left, and is composed of stretchers *a*, *b* and headers *c*, *c*. Wall 2 is composed of stretcher *g*, half closer *i*, two stretchers *d* and *e* and header *f*. It will be noticed that the stretcher *g* is of the wall 1 and amounts to a header in the wall 2, the latter in effect piercing entirely through the wall 1 at the one course.



The second course is shown in Fig. 2. The wall 1, corresponding to the wall 1 in Fig. 1, is composed of two stretchers

a, *b*, header *c* alternately. The wall 2 is composed of header *f* and two stretchers *d* and *e*, being placed alternately. This course is in effect the abutting of the two plain walls.

From this it will be readily understood, that the bonding between the two walls occurs at every other course, this being ample to at once tie the walls and to afford perfect support to either wall from its neighbor irrespective of its own foundations at the point of juncture. And in the construction of buildings this is of some importance, as the upper portions of such return walls are utilized, as a rule, to carry a greater burden than a superficial proportion.

NIMBUS.

Written for the CLAY-WORKER.

ADAPT YOUR OUTFIT TO YOUR TRADE.

BY D. W. STOOKEY.

IN these close times when every business man feels the necessity of exercising caution in the management of his financial affairs it will not be amiss to urge upon those who work in clay the wisdom of carefully watching their expenditures as well as their incomes. For several years preceding the last, it was an easy matter to find customers and to collect for sales made, but those times have gone. Then, the problem with every manager was to produce the most from his plant, knowing that the sales and collections were easily managed. Now, his energies must be directed towards the economical management of his present outfit, whatever that may be, and the husbanding of the limited amount of money that he is able to realize from limited sales and slow collections.

As the laws that govern the affairs of individuals are applicable to those of nations, and vice versa, the individual may learn something from the study of the history of the nation. Statistics show that as a nation we have been importing more than we have been exporting. In other words we have been buying more than we have been selling, spending more than we have been making.

Those years of prosperity, when all were employed with liberal incomes, led us on to leading lives of luxury that gave too little thought to the future. While we lived safely within our incomes we were acquiring habits that make it harder for us to adapt our methods to the conditions of the pre-

sent. We became so accustomed to luxuries that they almost became necessities to us and to give them up seems to be enduring the pangs of want. Our modes of living then were based upon an almost unprecedented prosperity that was, in a measure, abnormal and could not be permanent. Over production of manufactured goods was the result and the inevitable re-action came. It is useless to deny the fact of over production. The sceptic has only to go into the stores of our merchants. There he will find full stocks of all kinds of manufactured articles necessary to the maintenance of our people in luxury. He will also find two or three times as many establishments as are necessary to supply the needs in any given locality. Each mercantile house is found to contain a quantity of goods out of fashion and shelf worn, because there was no demand for them, because they represent the amount to which over production has been carried.

The inevitable result of over production is that factories shall produce less for a time. To the proprietors this means a reduced income. To the laboring man it means a shorter time, a reduction of wages or what is popularly called a "lay off." This to him is a diminished or cancelled income.

To one who has been living up to the full measure of his income, be it large or small, it introduces a very grave condition of affairs. This is no improbable case; no freak of the imagination, but the actual state of affairs as they exist in our land to-day.

Those old fashioned maxims such as, "In times of peace prepare for war." "Lay up something for a rainy day" and the homely advice "to save something for winter" come back to many families now with the most terribly bitter mockery. Many a butterfly who has been glittering gaily in the sunshine of prosperity and scorning the plainly dressed but provident bee can see, that it is too late, that this life is not all sunshine.

It is customary for Americans to look with pity upon the frugality of the peasantry of Europe, but doubtless to-day those frugal peasants who read the news are thankful that they are not among the starving thousands of unemployed who are reported to be in New York, Chicago and other American cities.

Without wishing to be considered an alarmist or a pessimist I want to express the opinion that as a rule Americans

have been living too luxuriously. There has been too much of that foolish pride which leads people to appear as well or better than their neighbors. "Trying to beat two-forty with a three minute horse" has ruined many who might have prospered had they been contented to travel at a rate consistent with their circumstances.

OLD VS. NEW METHODS.

Many brickmakers who were laboring against the disadvantages of limited capital and market were successful just so long as they employed simple methods that were proportionate to their capital and market. While these men continued to make brick by hand, dry them in nature's hot air dryer and burn them in simple up-draft kilns they were prosperous and the end of each season found them with a small balance in their favor. Unfortunately some have been led into the error of introducing costly apparatus and adopting expensive methods that were disproportionate to their circumstances and must now be classed with those who have failed financially while they would still be among those who are considered successful, had they been wise enough to have continued employing the methods adapted to their needs.

Machinery of high capacity, artificial methods of drying and improved permanent kilns are all right under certain conditions but they are no more suited to the needs of all clayworkers than are Krupp's guns to all who may wish to shoot.

The methods suited to factories that count their annual output of brick by the millions are not at all fit for the use of those whose product is only a few hundred thousands.

When the interest on the capital invested, the depreciation in value and expense of repairs are taken into consideration it is very probable that the per cent. of profit in making brick by the old methods is much greater than by the most modern. It is only when the great numbers that find a market in our larger cities are produced that the improved appliances can be employed with profit.

He who conducts a small plant with discretion and is able to meet his obligations with enough left for a comfortable living is more to be lauded and respected and has more of the elements that go to make up earthly happiness, than those who try to operate a concern larg-

er than the surroundings will support, that requires more intelligence and mental acumen than they possess, that is gauged to move at a gait beyond their capacity, and that finally ends in the hands of a receiver which is a legal acknowledgement that they were not capable to the task.

"BE KIND TO ONE ANOTHER."

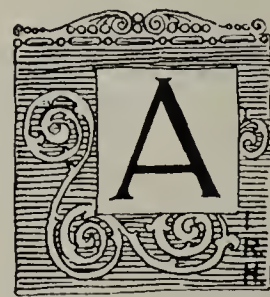
The phenomenal growth in popularity within the last decade of brick as a material for street pavements has drawn much capital from other fields into the erection of plants for the manufacture of paving brick. Some of these plants are the toys of rich men who use them as objects for mental diversion while they hope to realize a profit on the investment. A spirit of rivalry exists between these men in the effort of each to make his plant finer and more complete than the others." I myself heard one man make such a boast. These expensive plants and selfish boastings have made manufacturers who had their all invested in the manufacture of paving brick dissatisfied with their conditions because they were at a disadvantage when in competition with the more expensively arranged plants. This dissatisfaction has naturally led to a desire to improve. Improvement necessitates additional capital. The additional capital can only be obtained upon good securities, and mortgages, that destroy peace and happiness, must be resorted to. He erred in judgment in thinking that the new ways were adapted to his case. He was probably led to make the error by the extravagant promises made by advertisers as well as by the boasts of those who were situated more favorably and who were doing a much more showy business than he.

By way of parenthesis I would like to remark that there is abroad in the world a very unchristian tendency to boast of our successes and crow over our less fortunate neighbors or competitors. This manifestation may be pardoned when shown in the brute creation by the peacock, or rooster, but in man it is very uncharitable, and because it wounds others, must be considered brutal. He who hopes to build himself up by tearing down others needs educating in the rudiments of humanity. He who finds pleasure in the fact of being ahead of others and gloats over it to the wounding of their sensibilities has not risen far above the gladiator. He who has so far lost touch with humanity that

he finds his greatest pleasure in riding over others has little of the higher elements of humanity in him.

The highest earthly joys possible to man are to be derived from love and sympathy with his fellow men. He who has lost sight of the lessons in human sympathy and charity as taught by the Man of Galilee has lost his way if he seeks earthly pleasure. Let us rather strive to make successes in life by doing the best we can under our peculiar conditions, and then rest contented with the full knowledge that we have done what we could.

THE "CUMMER" AUTOMATIC DRIER FOR WET MATERIALS.



FEW days ago a number of gentlemen interested in drying clay, sand, cement, whiting, phosphate, etc., visited the works of Messrs. S. & E. Col-

lier, at Reading, Pa., to inspect the working of the "Cummer" Automatic Drier sold to that firm by Messrs. Charles Erith & Co., London, whose tunnel system for drying bricks and timber we illustrated last September.

The "Cummer" drier is of American origin, and is there in extensive use. It is now being introduced into most European countries. It consists of a revolving cylinder, through which the wet material passes, and is dried very rapidly by being brought into contact with the products of a perfect combustion in a specially designed furnace.

At Messrs. Collier's works the material being dried is clay carrying up to 35 per cent. moisture, and this was dried ready for grinding in the dry pans in the most thorough manner. The special system for handling both wet and dry material is completely automatic, and the saving of labor thus insured it very remarkable. Any kind of fuel can be used with the machine, and it is stated that a machine evaporating from two to three tons of moisture per hour only requires about one and a half tons of fuel per day. This would, of course, be impossible in the ordinary way, but the hot air and the vapor formed continue to evaporate moisture until it finally leaves the apparatus—a multiple effect in evaporative action being obtained, which would explain a high evaporative power which could not be obtained, for

instance, in a boiler, but even with this the duty claimed is very remarkable.

There is undoubtedly a great demand for economical drying methods, to replace wasteful, uncertain and expensive method of drying on floors, with its attendant expenditure on labor, and such machines a necessity to firms making bricks by the semi-dry process and the dry press machines. We have seen copies of Messrs. Collier's letters, which express complete satisfaction with the machine bought by them.

The saving in labor and fuel will also interest makers of Portland cement, whittings, ochres, phosphate, and all such materials.—*London (Eng.) Engineer.*

Written for the CLAY-WORKER.

BRICK MANTELS.

BRICK mantels are coming more and more into use as people acquire a taste for the substantial. In the older sections of our country the race of the flimsy is well nigh run. Cheap, jig-saw mantels made a wonderful impression on people for several years, but the good sense which there is in all things eventually prevails against the bad things, and the judgment of the people in the end is ripe.

The mantel which is here illustrated, was designed to go into a substantial brick building occupied by quiet, conservative people of good taste. On each side of it there are shown the book cases. They are of mahogany and are provided with all the conveniences

which properly belong to receptacles of that character. There is space for nice china, panels which enclose unbound magazines and shelves on which may be arranged dainty bricabrac. The mantel itself is of pressed brick. The design tells its own story.

The composition was arranged under the supervision of Louis H. Gibson, an attache of this Journal.

Written for the CLAY-WORKER.

ENAMELING BRICK.

No. 4.

THE MANUFACTURING OPERATION

Some of close attention to detail, and requires the use of good judgment. The clay out of which glazed bricks are to be made should be mixed with great care, not only as to incorporating the different ingredients thoroughly into a homogeneous body, but care should be exercised that materials used should be uniform from day to day, and week to week. It is better where a compound body is used that the different materials composing it should be ground together, rather than to be ground separately and mixed afterward. By grinding together a quite complete and uniform mixture is obtained in the early stages.

Great care and good judgment should be used in the selection of pugging device, and a mill should be obtained that will pug the clay with as little admixture of air as possible. Two mills will be found advisable, so as to insure clay of an absolutely even and uniform temper; upon this, to a great degree, depends

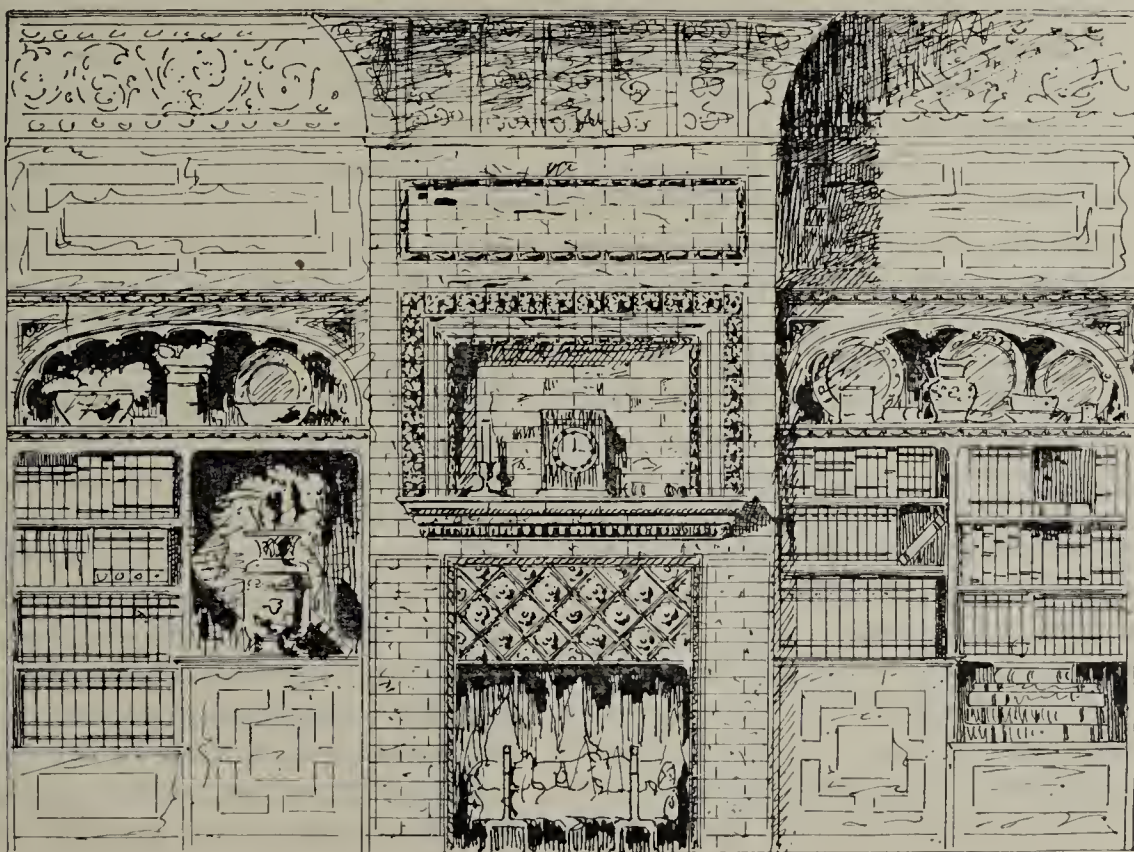
uniformity of size in the finished brick. This is of great importance to the glazed brickmaker, for it is certainly a great nuisance and expense to carry a stock of seven or eight colors—in headers, stretchers, quoins, round quoins and about eight to ten other styles, and keep the stock complete in three or four different thicknesses. The glazed brickmaker advertises to carry in stock not less than 150 different patterns. If not all one thickness, it would bother him greatly.

The process of making the blank for pressing can be any of the plastic processes that will produce a homogeneous, solid brick comparatively free from air and laminations, and which does not necessitate the use of sand on moulds. I believe hand made brick from thoroughly and properly pugged clay, are the best for glazing purposes. The moulds should be made of brass and lubricated with a low test kerosene, benzine, gasoline or any volatile, or partially volatile, mineral oil. After being made, the blanks should be dried to such an extent that when pressed they will be just hard enough to handle without bending. The softer the pressed bricks are the better, because if stiff, any air or laminations will develop into a blister after dipping into slip.

The partially dried blanks should be piled into a solid pile and covered for at least twenty-four hours, this is to allow sweating to take place, and to even the temper of the clay. The bricks may be pressed in any good repress, as light pressure being given to them as is possible, and at the same time produce sharp corners and edges. Any of the mineral oils mentioned above may be used as a lubricant. At the press the first difficulty will present itself; that is, the tendency of some clays when pressed in this soft condition, to drag at the corners and pull down, making top edge of bricks crooked; this is a peculiarity of some clays and not of others. If met with, the unfortunate individual will have to adopt the best means he can to overcome it. Use as light pressure as possible and try different degrees of stiffness until the desired results is obtained.

The press-box should be always kept in perfect adjustment and plungers kept fitted tight. Any fin is not only very objectionable in itself, but a leaky press-box gives a poor wavy face to the brick.

After pressing the brick should be al-



lowed to stand two or three hours in order that the oil may be partially dissipated and also that some of the bricks that were possibly soft when pressed may stiffen up a little.

My practice has been at this point to brush the face of the brick with slip, using a wide soft camels hair brush. This brush coating should be put on very thin, immediately after and while still wet the face of the brick should be dipped into the slip, the dipping should be done with a descending and at same time lateral movement, the front edge of brick being lowest when brick enters slip and highest when it leaves the slip. The slip should be as thick as it is possible to have it and work smoothly. The preparation of the slip is important, it should be gotten into a very fine condition, by sifting it through brass wire cloth not coarser than number 130, and number 150 is still better. After the slipping and within ten minutes to an hour several other difficulties if present will show themselves, and blisters, small semi-circular cracks, and large blisters. The first can usually be overcome by a better pug mill and better pugging, also pressing when still softer; this will also be the indicated remedy for the second trouble if in hand made brick. If in machine made brick, it is probably from laminations at machine; the large blisters are rarely met with except in machine made brick.

We have now arrived at a point where two methods are open to us; first, wet glazing; second, dry glazing. If we adopt the first method our brick should be dipped in the glaze from about half an hour to one hour after being dipped in the slip; the length of time to let them stand before glazing is a matter of judgment and varies with the clay, the condition of atmosphere, etc., but they should be allowed to stand until the gleam or glint from the surface of the wet slip has become partially dead or dull, about the appearance of the shine on a well vitrified brick. The whole dipping operation should be carried on in a cool room and the brick should be kept cool for at least twenty-four hours after dipping. This is so there will be as slight a tendency as possible for any compressed air in brick to expand and raise blisters upon the wetted surface. After the bricks are slipped and glazed the trouble commences if there is anything wrong in the operation, or materials, or their combination. As the time

passes, lookout for blisters. I have already indicated their causes, as the brick begin to dry, they may crack, or the slip, or glaze, or both, may peel off. If they crack, it may be from the clay having cracked in the press, and closed up again, the slipping and glazing operation opening these cracks. Cracks of this nature will appear on the arris of the brick and extend from the arris in toward the centre of the face. If this is due to an inherent weakness in the clay and cannot be overcome by care at the press, the use of such a clay will have to be abandoned. Longitudinal cracks, in or near the centre of edge indicate over pressure at the press. Cracks in the slip and glaze only, not extending into brick, indicate too great shrinkage in either slip, or glaze, or both, or too little shrinkage in brick body. Peeling of glaze or slip, or both indicate too slight shrinkage in slip, or glaze, or too much shrinkage in brick body. The shrinkage of body of brick can best be altered by taking out or adding finely ground grit. The shrinkage of slip or glaze can be altered by adding or taking out clay or by adding or taking out flint. In using the wet glazing method the glaze must contain considerable clay, about 12 per cent. clay will be found to suit most cases.

If we adopt the second or dry glaze method of glazing, the bricks after being dipped in slip will be allowed to stand until absolutely dry. Note this word "absolutely" as it is important, absolutely dry and hot is still better. When in this condition the faces to be dipped, are dipped into the glaze. If the glaze dries full of pin holes it would then be better to first dip in clean water and then into the glaze. Of course, before dipping, all dust and dirt must be carefully removed with a soft brush. I do not like the dry glaze process on account of the extreme care necessary, as the continual dipping of dry bricks into the glaze soon makes it very dirty and specky, besides the pin holes are an annoyance, but the worst difficulty of all is the almost unaccountable tendency for small blisters to rise on the surface. Often for days and weeks this trouble will not be met with, then suddenly it will appear in full force and ruin all the work. I believe that it is due to bricks not being absolutely dry at the time of dipping. I have however had it occur in brick I thought to be absolutely dry, but it will invariably occur in brick known to be

damp. For dry glazing it is not necessary to have any clay in glaze but 5 to 6 per cent. does no harm and makes a glaze that is not so quick to settle in the dipping tubs.

To be continued.

BURNING PAVING BRICK.

THE COLOR QUESTION.

A manufacturer of paving writes me as follows:

"I am manufacturing a shale paving brick, which burns a vivid red color, and the demand in this neighborhood is for a brick externally dark. If I burn the brick to such a degree that the brick are blackened they are ruined by being twisted and uneven. By using salt thrown into the furnaces when brick are at a white heat, the desired color is obtained, but it does not darken the brick evenly throughout the kiln. Seven or eight of the top courses are all right, and those below are so much lighter that the difference is all the more pronounced although the brick are equally good and come within the test required of them.

I am desirous of being told of some way by which I can overcome this drawback. I use the square down-draft kiln which gives excellent results in burning."

THE CAUSE OF TROUBLE.

The difficulty here is in the use of a clay which is too easily fusible. This case is only one of many which have come under my observation. The manufacturer finds that the clay becomes vitrified sufficiently to stand all tests *while still bright red in color*, but on account of the prejudice of the engineer who uses his product, he finds it an uphill job to sell his brick, no matter whether they are able to stand the test or not.

And in trying to cater to this prejudice in favor of dark colored brick, he finds that he cannot successfully increase the heat of burning and so darken the color by the natural flashing caused by the fire and smoke at high temperatures, because the clay becomes pasty and soft at about the same point that it begins to darken in color and thus the lower bricks are deformed by the weight of the superincumbent courses.

The failure of the salt glaze to remedy the trouble is due really to the same fundamental fault, viz, easy fusibility. The fact that the upper six or eight courses in a down-draft kiln take a handsome glaze and become dark in color proves that there is nothing in the clay itself to prevent its being satisfactorily treated in this way. The reason why the glazing is limited to the upper six or eight courses may be due to the management of the fires during salting, the quantity of salt used, or the duration of the salting. But in all proba-

bility, it is not due to any of these causes.

The simplest and most likely explanation is, that only the top part of the kiln is hot enough to take the salt, and that by the time the fumes reach the lower part of the kiln, the brick are not hot enough to decompose them, though they may be hot enough to be very fairly vitrified. And, if the burner were to make an additional effort to get the bottom of his kiln hot enough to decompose salt fumes, or "take salt" as the sewer pipe men say, the chances are that he would either overburn his top courses, or deform the bottom bricks—or both. So that there is no chance for any such successful change in the color of the bricks under these conditions.

THE REMEDY.

But as has been already pointed out, the only thing standing in the way of getting a dark color is the easy fusibility of the shale clays which constitute the bulk of the mixture, and by altering the amounts of the various kinds of clays used, so as to produce a more refractory mixture, there should be no difficulty in obtaining a brick which will stand up and keep its shape at a salt glazing heat. Of course, this refractory quality or infusibility is attained by the partial sacrifice of the vitrifying qualities. In the very nature of the case, these two qualities complement each other and what the brickmaker strives to do is to strike the balance between the two extremes.

The selection of material to alter this too ready fusibility must be governed by local conditions.

Where fire clays are accessible they make the readiest means of control, but in their absence, any sandy shale or plastic clay which stands a distinctly higher heat than the body material may be used. Even drift or sedimentary clays are sometimes found which are perfectly suitable for this purpose. The use of actual sand itself, while correct in theory, is not found in practice to make a sound, strong brick. The particles of sand expand under heat and the particles of clay shrink, so that the bond is broken and the brick becomes structurally weak.

In this particular instance the writer chances to know that there is a strong, red, surface clay overlying the shale, which endures a much higher temperature than the latter, and this material is accessible for purposes of mixture.

By mixing this clay with the shale, it

will be possible to find a proportion which will permit of a sufficient increase in temperature to allow of salt glazing the brick in the lower as well as the upper parts of the kiln.

A JUST CRITICISM.

But while it is possible by judicious admixture of other clays to make a dark colored product, it is nevertheless an outrage which paving brickmakers ought to unite to suppress, that city engineers should be permitted to discriminate against a paving material on no more substantial ground than color. What earthly difference does it make whether a brick be white, or red, or black, so that it is both tough and non-absorbent.

Civil engineers in charge of municipal work often hold most diverse and untenable views of the qualifications of a good paving brick and in the past they have held the manufacturers to a rigid account in humoring their whims. Instances are not at all uncommon of engineers whose opinions and specifications have changed each season for several year, but it is the poor manufacturers who pay, the piper while these "experts" learn their business. In this case

a manufacturer of a really good article is casting about in every direction to alter the color of his brick, simply because a city engineer prefers black to red.

Paving brick men are responsible for this state of affairs themselves to a large extent. There has been so little unity and fellow feeling among them in the past that co operation among them even to suppress such nuisances as this case presents has been an impossibility.

EDWARD ORTON, JR., E. M.

AN IMPORTANT QUESTION ANSWERED AFFIRMATIVELY.

Ask an experienced advertiser if advertising pays and the invariable answer is: "Yes, if done *judiciously*." The important question that confronts the novice is, therefore, *how to advertise judiciously*. Manufacturers and venders of clayworking machinery and appliances will find an easy and sure solution of the problem, if they will heed the hint in the subjoined letter and confine their efforts to the CLAY-WORKER, for advertising in these columns is JUDICIOUS ADVERTISING:



T. A. Randall & Co.,

Indianapolis, Ind.

May 25th, 1894.

Gentlemen:

We have been advertisers in the "Clay-Worker" for quite a number of years, and can state, without a "twinge of conscience," that, as an advertising medium, the "Clay-Worker" has been more valuable than all the other Journals combined, and to give some idea of the extent of the territory covered in one season, we sold Machinery in Los Angeles, Cal., West Brattleboro, Vt., Washington, La., and St. Paul, Minn., and in each case the purchaser stated he had seen our ad. in the "Clay Worker." In evidence of our appreciation of the "Clay Worker" will state that we have discontinued advertising in all other Journals except the "Clay-Worker and Drainage Journal."

Wishing you a long and prosperous career, we remain,

Yours truly,

Anderson Foundry & Machine Works.

W T Dubbin
SECY & TREAS

ings, and warerooms on it. I had got brick kilns mixed up in my mind with distilleries. I tried to conceal my disgust when at last I found the place, and entering, asked for Mr. Mormort.

"Sure, he's not here," replied the watchman, who accosted me, "Sure the yards is closed, being as there's no coal."

"Coal!" said I, "what's coal got to do with it?"

"Coal!" said he, "hownellwegoynto make brick when there's no coal? Don't you know the miners is on strike?"

"Oh yes," I replied, "but sure they don't adulterate brick with coal, do they?"

The watchingman looked a mixture of disgust and anger.

"What are you givin' me?" he inquired, with added contempt.

I assured him that I had not intended to make him any contribution whatever, but that if he meant it for a hint, why, for that matter, I had some excellent cigars and a flask of ———.

Well, we became quite friendly. It grew dark. Of course there was no use in my trying to find out anything in a brickyard that had shut down and the proprietor gone to Oconomowac for the summer. So I postponed my yearnings for knowledge, and made very good friends with the lone man on watch. By the time we had become thoroughly acquainted, the last train into town had gone and I was content to remain at the yards. The watchman kindly spread me out on an unoccupied clay bed. I fell asleep and later had an experience that for pure cussedness and total lack of reason stands unique. Of its details, or rather lack of details, I will tell in my next.

CHARLES LEDERER.

Written for the CLAY WORKER.

THE NEW YORK BRICK MARKET.

JUNE, the month of roses, is at hand, and it is to be hoped that it may be a more satisfactory month for brickmakers, both employers and employes, than its predecessor.

All have been hoping Micawber-like, that something would turn up, to cause an increased demand for brick; such as an underground rapid transit road in New York City, or the commencement of the North River bridge, or the speculation on the necessities of others would cause capital to take hold, as low prices prevail on all materials that go to make

up a building, labor being the only exception. But none of these inducements tempt capitalists to take hold, it seems as if we had reached that point in the trade where serious lessons will be learned. The old axiom of cutting your garment according to your cloth, or to change it, to make brick according to the demand is lost sight of, and they rushed ahead as soon as it was found that trust or combination was not likely to help them individually. A few worked hard to effect a combine, but the movement was not successful.

THE RESULT

Of all the talk about a brick trust is nil. The old saying that "Trust is dead—Poor pay killed him," does not hold good in this case. The facts of the cases were as follows: Those who wished to sell, thought all they had to do was to put a price on their property—and some of them did it with a vengeance—for they thought there was plenty of capital behind the movement. But they were informed that it would require a far larger amount of money to organize a trust, than the promoters had been led to believe. So it died—peace to its ashes, although it was a great disappointment to many. Some had worked hard to have it go through, in the hope that they could sell at a good figure, and be on the "inside" of the management.

In a former letter I said, that if any arrangement was effected for the coming season, it would be through an agreement to start late in the season. Last month, the CLAY-WORKER contained the call to meet at the Hotel Metropole. The next meeting was held at the same place without any definite action being taken. The general sentiment of the meeting was a unanimous hold-off, but as that could not be done, the next best thing was to see what percentage would agree to this action. The next meeting was appointed for Newburgh, N. Y.

At that meeting, it was ascertained that 85 per cent. of those engaged in the manufacture of brick on Tide Water were willing to fix the date of starting, the 15th of May. As that was the best arrangement that could be effected, it was decided to set that date to begin moulding. I will not say that all who signed the agreement will faithfully abide by it, but there is no doubt that a large number of them will, and will, also, in some shape, control their shipments.

HACKENSACK

Is not represented by one name. With one exception, though, the yards will not start until that date or a few days before, and will not place much stock on the market.

The largest firm here began moulding on the last day of March. It must have cost them something to manufacture during the month of April, with a gang of men waiting in the shanty for six inches of snow to melt off the yard. If they had customers waiting to be supplied, it would appear as though it would pay them in the long run to go on the market and buy brick for them, but possibly no other brick but that certain make would do—who knows?

One of the yards has had two pumps going night and day (excepting Sunday) for the past three weeks, to free the clay bank from water, and during the brick-making season, the engineer will start the pumps at 3 o'clock in the morning and run them until the pits are out at 10 a. m. in order to free the bank from water that has accumulated during the preceding twenty-four hours. Otherwise, the water would cover the bottom of the bank so that they could not get in with a horse and cart.

BURNING WITH COAL.

Mr. Walsh has had stationary bottoms and side walls built for an eight arch kiln, which he will burn with coal. As he burns his own brick, he is satisfied that coal is the coming fuel. He will burn his brick in this one kiln until he is master of the art, and will then use it altogether. It is hardly to be expected that he will have all good hard brick, as his only experience has been with the two kilns which Mr. Sutton burned for him last fall, of which mention was made in the CLAY WORKER at the time. Mr. Walsh is of the opinion that what one man can do, another can, if he only has confidence enough in himself to carry him through. Mr. Walsh has made the initial step, and if he succeeds, more will follow.

It is strange that some brick manufacturers are satisfied that the cheaper way is to burn with coal, but because their first effort is not a complete success, get, shall I say, tired, and do not try any more. Late last fall, one of the yards put up a small kiln, in which were washed, dry, frozen and wet bricks, and then, as though that was not enough of a combination, in making the heading course, or double coal, they run out of coal dust, and yet they fired the kiln

in that condition, expecting, I presume, to make a success of that burn. How any one could expect to make a success under such conditions is beyond my comprehension.

IDLE YARDS

Seem to be on the increase here. The death of one member of a firm will cause the yard to lay still this season, and will likely result in the sale of the property. If such should be the case, the price that will be obtained will be small in proportion to its value, and in all likelihood, it will be sold at public sale. Now is the time to buy, but judging from past experience, brickmakers are loth to invest when brick are low, but when the boom comes they will pay fancy prices.

In the year 1876, a piece of improved clay property was sold at assignee's sale, after their adjournment, for \$43,000. To-day the same property could not be bought for double that sum. The brickmaker is completely knocked out in times of depression. I may say that in the purchase of the property mentioned, three men were interested, any one of whom could have bought and paid cash for three such pieces of property, and two of them were old brickmakers. Two members of this firm have since connected with others and have purchased property not nearly so well improved for a sum about four times as large. One was at a forced sale, and the other at the seller's own figure, and in all probability will be a source of litigation with the town on account of encroachment on the road for clay.

HAVERSTRAW.

Manufacturers are not making much of a start. Up to date but three yards have started, and, strange as it may seem, one of them is controlled by one who during the winter was one of the moving spirits in all movements for a combination of brickmakers to reduce the output. It looks as though they only talked about curtailment to hear themselves talk.

THE DULL PERIOD

Of the year is always at this time, and as it is of yearly occurrence, one would think that the brickmakers would try to regulate shipments to suit the market. A few weeks ago when the market was way down they held back with the result that 25 cents per thousand was gained. Just as soon as the raise was effected they began making fuller shipments, and consequently lost the price gained, and now the prices are even

lower. It appears as though nothing will ever teach them the lesson they should learn. No doubt some of the shipments were compulsory, in part—some shading being done by the commission men under orders from the manufacturer, as they were in need of money.

If such things prevail at this season of the year, what can be expected later on, when the market is overstocked and demand is light.

A SAMPLE.

All who are engaged in making brick are hoping that the building trade will make a better showing this year than last, but the first quarter is past and is behind the corresponding quarter for 1893.

For the week ending April 21st, 1893, there were issued 117 permits for buildings to cost \$3,126,400. For same date and length of time for 1894, no permits at all were issued. Certainly, no encouragement can be taken from these blanks, and still some of the manufacturers commenced manufacturing in March. If they had waited until July they would have filled their sheds with more than enough to supply the demand.

A NEW INDUSTRY

In the shape of brick is talked of for this section. Negotiations are pending for one of two plants to manufacture glazed brick. The parties want to lease and if they mean business, they can be accommodated, and at reasonable figures for use of plant and clay. It is to be hoped it is not all talk. They have looked the plants over and had figures given them, and the owners are waiting with a patience that Job never possessed for the other fellow.

LABOR TROUBLES.

The laborers, that is, the migratory part of them, arrived long before the yards were ready to employ them, as the yards here did not start till about the 14th of May. Wages have been cut on some yards 25 cents per day; on a few yards 15 cents on some men and others 25, with no reduction on foreman or engineer. Along the Hudson about seven dollars per month is the general reduction. A strike on the Upper Hudson was the result, commencing at Kingston and moving north, a mob going from yard to yard stopping the men who were working, but not doing any damage. The movement then came south. At Roseton, on Mr. J. C. Rose's yard, they tumbled the hacks. Across the Hudson at Low Point, they started, going from

yard to yard and compelling men to go with them, then marched down the New York Central & Hudson River R. R. about four miles to Dutchess Junction, compelling all to stop work. At the Aldridge Bros. yards, they cut the belt on the rim of the shafting. Just below, on Mr. Tom Many's yard, the foreman would not stop the engine and they handled him very roughly. The result was that some of them were arrested, and are now doing time, and the strike ended without any concession on the part of the manufacturer—in fact, they even said that before they would restore last year's wages, they would let the yards lie still.

About a week later, at Haverstraw, on three yards which are on the Sibburn estate, the men were told that their wages would be less than the season before. By midnight the three barns belonging to the yards were afire and totally destroyed, with nine horses and all the harness. It will cost the estate of Sibburn one thousand dollars more than the insurance to replace the barns. When day-light appeared it was found that all the belts on the machines had been cut and all the molds thrown in the river. Whether that will be the end, or more is to follow, time will tell. When the men on the yards here were notified of the cut, they accepted it without any comment.

MOULDING

Has been very much retarded on account of wet weather. For eight days, not a wheel was turned, and the ninth day, when they did mould, they could not get out the brick on account of rain. For two weeks the men did not make their board.

THE MARKET

Is getting more and more in the buyer's favor and shipments are getting fuller. \$5.00 is the top, with \$4.50 and 75 cents the ruling rate for the majority, and not many Jersey brick will reach \$4.50. Hackensack are selling for \$4.25 per M, with a very dull market and from twenty to thirty barges on the market all the time.

The picture of the brick being loaded on the barge in the April CLAY-WORKER looked familiar, except that the brick were put in the hold. On our barges they are all put on deck. It is too expensive to have a man toss off his barrow load and have a man to catch them. With us, the wheeler runs his barrow aboard the vessel, puts it where it is wanted, and the crews stow the brick away.

A. N. OLDTIMER.

Hackensack, N. J.

BRICKYARD SKETCHES.



FOUR years ago several enterprising citizens of Franklin, Pa., conceived the notion that there was a good opening for the establishment of a modern building and paving brick plant at that point, and the organization of the Franklin Paving Brick Company was the result. The capital stock of \$20,000, was soon placed and a large tract of land near the town was pur-

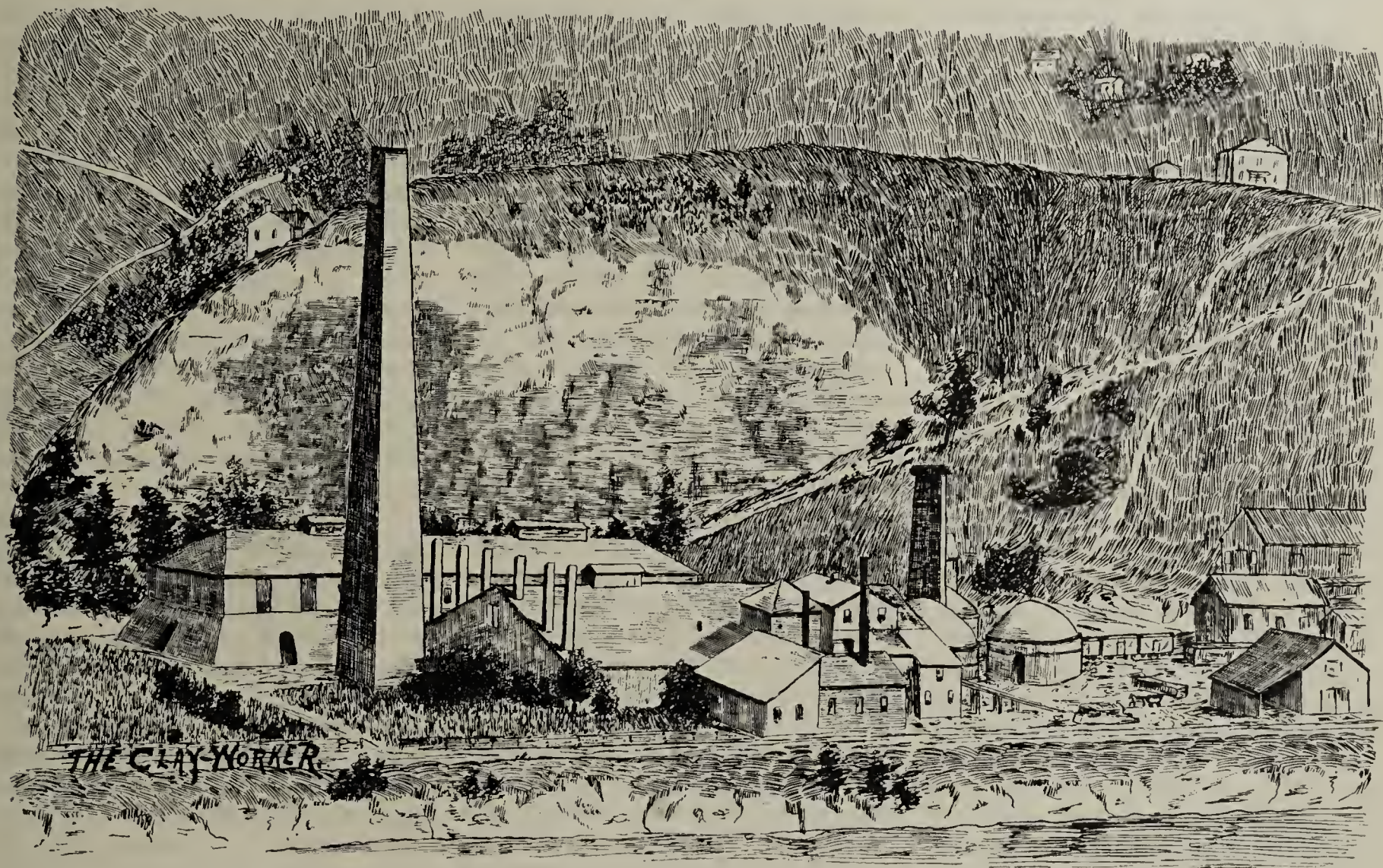
factory manner. During the past season they have repressed all their brick, using a double repress, from the shops of the Frey-Sheckler Co., Bucyrus, Ohio, which they commend very highly for its speed and efficiency. They say that one man has pressed as high as 25,000 brick on this machine in ten hours.

From the repress a large portion of the brick go direct to a "Perfect" continuous kiln erected under the direction of Sercombe, Osman & Warren. They had formerly used the ordinary down draft kilns in comparison with which their continuous kiln has proven very economical. It consumes only about

to Dr. Henry Froehling, Analytical and Consulting Chemist, Warners, N. Y., gave the following results:

| | |
|---|--------|
| Silica..... | 61.06 |
| Alumina..... | 21.76 |
| Iron Oxide..... | 7.04 |
| Lime..... | .58 |
| Magnesia..... | .23 |
| Potash..... | 3.76 |
| Soda..... | .79 |
| Water and Carbonic Acid lost by ignition..... | 4.80 |
| Total..... | 100.02 |

The officers of the Franklin Paving Brick Company are proud of their plant and its products and invite brickmakers



THE FRANKLIN (PA.) PAVING BRICK COMPANY'S WORKS—DRAWN BY A MEMBER OF THE FIRM.

chased and the work of erecting a plant was begun. They soon demonstrated the fact that they had a superior grade of shale in inexhaustible quantities, and so have since directed their efforts to the production of paving brick.

The clay or shale bank is 75 to 125 feet in height and is blasted off in shelves of about eight feet in width, and carried in cars down an incline about a thousand feet and dumped beside two immense J. W. Means & Co's dry pans. From the pans the clay goes to an "Ohio" brick machine, made by E. M. Freese & Co., Galion, Ohio, which turns out the brick in a very rapid and satis-

one-fourth the amount of fuel formerly required, and the per cent. of first quality pavers turned out ranges well up toward the one hundred mark.

During the past year the capital stock of the Company was increased to \$60,000, which will enable them to increase their capacity, as the growing demand for Franklin pavers requires. T. L. Kemerdel, city engineer, of Franklin, where they have been used extensively, says he regards the Franklin pavers as superior to any in that market. They have also been tested by Prof. R. C. Carpenter, of Sibley College, with gratifying results. A sample of Franklin shale submitted

to visit them and inspect their works throughout. The officers of the Company are: Pres.—JOHN A. WILEY, Sec'y—GEO. ALLEN, Treas.—W. J. BLEAKLEY, Gen'l Mgr.—W. CRAMER.

RESPECTFULLY REFERRED TO CAPT. CRAFTS.

Bricks made upon sea coasts must be carefully guarded from salt air or water during the manufacturing process. They are by far more durable if made some distance inland. The brackish water of the coast induces speedy disintegration unless the bricks are completely covered by a coating of practically impervious

cement to keep air and moisture from them. When thoroughly vitrified, bricks made with fresh water will endure sea air for a long time, but even then protection and occasional patching up pay well for the trouble.—*Journal of Building.*

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Button Hole Talks.

Editor Clay-Worker:



NE of the grizzled and gray brothers affixed himself to my button hole the day after the Powwow, and said: "Oh you're the chap that tried to talk about the ladies last night?"

"Well, yes, that was a mistake sure enough."

"Why a blind man could see that you never had experience in that line. Don't see what they thought of putting a boy like you right into deep water like that. Why, I wouldn't be afraid to bet that you ain't even married. Now honest, are you? What—engaged—Oh shaw, that don't count. Experience in that line only begins with marriage. But say, look here, I know one lady that I could talk all day about, and she's a brickmakers wife too, you bet. Why say, day after day, week after week and year after year her face has blossomed in smiles and sympathy for her old man and his troubles, and has been the sunshine that has kept his old heart from withering and growing mouldy in the gloom of mistake and disappointment. Why, on sunny days and rainy days; in summer days and winter; on holidays and wash days, *she* has always been the one true comforter and pardner of the hard working but dull and gruff old brickmaker whom she had loved and cheered through all the trials and disappointments of their checkered life. Why say, Bub, clayworking has more vexation and disappointed to the cubic second than anything else on earth. Say, hold on, what's your hurry you can go yet, I want to tell you. I went to a show a while ago where a chap that was in our line, only workin' crockery, was the hero of the play and blamed if he didn't fire a kiln right on the stage and it was 'way up' too, even if he did

draw his trials out of the fire box, but say, he got out of fuel and was strapped and couldn't get any coal or wood or oil or natural gas, and was just desperate. Well do you know I was so wrot' up that I was goin' to get right up to offer to stake him, only mother pulled my sleeve and reminded me it was just a play. Well, then what do you think. Darned if he didn't go to work and break up the furniture, tables and chairs and such, and crammed them right into the fire box and with that he got his heat, made his everlastin' fortune and the curtain came down. Now, do you know, that ain't so everlastin' strange when you come to think of it, it ain't the only case. Not by no means. Why me and that lady I was tellin' you about has burnt lots of furniture and not furniture alone but good clothes and houses and lots, shoes, bonnets, pleasure trips and in fact most all kind of luxuries and comforts and we never made our everlastin' fortunes either for when we got the heat we wanted there never was no rich middleman to jest lay right down and give us all we wanted. No sir, we just had to work the harder and tug away like army mules and try to win out alone as best we could. But say, do you know, if it hadn't been for her I never would have lasted at all, and so, I just want to advise you to just brace right up and get that girl of yours to set a quick day and maybe when you're married well, you may be of some account and—well, say if you must go why goodbye but remember what I say and hustle things and when you're married come over and see us, me and that lady I was tellin' you about; she's lookin' after things at home while I'm away. Anyway you'll have a better idea of the subject after you see the dearest old angel that God ever dropped into the life of a rough old brickmaker."

GATES.

Signs of Prosperity.

Editor Clay-Worker:

Enclosed find P. O. order for \$2.00 on account of subscription. If this does not pay the bill, let us know and we will settle. We do not want the paper stopped, as we get a great deal of valuable information from it, and if we fail to pay, please notify us repeatedly until we do.

Business is looking up some in our county. Yours Truly,

DALTON BROS.,
Hopkinsville, Ky., May 15, '94.

A Reply to Mr. Greer—How to Remove Old Tile From Roofs—The Tariff Question.

Editor Clay-Worker:

In your May issue Mr. R. M. Greer calls attention to our answer to question No. 7 in Question Box at the Convention in January last, to wit: "Is there any way in which roofing tile fastened on with nails can be removed for use on other buildings." My reply was, "There is no question about it," etc. In making the reply off-hand we had in mind, and took it for granted that the questioner referred to clay roofing tile only, and in answering Mr. Greer's request that we should state "just exactly how this was to be accomplished," we take it for granted that he refers to tile made of clay. Had the question been, *can all* tile made of clay and fastened onto roof with nails be removed, etc., our answer would have been different, for the reason that there are now in the market, and coming into it, *so-called* roofing tiles to which our reply, as made, had no reference; owing to the fact that they are made of material that will not vitrify. The tile are soft, absorb water, and have but little strength. When I made reply I had in mind the *Akron Vitrified Tile*, made for many years by J. C. Ewart & Co., of Akron, Ohio.

Now, in reply to Mr. Greer's question I wish to say that the roof of the West Hotel in Minneapolis was covered with what is known as the Diamond tile, made by Ewart & Co., and owing to improper construction of roof supports, etc., they had to be removed. This was done by prying and lifting the tile with a tool, starting the nail from its hold and drawing it partly out in some cases, and after withdrawing tool and letting tile fall back into place the nail was drawn by the use of pliers. The tile were all removed from the roof and with but very small loss from breakage in so doing.

If Mr. Greer or any who are interested will take tile made by the firm mentioned above, and nail them onto a three-inch white pine plank, with a ten penny wire nail, (which is three inches long,) and will then take a common hatchet and insert the blade of same between the tile and plank as a lever and lift upon the hatchet handle, as upon any lever, he will find the tile have strength enough to pull out the nail that has been driven in, until its head is even with face of tile, and this without breaking the tile. Of course, a three

or four penny nail is all sufficient for fastening tile to any roof, covered with any roof sheathing.

I do not agree with Mr. Greer that "a tile with a lug beneath by which it can be fastened, with wire, when necessary, is by far the best pattern for all intents and purposes." In actual work we think he will find that fastening with lug and wire to a wood or clay sheathing is by far a more expensive manner of laying tile than with nails. Of course, where tile have to be laid on iron rafters or purlines with no sheathing under them, nails cannot be used, and lugs and wire are the proper fastenings.

I believe the better way to fasten tile on wood or clay sheathing is with a screw, using a strong spring ratchet screw-driver with handle long enough, so that the tiler can place the end of it against his shoulders and drive screw to place with one motion. This avoids breaking of tile when head of hammer glances from the nail-head, as is will sometimes do in nailing.

I agree with Mr. Greer in his opinion regarding the size to be used in the manufacture of roofing tile. His statement of the case is well put, and so far as we know, it sets forth facts. The oldest manufacturers of roofing tile in this country, and the ones that have more roofs on buildings than all others combined, and have been furnishing them for the past 17 years, make a tile, among their large assortment, called the Columbia, which lays $102\frac{3}{8}$ inches to the weather, taking 150 tile to cover a square. It is strong, durable, ornamental and thoroughly vitrified, and, as is the case with all other tile of this manufacture, they are everlasting so far as weather and elements are concerned, making a positively water-proof roof when properly laid that will last as long as any building can stand.

There is another matter in Mr. Greer's communication about which we desire to say something. He says, referring to Mr. Homes' paper read before the National Association of Fire Manufacturers, "As far as I can make out from the figures, the flattering results of the McKinley bill has been the decrease in a little over two years of something over two million imported bricks, including fire, glazed, ornamental and other than these classes." Now we are inclined only to speak in this connection regarding glazed brick, of which during the last two years the American product has increased a little over two million per

annum in first quality glazed brick sold of English size. This would cover the deficiency according to Mr. Greer, as we understand him, of the falling off in the importance of different kinds of brick he mentions, and can be accounted for in the lines of glazed brick alone.

It seems to me that if American manufacturers have been able to supplant the English to the extent of two million per annum from two factories, to say nothing of what the other factories in this country are doing, it is something worth mentioning and of interest to brickmakers. So near as we are enabled to know, our American manufacturers are unable to make first quality glazed brick to be sold at their factory doors at a less price than \$75 per thousand for English size. This price is to jobbers and dealers, and it is a fact that English brick to-day, duty included, can be laid down in Chicago, freight paid from Leeds, England, for \$82.82. To this add \$1.25 for insurance, and you have the total cost, \$84.07, in the Chicago market. (We speak of Chicago because we do not know the exact figures on the sea-board.) With the duty taken off, English brick can be laid down to the dealer in Chicago at about \$60.80, plus insurance, \$1.25, making \$62.05; while American brick at their factories at \$75, plus freight to Chicago, \$14.40, would make them \$89.40 per thousand.

With these figures before us I do not agree with Mr. Greer that every brickmaker should be a free trader. (Perhaps if we were a brickmaker we should be a free trader, but most decidedly think we should not.) Mr. Greer says, "The weight of brick is so great in comparison to its value that any advalorem duty would necessarily be small in comparison to cost of transit, which is always in itself a sufficient protection." In reply we would like to say to him and the readers of your valuable paper, that last year we were quoted a freight on English brick by rail from the factory at Leeds to Liverpool, then by ocean to our sea-board and by rail from the sea-board to Chicago at \$20.01 per M. brick of four net tons weight. The duty on brick and packages is \$22 even figures. Here it seems that Mr. Greer is wrong again. He is probably writing from the standpoint in Mexico, where there are no import or protection duties, while we are writing from a standpoint inside a country which has protection, and has prospered under it, as no country has ever prospered before, until the free

trade party were elected to power.

We remember to have seen it stated a short time ago in some newspaper that just 50 years ago a condition existed in this country very similar to that now existing, and from a cause very much like that which has produced the present stagnation of business. In 1843 a compromise tariff bill, which proposed to reduce to a horizontal rate of 20 per cent. advalorem duty, had produced a depression in every branch of business then prevailing. Under these circumstances Daniel Webster rose in the Senate and spoke as any Senator might speak to-day in describing the condition of the country as it now is.

Mr. Webster said: "Mr. President, in the midst of ample means, of national and individual happiness, we have unexpectedly fallen into sore distress. Our course has been suddenly arrested. The general pulse of life is at a standstill, and the activity and the industry of the country feel a pall. The full extent of commerce is checked, manufactures suspended with incalculable injury to those concerned in them, and the labors of all threatened with the loss of their usual reward. Our resources are nevertheless, at the same time, abundant, and all external circumstances highly favorable and advantageous, such as fairly promised us not only a continuance of that degree of prosperity which we enjoy, but its rapid advancement to still higher stages. The condition of the country is indeed singular. It is like that of a strong man chained, in full health, strong in body, and all its faculties unimpaired, it is yet incapable of performing action, fetters and manacles are on all its limbs."

From this it would seem that any movement in American politics, such as proposed, to reduce tariffs in days gone by, had the same results which we find existing in our day.

GEO. B. ENGLE, JR.

Coxeyism As Viewed By One In Sympathy With the Movement.

Editor Clay-Worker:

I would like to answer the "Coxey Fever" statement that was published in the last issue of the CLAY-WORKER.

You take a man who cannot get work and his stomach is empty. The doctor will tell you there is something wrong, for it is against the nature of man to go without food, and when he does, evil results will follow.

It is this very thing that started the

Coxey movement. These men are not going to Washington to demand legislation, alone; but they are going there to right the wrongs that have been put upon the workingman by bad legislation, which has been going on for the last 21 years. Our legislation has been one sided, and the producer has not received any benefit.

As to Mr. Coxey and his generals being either "fools or knaves or both," I would like to say if our House and Senate were composed of just such men, the times through which we are passing would never have been experienced.

In regard to the Coxeyites calling themselves the unemployed, if you could look over the country and see the number of men who are out of work and cannot get anything at all to do, you would wonder there are not more of them in the Coxey army. A few years ago, Denver was making 1,000,000 brick per day, and to-day 5,000 brick are not made. The silver mines have closed down on account of the price of silver. The smelters have laid off about two-third of the men, because they cannot get ore.

Now, what are these men going to do? I suppose if they would sit down and starve, they would be gentlemen. But because they have gone with Coxey, you call them tramps. Put yourself in their place, and see how you would like to be in the situation they are in. To be sure some of Coxey's followers are tramps, but as a whole they are workingmen, and have just as good a right to the comforts of life as any one else.

As regarding anarchism, if these men don't gain their point by going unarmed and peaceably, the next time they have to defend a cause of this kind, they will not start out with a lot of barrel staves with a flag of true on one end, but they will raise up with arms that will speak for them.

General Snowden would not dine with Mr. Coxey because he thought he would have cause to meet that general in a stronger conflict. I hope such a conflict will never come to pass. But if it does, General Coxey will have lots of company.

You will oblige me by putting this in the columns of the CLAY-WORKER, as I am a CLAY-WORKER reader. Respectfully,

JOHN E. WALLING.

Denver, May 22, 1894.

TALENT is the ability to make use of the results of some genius.—*luck*.

A Familiar Voice From Over the Sea. *Editor Clay-Worker:*

There always appear to be more or less "Convention Echoes," and if your readers think these are a little late in coming in they must remember that it takes a good while for the sounds to travel across the Atlantic and the "echoes" to be carried back. As I have been buried in the pages of your most excellent "Convention Number," and looking at the life-like pictures in its portrait gallery, of the men who have been honored by the association either with official positions or place on the programme, most of whom I am privileged to number among my friends, it hardly seemed possible that I could be 4,000 miles away, and for the time being I was in spirit back in America, and in great Chicago. I regret that geographical lines deprive me of the privilege of membership any longer in the N. B. M. A. of America, but in heart and feeling I am still one of you. The conventions seem to get better with succeeding years, and the character of papers read at the late gathering is of a very high order. These papers and the discussions, which make up the convention number, form a veritable encyclopedia of information on clayworking.

I observe that Bro. Purington and others still make a bugbear of the term "vitrified," and want to substitute "annealed." Really, if these two words could speak they would say, "there is no fight between us gentlemen, if you will only let us alone, and we accomplish most when working in harmony." One of your Chicago contemporaries, after a former annual meeting, dropped the term vitrified altogether. I suppose because the term seemed to be getting unpopular and he thought he had best keep in with the spirit of the times. Many of our friends seem to forget that a brick requires to be both vitrified *and* annealed. To anneal means to temper or to toughen. A man may anneal a brick all he wants to, but if he has not first burnt it hard enough or vitrified it, it will never make a paving brick. If your readers will read over again my paper on this subject in the October 1893 number of the CLAY-WORKER, I think they will see that, as I have said there is no quarrel between these two terms, and that *both* conditions are essential in good street paving bricks.

It was a pleasure to read the able paper of Mr. Orton, on "The Technical Education of Clayworkers," and to note

the growing favor with which this subject is being received. It was also somewhat gratifying personally to note that the special branches of education which Mr. Orton considered as of most importance were almost identical with those I advocated in an article five years ago.

Well, I am sorry there is not a National Association of clayworkers on this side the water, and I do not know if there is enough fraternal feeling among Britishers to make such a thing possible, but one or two of us think there ought to be, and if such a thing should be realized, the United States will deserve all the credit for showing us the way.

For one thing I am thankful, with the CLAY-WORKER before me every month, I am able to keep "in touch" with my brethren in America, and (shall I say it?) with the most advanced ideas in the ancient art of brickmaking.

ALFRED CROSSLEY.

Comondale, Eng., April 10, 1894.

The Situation At Chicago.

Editor Clay-Worker:

When I wrote you in May, the striking brickmakers about Chicago were just going back to work under a truce, and are still at work. About ten days ago there was a meeting of the brick manufacturers and brickmakers at Blue Island, represented by delegates from the manufacturers and the men. The situation was talked over, and as there were some things which were not entirely satisfactory to all concerned, it was arranged to have a conference at a later date.

Tuesday, June 5th, there was a conference of brick manufacturers and brickmakers who selected by mutual agreement E. H. Rexford as umpire, to pass upon contentions affecting the new wage scale. Mr. Rexford is a real estate dealer with an office in this city, and lives at Blue Island. The manufacturers and the employes are still very wide apart in the matter of future wages. The condition under which the conference is being held allows the manufacturers until June 22 to effect a settlement. Thus far the manufacturers have not agreed to accept the union—the organization of which precipitated the strike. The manufacturers in their scale asked for substantially the same reductions for which they contended at the outset. On these lines a settlement will now be attempted, with fair prospects for success. All matters to be referred to Mr. Rex-

ford for settlement upon which the manufacturers and employes cannot agree.

The striking coal miners seem to be in command at present, and it looks very much as though the prosperity of the whole country were dependent upon their actions, and subject to their will and pleasure to a degree that is humiliating for the average American citizen to contemplate. Coal is very scarce in Chicago. In many factories the supplies are nearly exhausted, and if relief is not speedily obtained they will be forced to shut down. Many pressed, common and fire brickmakers are idle, while some are working along expecting to be forced to shut down their works later on.

The strike that have been inaugurated in Chicago by the plumbers, painters and brickmakers, to say nothing of the coal strikes, have done incalculable injury to the building interests in this city. The loss falls upon owners, contractors and artisans, as well as common laborers, and many of them must live upon short rations this winter in consequence of the action of the trades' unions.

The query has arisen in our mind very frequently of late as to whether "we are a nation" with strength enough to manage our affairs upon well known and well established principles of government, or whether we are a vast aggregation of cities, villages and communities, controlled by revolutionists and mobs. It seems to us that the time is near at hand when this question must come to a settlement and be settled for all time. It must be evident to all people that it is impossible that the country should prosper, as it has every right to do, if it is to be encroached upon by bands of marauders and highwaymen whenever it pleases these individuals to inaugurate a campaign. Had this country any more cause to be indignant when shots were fired at old Fort Sumter in 1861 than it has to be now at the murdering of innocent people and the destruction of private property. The cities, counties and states where these depredations are carried on will, in most cases, be forced to pay for losses as they should do. We are looking forward to the day when the American people will assume their rightful prerogatives and demand the cessation of this warfare. Stop it must, or this country which has, in the face of so many and so great disasters, pros-

pered in spite of them all, must finally fall before the withering touch of anarchy and rapine.

The ground work of the phenomenal success and the development of this country has been the close adherence of individuals to their personality, relying upon their own efforts for their success in life, and we believe that all combinations of individuals for the purpose of forming unions or syndicates are contrary to the best interests of the country, as in each case the individual loses his personal identity and places his liberty or his monied interest, as the case may be, under the control of others. The individual, whether a laboring man, an artisan or a capitalist, that can keep control of his own gains, may place his ideal as high as he chooses and work up to it; while, on the contrary, the individual who pools all his attainments with those of others can only go as fast as they go, and reach no higher point of success than they reach.

I admit that in the development of a great country like ours for the purposes of making large improvements it seems almost and probably is positively necessary that the capital of individuals should be combined to make these necessary mammoth improvements, such as railroads spanning continents and shortening distances between points, and the building of steam-ship lines, etc., where the State cannot undertake such work; but the fact still remains that the individual so placing his capital in the hands of others loses control of it and can only receive as a reward such dividends as others may secure for him.

I contend that every American citizen, from the poorest and most ignorant to the best educated and most able, can secure better results for himself than can possibly be attained through any combination.

Chicago, June 7th. COSMOPOLITAN.

What We Like.

Editor Clay-Worker:

Enclose please find \$4 for two copies of the CLAY-WORKER.

There is very little brick building in Binghamton this year, consequently the yards here are doing very little work. Our factory is situated 28 miles from here in Pennsylvania, where there are two brick yards with a capacity of 75,000 brick a day. We find the demand for brick in our territory better than usual, and think we will be able to sell all we can manufacture this season. Our trade

is chiefly in Carbondale and Scranton, which we think have not been so seriously effected by the hard times as have other localities. The soft coal strike has largely increased the demand for anthracite coal which is stimulating the anthracite coal regions. We find that there is more building than usual in the country towns. Yours truly,

THE BRANDT CLAY PRODUCT CO.,

W. S. Brandt, Sec.

Binghamton, N. Y., May 19, 1894.

A Tale of Bricks and a Busted Boom. *Editor Clay-Worker:*

As you ask clayworkers to send you any communication likely to be of interest to the trade, I adopt this method of whiling away some hours of enforced idleness, only hoping that it may be of use to you.

This is a pretty little town of about 4,000 inhabitants, which is now suffering from the effects of an aggravated case of artificial booming.

About three years ago a majority of the citizens voted that the town should be bonded for \$100,000, the money to be used to induce manufacturers to locate here. Well, the \$100,000 is spent and the scheme has proven a sickening failure.

This community is in exactly the same condition and frame of mind at present that that immortal individual was, who tried to lift himself by his bootstraps. We have, however, about \$200,000 worth of experience, so we are really ahead after all.

At the time the "boom" commenced booming, a brickyard was in operation here in which your humble servant was interested. We had a nice little yard, for a nice little town. We had a steam power Quaker machine, a good engine and boiler, double soak pits, with elevator, racks and pallets enough to dry all output, first-class tools of all kinds, and, with all, a *practical knowledge of burning bricks*. We sold bricks at \$6.00 and \$8.00 per thousand, and we could make an average of 25,000 per day for at least 100 days each year, if necessary.

When the "Board of Trade" met one day, the question of building material came up, then bricks was mentioned, at which a gentleman who operates a small, very small, tobacco shop and whose wife is an enterprising milliner, rose to state that after a thorough investigation, he felt warranted in saying that the facilities for the manufacture of bricks in this town were inadequate

to meet the demand to be created by the "boom." That all the bricks now made had to be made *out of doors*, and consequently could only be manufactured in summer. That the method of burning was certainly old fashioned, for he had been away from home somewhere and and seen bricks burned in some kind of patent "oven," and that he knew that bricks to be first-class should be burnt in "ovens" anyhow.

Another member got up and said that he didn't pretend to know anything about making bricks, but he did know that the price asked for a thousand bricks in this town was awful! and that we couldn't expect manufacturers to locate here if they had to pay two prices for bricks.

So they induced some local capitalists to interest themselves in the manufacture of bricks. They needed some one to manage the concern, so they went back into the country some considerable distance, and got a saw-mill man to act as superintendent.

This man had failed as a saw-miller, had started in at that business spread-eagle style, bought, or rather agreed to buy, all the standing timber in this part of the country, and then "busted," leaving the timber still standing. He also failed as a building contractor, etc., so I conclude that the Brick Manufacturing Company must have selected him to manage their works because he needed a job bad, and because they thought most any darn fool could make bricks anyhow.

They also bought several thousand dollars worth of machinery, which the agent said would make 60,000 bricks daily, the real capacity of which is 18,000. They also erected a patented kiln which, in their hands, is worthless. In fact, the miller declares he will not use it any more, because "It is good for nothing," and oh! how they rub it into that poor kiln man!

They now have quite a large stock of soft, salmon brick on hand at \$4.50 per thousand. The big works are in a state of "innocuous desuetude," but the little, old yard has to furnish all the bricks that are used here, or ninety-nine one hundredths of them, at \$5.00 per thousand. Those \$4.50 soft salmon keep the price down.

We told them how it would be, but they thought we lied. They were like the doctor the gentleman told about in the last N. B. M. A. Convention. We told them they couldn't market 1,000,000

bricks a year here, even if they made them. But they thought we lied. We wouldn't care, if we didn't have to sell bricks at \$5.00 per thousand. It is so easy for the price to get down and so hard to get it up.

COUNTRY BRICKMAKER.

CHIMNEYS.



IF THE architect had not been used to placing chimneys in his buildings he would say that in bringing them out through the roof in the various parts of the structures that he has to design that they would interfere with the architectural effect, he would affirm that chimneys were altogether inartistic, and for that reason, if for no other, could not be tolerated. In truth chimneys are in all respects highly artistic if properly handled and add a great deal to the beauty of the buildings; yet as above stated, we can readily understand that if chimneys should be born into the world as a new problem in building that they would be cried down for the reasons given. Americans do not make as much of chimneys as do most of the builders of European countries. The builder is not sufficiently honest about his chimneys. Either he gives them undue prominence, over-



loads them with decorated material, or he treats them as though he were afraid of them. The chimneys of Amsterdam are beautiful indeed and add greatly to the picturesqueness of that city. Likewise in Paris, while they are there treated in a way somewhat more decorative than is common to the rest of the world, they are yet handled in a very

honest way, no effort being made to conceal them, and their decorative work is that of artists. A view of the roofs of either of the cities named is highly picturesque and would give great satisfaction to one of æsthetic tastes even if he did not see the rest of the buildings. There is often the idea that the chimney should maintain a symmetrical relation to the rest of the building. However, in no section of the world do we find a high regard for symmetry in chim-



neys successful; on the contrary, we find the most beautiful chimneys in that part of the world where they are allowed to have largely their own way; coming out of a building in unexpected places and unexpected ways and decorated by the hand of an artist.

The chimneys shown in the cuts are French examples. They are picturesque in form, ingenious in construction and altogether satisfactory as such things go. Any good bricklayer could construct either of these chimney tops.

M. F. Williams & Co., St. Louis, Mo., in a recent letter say: "In these depressed times, we modestly report the following sales: A complete outfit to Rome, Ga.; a pulverizer to Hannibal Press Brick Co., Hannibal, Mo.; supplies to Cote Brilliant Press Brick Co., St. Louis, Mo.; Herman Brockschmidt, St. Louis, Mo., St. Louis Pressed Brick Co., St. Louis, Mo., National Brick and Quarry Co., St. Louis, Mo., Illinois Supply Co., St. Louis, Mo., Turner Brick Co., Turner, Ills., Ridgway Brick and Tile Co., Ridgway, Ills., Sparta Press Brick Co., Sparta, Ills., H. C. Dunn, Erie, Pa., J. M. Harry & Co., Dallas, Tex., John Kloess, Belleville, Ills., Mackey Brick and Tile Co., San Antonio, Tex., and other prospects good.

THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK
MANUFACTURERS' ASSOCIATION OF THE
UNITED STATES OF AMERICA.

PUBLISHED MONTHLY.

INDIANAPOLIS, JUNE 15, 1894.

Entered at the Post-Office at Indianapolis,
Indiana, as second-class matter.

TERMS OF SUBSCRIPTION:

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| One copy, one year (if not paid in advance) | | 2.50 |
| Six copies | - - - - - | 10.00 |
| Ten copies | - - - - - | 15.00 |

Foreign subscriptions 50 cents additional.

Subscribers when ordering a change of
address should give both the old and the new
address.

ADVERTISING RATES furnished on application.

Correspondence on all subjects of interest
to Clayworkers is solicited. Communications
from practical men will always be welcome.
Address all communications to

T. A. RANDALL & CO.,
5 Monument Place. INDIANAPOLIS, IND.

THE WEALTH OF CLAY.

In the western part of this state, in the sections given up to coal mining, people have discovered a new source of wealth. The citizens of Brazil say that they expect to get as much money out of their clay as they have out of their coal. Factories have been started which are manufacturing various kinds of special clay products such as vitrified tile, hollow brick, fire proofing, flue lining, paving brick and other special products of that general character. The clay is of most excellent quality and a new and relatively profitable industry has grown up in that section. The clay is of proper quality for making roofing tile and the near future will see an energetic movement in that direction. We are only just beginning to realize the wealth of our clay beds. With added knowledge and the campaign of education among the people we may expect to see yet larger opportunities for added wealth to the individual and as well to the country at large.

COXEYISM.

We give in another column a communication from Mr. John E. Walling, first, because those who differ from the CLAY-WORKER are, to the extent of our available space, entitled to a hearing, and, secondly, that our readers may have access to one of the ablest defenses

of Coxeyism that can be produced. Mr. Walling will, we are sure, indulge us in a word of comment. To us, it seems that he concedes all that we alleged against this strange movement.

Of course, there are unemployed men, but does a march to Washington furnish them remunerative employment? There is some exercise in it and a great deal of exposure but no compensation. Their rations, by the way, are furnished by working men and women who have not had, on an average, more remunerative wages than these travelers. Who is benefited by the movement? No sane man imagines that the presence of a million of men in good health, living off of charity would influence congress one way or the other.

Mr. Walling states a case. A million of brick were made in Denver a few years ago to less than five thousand now. Can congress create a demand for brick in Denver by any possible legislation? A painful truth connected with this bit of local history is, that at least three-fourths of the bricks laid in those booming years are not now, and never have remunerated the men who paid the bills finally. The brickmaker and the bricklayer and all intervening forces got paid for their labor, while millions of bricks lie snugly imbedded to-day in towering walls without a profitable tenant within and the houses themselves have passed from the ownership of the enterprising "capitalists" who built them into the hands of widows and orphans and savings banks, who loaned the money that went into the hands of the laborers. Can Coxey and his men, by marching and camping, make things any better? No possible legislation can fill those capacious stores and splendid residences with thrifty tenants.

Mr. Walling tells us that silver mines are closed with a train of evils following, because silver has become cheap. Can congress restore the old price of silver? Wheat is cheap too. Can congress by legislation restore the old prices of wheat? And right here develops the inspiration of Coxeyism. Because in obedience to the law of supply and demand which is as inexorable as the law of gravitation, the price of silver is low, the owners of the mines quit business, and tens of thousands of men are out of employment, and they leave home to live off farmers who must sell wheat at less than half its former value, while the farmer adjusts his wants to the new conditions and sows larger fields or

turns his attention to raising chickens, or something else more remunerative than wheat at present prices. The thrifty farmer keeps pegging away. If he can't get a dollar a bushel he takes fifty cents, and evens up somehow, in the end, while Coxeyites fix an arbitrary price for their products, and if they can not get that, they tramp.

Finally, Mr. Walling, in defending Coxeyism, states clearly its ultimatum: "If they cannot gain their point by going unarmed, the next time they will start out with arms that will speak for them." There would be no significance in their movement if it did not contemplate this. Of course they can not create wealth by "peaceful" marching. How they can with arms, no one can tell but Coxey himself.

The situation is a serious one. While the frugal and patient millions are adapting themselves to the inevitable conditions, there are many thousands who assume that they must live whether others do or not. Some will neither work in the mines nor let others work at better wages than they are making now, and some will not make brick or do anything else unless the price of labor suits them. We thank Mr. Walling for substantially confirming our position. Coxeyites are either fools or knaves. Those who contemplate the ultimatum are knaves, and those who expect to make an honest living by marching are fools.

ONE WAY TO ENCOURAGE COMPETITION

When one goes to the office of a manufacturer of a special clay product, say, of roofing tile, floor tile, or some other product of like character, and asks if he may be allowed to go through and inspect the works, and is told that visitors are not allowed in the works, it makes one all the more curious to see what is being done. It is natural to suppose that the establishment is possessed of some rare trade secret which the rest of the world has not. The idea naturally follows that they are making much money. In their knowledge they have a monopoly. It is the most natural thing in the world that people should then wish to know their secret. It is very difficult to hide a light of this kind under a bushel. In truth, people exaggerate the brilliancy of what they cannot see. There is a high fence around the works, within which none but the initiated may pass. The product may be seen as it is shipped

away, bearing out the impression that it is a great business, that everything is moving along easily and that there is nothing to do but to make the tile by this secret process, and thus pass smoothly on to fortune. This is the impression made by the air of the secret and it is very misleading, however natural.

BEHIND THE FENCE.

How different it would seem could one view the works from the other side. The writer once visited such a plant and not knowing that visitors were not forbidden, went about through the different departments and was thoroughly amazed by the signs of wear and tear upon the capital invested. The great scrap heaps of broken tile were alone sufficient to dampen the ardor of any prospective investor. He saw there the record of many experiments, expensive parts of the plant abandoned, much rejected material, and all together a record of unprofitable investment. It would discourage the most sanguine capitalist to walk through the establishment. However, he is not allowed to walk through it. It is only through the result of accident that one knows the real state of affairs.

The capitalist who knew just what this concern had gone through might not care to risk his money in the same way, but he does not know it; he is encouraged by their secret, and thus it is that as soon as one is refused admission to an establishment of this character, he immediately has a strong desire to enter into business competition with them, to divide the profits. Methods of this character encourage, rather than discourage competition. People imagine only one side of the proposition, that of profit. It is a truism that on general principles those who have the least to conceal from the world are the most anxious to conceal it. The most successful establishments for manipulating clay are not the ones that are secret in their mechanical methods.

MINERAL PRODUCTS OF THE UNITED STATES.

We are indebted to Hon. Daniel S. Day, Chief of the Division of Mining Statistics and Technology, for advanced proof of the mineral products of the United States for the ten years ending with 1893. The report is full of interesting figures, the details of which we cannot give. More than fifty "minerals" are tabulated with the increase and de-

crease of their production during the decade. One item is of more than passing interest. The metal tin, does not appear before 1891, when, under the impetus of protection, it went up to 162,000 pounds, but it fell in 1892 to 8,923 pounds, and in 1893 it fell to 1,788.

The philosophy of these phenomena is not given in the report, and we do not care to discuss it here. It will be enough for our readers to know that tin products have never been so cheap as now. Though the output of several articles have largely decreased in the ten years taken, the aggregate increase has been great.

From an aggregate value in 1884, of \$413,989,105, the aggregate in 1893 reached \$609,817,495, which indicates a healthful condition of our mining interests, and the government does well to gather and preserve these statistics.

A WISE COURSE.

Advertising cuts a large figure in most lines of business at this time. A few concerns—a very few—give this department of their business the same intelligent, careful attention that belongs to the successful management of the general undertaking.

It is lamentably true that the advertising department of any business is usually the last to be systematized and given thoughtful business attention. Those of the advertisers in the CLAY-WORKER who have given the subject careful attention are aware that we have perfectly covered the field in which they have been seeking to develop their business. They know that they have been placed before the trade as well by us as though there had been a dozen journals in the field. The manufacturer who has machinery to sell has been brought in direct and repeated contact with the buyer at moderate cost. With a dozen journals in the field, the work could not have been done better though done at a very much greater cost.

Nothing in the way of competition could have excited this journal to any better efforts. We have absolutely reached out in all directions. If there is an able writer on subjects pertinent to this journal who is not represented in its columns, we do not know where to find him. No effort has been spared to get the best and to distribute it broadcast in the most effective way possible. However, we have never felt inclined to indulge in extravagant expenditures for

mere mechanical effects. It would not pay us or our patrons to print the CLAY-WORKER on gold leaf. We have been content to give clayworkers a first-class magazine. That we have succeeded in this, the CLAY-WORKER itself is the best evidence. While it is in no sense a cheap paper, it has never taxed the advertiser, who pays the bills, for nonessentials. In this, as in other details, we have followed a wise conservatism, giving the greatest real value for the least cost. We feel confident that our patrons appreciate the wisdom of our course. The commendatory letter on page 659—and we have many similar—confirms our judgment.

A SIMPLE REQUEST, BUT IMPORTANT.

If our readers will simply write the words "CLAY-WORKER" on the margin of their letters to advertisers, the latter will consider it a favor, for they like to know the source of inquiries for circulars, etc.

ALWAYS IN FRONT.

THE well earned popularity of the Simpson Press has been due to a determination on the part of the manufacturers to give the brick-making public a perfect machine, or as near so as mechanical ingenuity and a thorough knowledge of brickmaking in all its branches, will permit. The result of this high resolve is a press that has not been excelled in the essential requirements of a perfect article.

The presses are running throughout the length and breadth of the United States and Canada. Many of them have been called upon to run day and night for months at a time, and the satisfaction expressed by their users must certainly be gratifying to the Simpson Company, inasmuch as in numerous instances, duplicate and triplicate orders have been given; hence the wonderful record attained by this press.

The Simpson Brick Press Company, manufacturers of this machine are prepared to construct and equip plants of any capacity. Not a stone is left unturned in their efforts to keep their machinery in the front rank, and purchasers of anything sold by this company may always be sure of its excellence.

For further information see ad. on page 629, or address The Simpson Brick Press Co., 415 Chamber of Commerce Bldg., Chicago, Ills.

AFTER THE PANIC IS OVER.

BY WILBER GRAHAME.

SAID Brown: "Some year when the crops are good,
And business is on the rise,
I'll pitch my fortune with Neighbor Hood,
And, like him, will advertise."

SAID Smith: "If ever this panic's past,
And I am still on deck,
I'll turn a new leaf over the last,
And trust to the press a speck."

JONES said: "I will cancel my contracts now,
The times are so very bad,
The cost takes up such a part, I trow,
Of the profits I might have had."

SMART Green replied: "Just give me, please,
A write-up or two, and when
I find I am getting returns from these—
Well, drop in and see me then."

* * * * *

BBROWN still is waiting a rise in trade,
Poor SSMITH is out of the race,
GGREEN's "ad." in the SSHERIFF's list displayed,
Is bringing crowds to his place.

JJONES cleared up his desk, for his work was done,
But before he closed the lid,
He found the "ads." that he did not run
Cost more than the ones he did.

HHOOD weathered the panic all undismayed,
Sole monarch of all survivals,
For his advertising had held his trade,
And captured that of his rivals.

— Inland Printer.

THE VOICE OF THE TILE.

BY M. C. MEIGS.

IAM only a hole in an humble vocation,
Yet I greatly control your civilization;

I am very tenacious, and hard as a stone,
And am like old Horatius in holding my own;

So lay me down, keeping me straight in the ditch,
And, while you are sleeping, I'll be making you rich.

Every Farmer of pride dearly loves to provide
For the future—the son and the daughter;
So give me the chance, and I'll greatly enhance
Every acre I drain of its water!

And here's my great beauty—I'm always on duty,
Out of reach of the "Bulls and the Bears;"
And when you're in your grave I'll continue to slave
For your children—their children—and theirs!

My habits are good—I require no food!—
(My joints are all made without mortar)
And I always abstain when deep in the drain,
From everything stronger than—water.

If your land is too wet, and you're burdened with debt,
And encumbrance begins to accrue,
Obey Nature's Laws!—by removing the cause,
Drain your farm—or—it will drain you.

'Tis so foolish to plant where the goose and the brant
Might paddle from March to September;
You might as well sow on a November snow,
And expect it to grow—in December.

Some farmers are falling, and weeping and wailing,
And blame the good Lord without reason!
When, if they would stop sowing seed in the slop,
They might raise a good crop every season.

Most farmers lament the money they've spent
For things only made to beguile;
But never as yet did a farmer regret
The money expended for tile.

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"BRICKMAKING AND BURNING,"

J. W. Crary, Sr., \$2.50

"TABLE OF ANALYSES OF CLAYS,"

Alfred Crossley, \$1.00

"DURABILITY OF BRICK PAVEMENTS,"

Prof. I. O. Baker, \$.25

Mailed, postage free, on receipt of price. All of
them to one address for \$5.50. Address T. A. Randall
& Co., Indianapolis, Ind.

ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and Belleville, Ill.

ESTABLISHED 1859.

RED Pressed and Ornamental Brick of unsurpassed quality
a specialty and can be furnished in any desired quantity.
Builders who desire the finest pressed brick at reason-
able prices, are requested to write for illustrated catalogue and
price list.

Rock-faced and Roman brick, red and brown, granite,
mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

ANTHONY ITTNER, Telephone Building, ST. LOUIS, MO.

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| Michigan Brick & T. Mach. Co..... | 695 | Wellington Machine Co..... | 706, 707 |
| Means, Jas. & Co..... | 685 | Williams, M. F. & Co..... | 536 |
| Newell Universal Mill Co..... | 696 | Wiles, A. M. & W. H..... | 688 |
| Nolan, Madden & Co..... | 708, 709 | | |
| Ohio Machine Co..... | 679 | | |

Brick Kilns and Dryers.

| | | | |
|---|-----|---------------------------------------|-----|
| Alsip, Wm. & S. H..... | 692 | Phillips, S. G..... | 682 |
| Bickel Bros. Contracting Co..... | 691 | Reppell, L. H..... | 692 |
| Centinela Brick Kiln & Drier Co..... | 635 | Sercombe, Osman & Warren..... | 634 |
| Chambers Bros. & Co | 719 | The Huyett & Smith Mfg. Co..... | 637 |
| Columbian Pottery & Brick Kiln Co | 677 | The F. D. Cummer & Son Co..... | 636 |
| Eudaly, W. A..... | 633 | The Standard Dry Kiln Co..... | 638 |
| Kaul, Carl F..... | 693 | The Sharer Dryer & Cons'r't'n Co..... | 622 |
| Morrisou, R. B. & Co..... | 632 | Wolff Dryer Co..... | 722 |
| Pike, E. M..... | 683 | Youngren, P. L..... | 691 |
| | | Yates, Alfred..... | 680 |

Brick Yard Supplies.

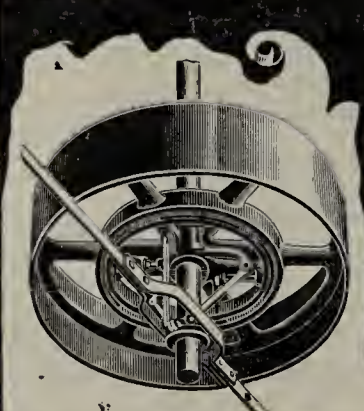
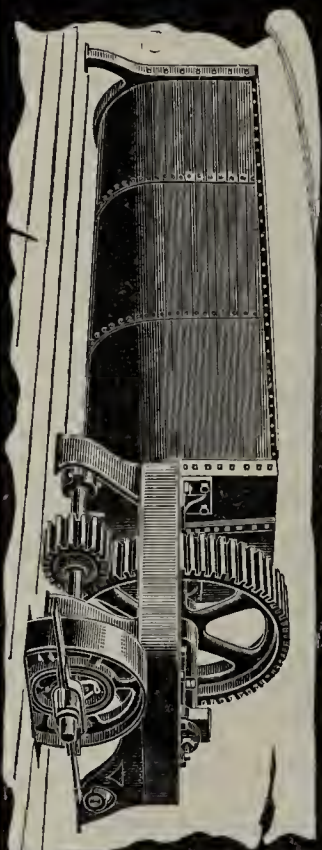
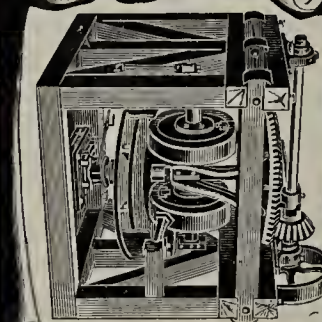
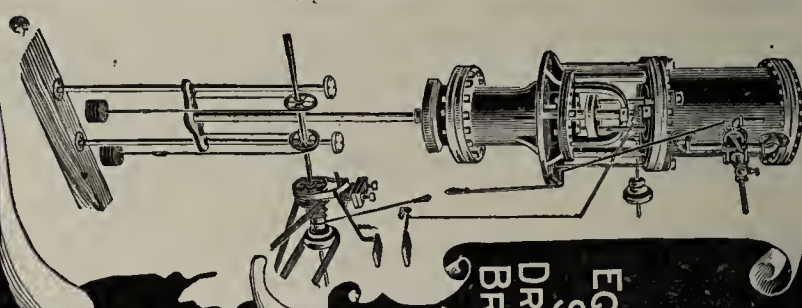
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|--|-----|---|-----|
| Arnold, D. J. C..... | 687 | Newton, A. H..... | 680 |
| Blum, J..... | 677 | Chas. Pickles..... | 677 |
| Borden, Selleck & Co..... | 685 | Steele, J. C..... | 677 |
| Buck, J. A..... | 682 | Turner, Vaughn & Taylor Co..... | 684 |
| Coldewe, G. & Co..... | 685 | The Ball Bearing Car Wheel & Mfg. Co..... | 689 |
| Carnell, Geo..... | 689 | The Harrington & King Perforating Co..... | 623 |
| Illinois Supply & Construction Co..... | 677 | The J. M. Ervin Special Machine Co..... | 688 |
| Lake Co. J. H. & D..... | 681 | The Walworth Run Foundry Co..... | 688 |
| Marion Steam Shovel Co..... | 696 | Wagoner, M. V. B..... | 686 |
| Mey, F. H. C..... | 690 | | |
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| Carlin's Sons, Thomas..... | 697 | Nor h American Phonograph Co..... | 682 |
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| Clayton, William..... | 682 | The British Clay-Worker..... | 681 |
| Dean Bros. Steam Pump Works..... | 681 | The Union Hardware Co..... | 684 |
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| The McLagon Foundry Co.—Brick Machinery..... | 720 |
| Standard Dry Kiln Co.—Brick and Tile Drier..... | 638 |
| The Akron Fire Brick Co.—Building Block..... | 676 |
| J. M. Ervin Special Machine Co.—Brickyard Supplies..... | 688 |
| The Huyett & Smith Mfg. Co.—Brick Dryer..... | 637 |
| The Anderson Foundry & Machine Works—Brick and Tile Machinery..... | 705 |
| Jonathan Creager's Sons—Brick Machinery..... | 689 |
| Michigan Brick and Tile Machine Co.—Brick and Tile Machinery..... | 695 |
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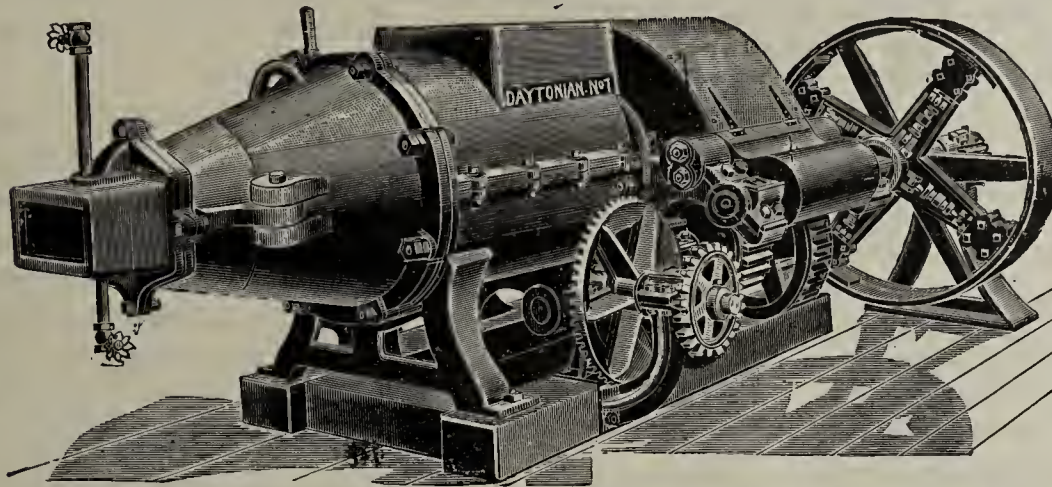


STEVENSON & CO.
WELLSVILLE, O. U.S.A.

MANUFACTURERS OF COMPLETE MACHINERY.

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES,
STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES,
DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR
BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS &
ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFING,
BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS
MANUFACTURED & CARRIED IN STOCK WITH ALL MILL
& FACTORY SUPPLIES.

❖ RAYMOND'S ❖

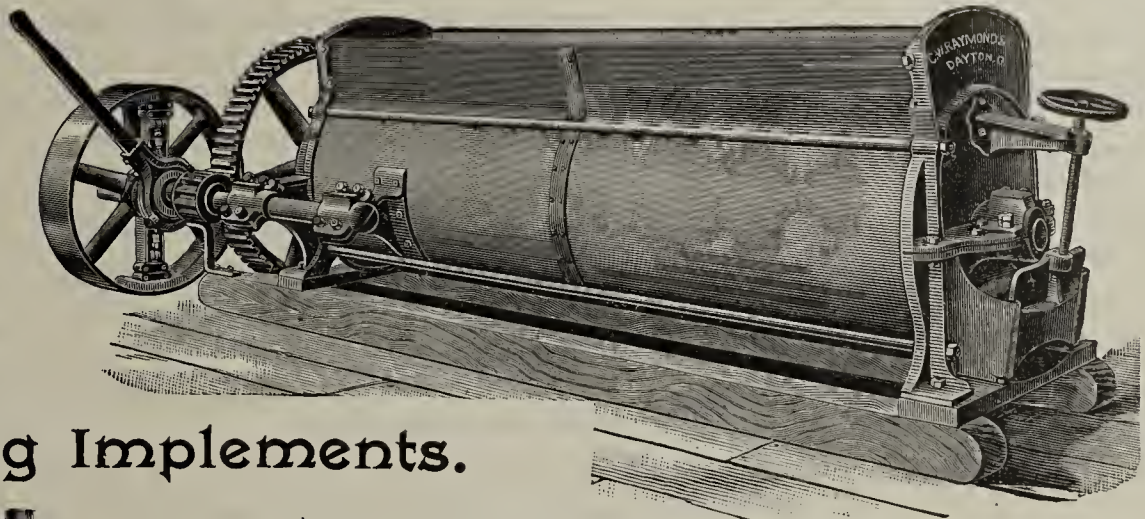


BRICK

Brick Machines:

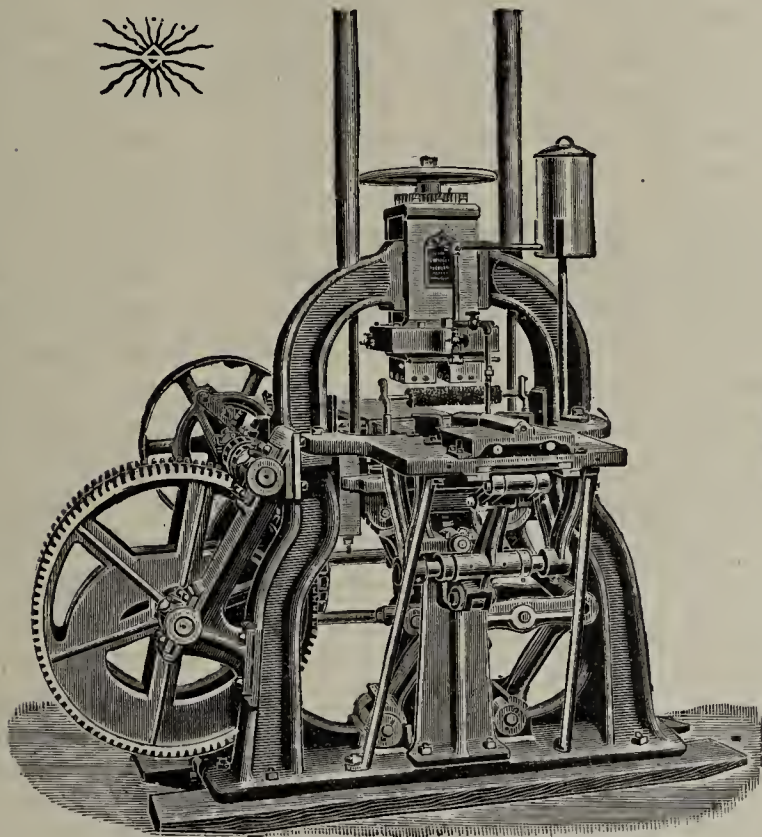
Cutting Tables,
Pug Mills,
Revolving Screens,
Roller Crushers,
Disintegrators,
Dry Pans, &c.,

MACHINERY



A COMPLETE LINE OF

Clay Working Implements.



The Columbian Special Re-Press.

*Re-Presses for Red Brick,
Re-Presses for Fire Brick,
Re-Presses for Paving Brick,
Re-Presses for Ornamental Brick,
Re-Presses for Roofing Tile,
Re-Presses for Sidewalk Tile.*



THE LARGEST LINE OF
RE-PRESSES
IN THE WORLD.



C. W. Raymond & Co

DAYTON, OHIO.

... SEND FOR CATALOGUE ...

EDITORIAL NOTES and CLIPPINGS.

A new brick plant will be established at Janesville, Wis.

Jacob Sutton, Castleton, Ind., wants a second-hand Auger tile mill.

Wm. Roberts of Pickens will establish brick works at Weston, W. Va.

David Davidson, Saratoga, N. Y., has commenced work on his brickyard.

The Hamilton (Ohio) Brick Co. has been incorporated. Capital stock \$50,000.

McMurry's brickyard, Olean, N. Y., was damaged to the extent of \$1,500 by flood.

The pottery of J. G. Swahn & Son Minneapolis, Minn., was partly destroyed by fire recently.

Eugene Strickland has leased the yard of Strickland & Edwards and will operate same this season.

Frank Dudenhoeffer, Erie, Pa., will put in another brick machine, thus increasing the capacity of his plant.

If you want to buy or sell a second-hand machine, read or advertise in our "Wanted, For Sale, Etc." columns.

The Indiana Clay and Specialty Co., Shoals, Ind., has been incorporated for the manufacture of brick and tile.

J. W. Turner, Lincoln, Neb., writes that he intends to embark in the brick business. May success attend him.

Oliphant & Pope, Trenton, N. J., have purchased land on which to erect a plant for the manufacture of enameled brick.

John Schwab, of Loretto, Pa., has secured the contract to furnish 2,000,000 brick for a new convent to be built at Cresson.

Garret G. Allison, until recently an extensive brick manufacturer of Haverstraw, N. Y., died at his home in that city May 29.

A new company known as Standard Brick Co., has been formed at Berlin, Conn. C. N. Dickinson, Hartford City is president.

Jefferson City, Mo., according to the *Tribune* of that city, is in need of another brick plant, those now there not being able to supply the demand.

Lenhart & Johnson, Fultonham, Ohio, will make extensive improvement in their tile plant and among other things put in some new machinery.

The Richmond (Va.) Brick and Tile Co. will open up a new yard near Petersburg, that will give employment to something like fifty men.

A brand new and attractive ad. appears on page 688 that will interest brickmakers in general and dry press manufacturers in particular.

Jeffersonville, Ind., is to have a new pressed brick plant. Prof. P. P. Stulz has had samples of clay tested and which has been pronounced to be of extra fine quality.

Clay suitable for street paving brick has been discovered at Hanover, Pa., and a company will be organized for the purpose of erecting a plant to manufacture pavers.

The Mound City Brick Works, Moundsville, W. Va., have made extensive improvements in the plant and will soon start up again. It is now under the management of Mr. Hodgeman.

The Mendota Tile Co., Mendota, Ills., is thinking of changing their method of burning from coal to crude oil, and will be pleased to receive bids for furnishing the necessary tank, piping, etc.

The Atlanta (Ga.) Terra Cotta Co., has been incorporated for the manufacture and sale of terra cotta, brick, etc. V. H. Kriegshaber, A. Sohns and C. Baertschy are the directors and the capital stock is \$12,000.

A fine bed of fire clay has been discovered near Redwood Falls, Minn., and a company will be organized to manufacture fire brick. A. Edlund, W. A. Stowell and G. E. Stowell of Minneapolis are interested.

Robert Lane, an employe at the Pardee Terra Cotta Works, Perth Amboy, N. J., while feeding clay into a crusher fell forward into the mill, crushing both arms. The left arm being so badly mashed as to require amputation.

Mr. P. Hanson, of Blooming Grove, Tex., writes for sample copy of *CLAY-WORKER*, as he says he is investigating brick machinery with a view of putting in a complete plant, and needs the *CLAY-WORKER* to aid him in selection.

The strike among the brick yards on the Hudson is over, the men having returned to work at the prices offered them at the beginning of the season, with a promise of an increase in wages as soon as the price of brick are advanced.

A valuable deposit of clay has been found on property owned by Dr. C. S. Carter, Leesburg, Va. A stock company has been organized and steps will be taken at once toward the erection of an immense ornamental brick plant, under the name of the National Brick Paint and Mfg. Co.

The Greentown Pressed Brick Works, Greentown, Ind., has been organized with a capital stock of \$40,000. They will erect a modern plant with a daily capacity of 25,000 and expect to be ready for manufacturing brick by the first of August. H. L. DuBois will have charge of the plant.

The Kensington Brick Co., New Kensington, Pa., recently equipped their yard with Simpson Presses, and the demand for their product has been so great that they have been obliged to order another Four Mold Press from the Simpson Company. This is only one in many instances of the success of this press.

The Bonnot Co., Canton, Ohio, write that they are progressing nicely in the construction of the Cleveland Brick Co's plant, which is to be one of the finest plants in the country, as it possesses some conveniences well worthy special notice. They request us to say that parties desiring pictures of this plant can obtain same by addressing The Bonnot Co.

The Geo. Baur Brick Co. has recently bought the brickyard formerly owned by the Pomeroy & Mason Brick Co., at Mason City, W. Va., and have put in one of the "Ajax" Brick Machines and a "Big Four" Repress, also a pug mill, dryer cars, etc., manufactured by the Ohio Machine Co. See their ad. and cut of "Ajax" on page 679. This brick plant is now turning out the finest quality of vitrified paving brick and building brick, which they find ready market for without any difficulty.

The St. Rock (Canada,) Pressed Brick Co., was organized in May and soon after sent a committee composed of J. A. U. Beaudry and R. L. deMortigny to the "States" to examine into the merits of the various press brick machines. This they did thoroughly, visiting many places where machines could be seen in operation. They finally landed in St. Louis where they spent several days very profitably going about among the enterprising brick manufactories of that city. Mr. Beaudry said to the writer that he liked St. Louis better than any of our cities. Her press brickmakers he thought were ahead of any he had seen elsewhere. The gentlemen concluded their investigations to their own satisfaction and closed a deal with the Ross-Keller Brick Machine Co., for an outfit to include one of their largest presses. They hope to get their plant in operation in a short time and expect to have a model modern plant.

Illustrations

JUNE IDYL.

I.

Hail! June, gentlest of twelve,
Within thy smiles we delve.
With thy fair cheeks rose-glow reflecting.
May, tearful paradox,
Toying with Winter's locks—
Pass'd to oblivion—none objecting.

II.

Whether sunshine or tears,
Mark the months or the years,
Clay-workers withal ar'nt repining.
Much good water they need,
And warm sunshine. Indeed,
Each cloud has its silvery lining.

III.

From the storm's strong pelter
Must mortals have shelter,
With content and comforts alluring.
And lowlands must be drained,
That the soil may be grained.
Food, raiment and profit assuring.

IV.

Then Clay-workers of means
Must have the best machines
To fill all demands for such duty.
And he who makes the best
Will then knock out the rest,
Should merit be enhanced by beauty.

V.

The persimmon is high
Many poles striking "nigh,"
But, if you are hoping to knock it,
In spite of tongue and vim
Your chances yet are slim,
Without good pictures in your pocket.

VI.

Pictures good—yes, and bad
Are now become the fad.
But, here we drop a word of warning,
'T were better none at all
Than "nightmares" that appall.
The time for those are passed—'tis morning.

BAKER-RANDOLPH CO.,

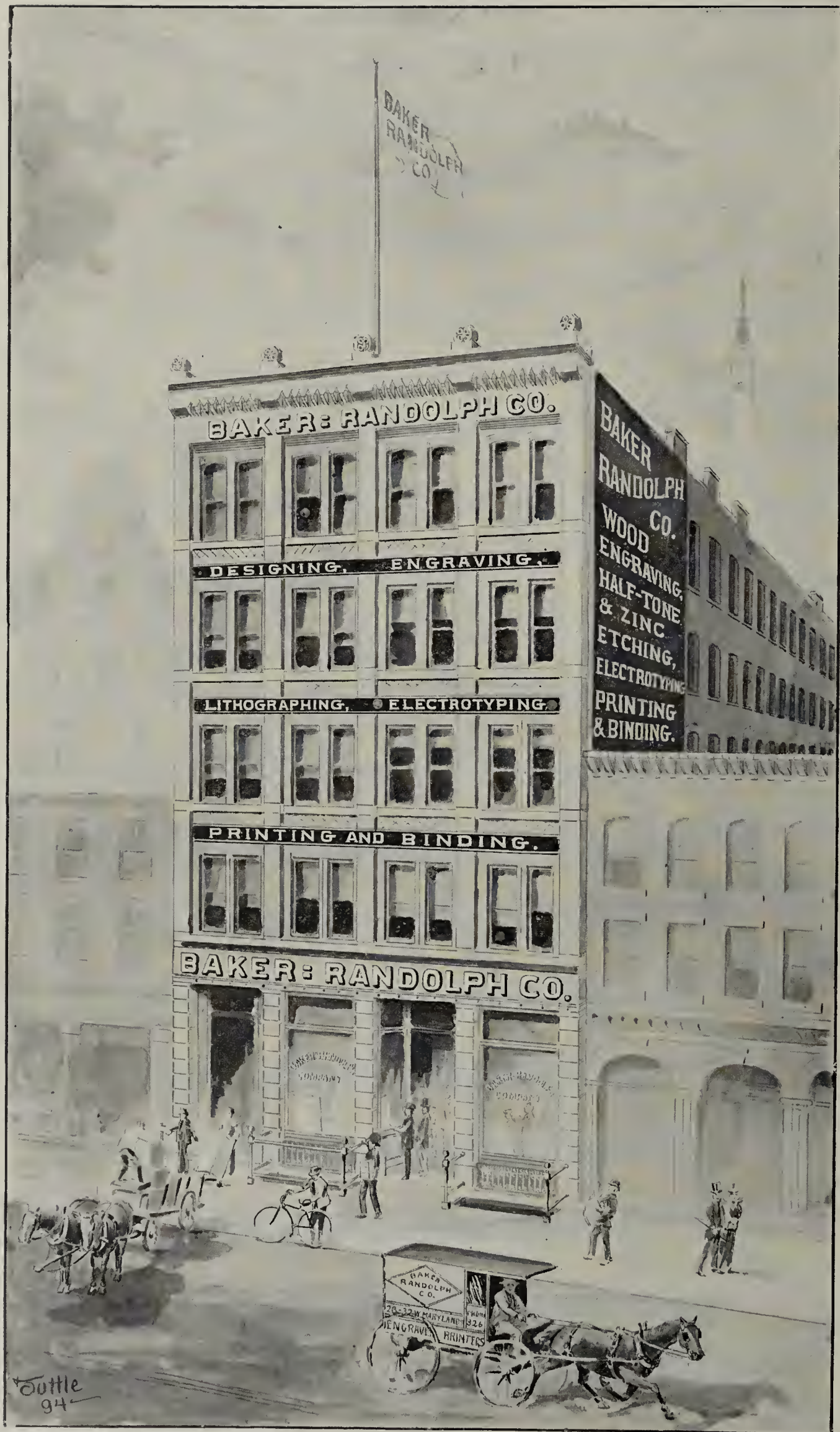
INDIANAPOLIS, IND.,

IS ESPECIALLY EQUIPPED FOR ILLUSTRATING, PRINTING AND BINDING ANYTHING
THAT MAY BE DESIRED BY THE MAKERS OF

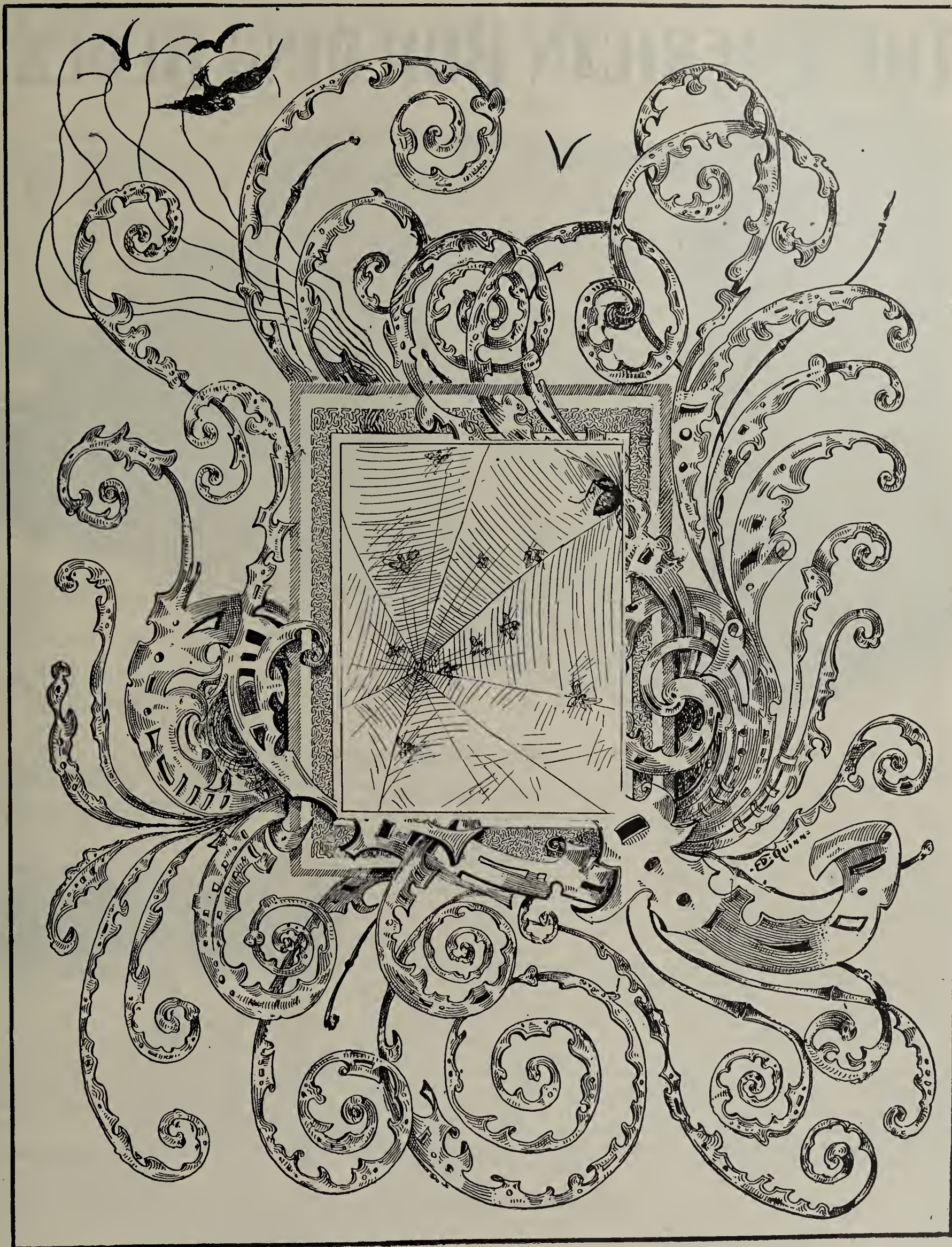
CLAY-WORKING MACHINERY.

VII.

For poor illustration
Brings sure ruination
To all concerned, whether high or low.
To know the WHY and HOW
Are artists' duties now,
Otherwise, from us they have to GO.

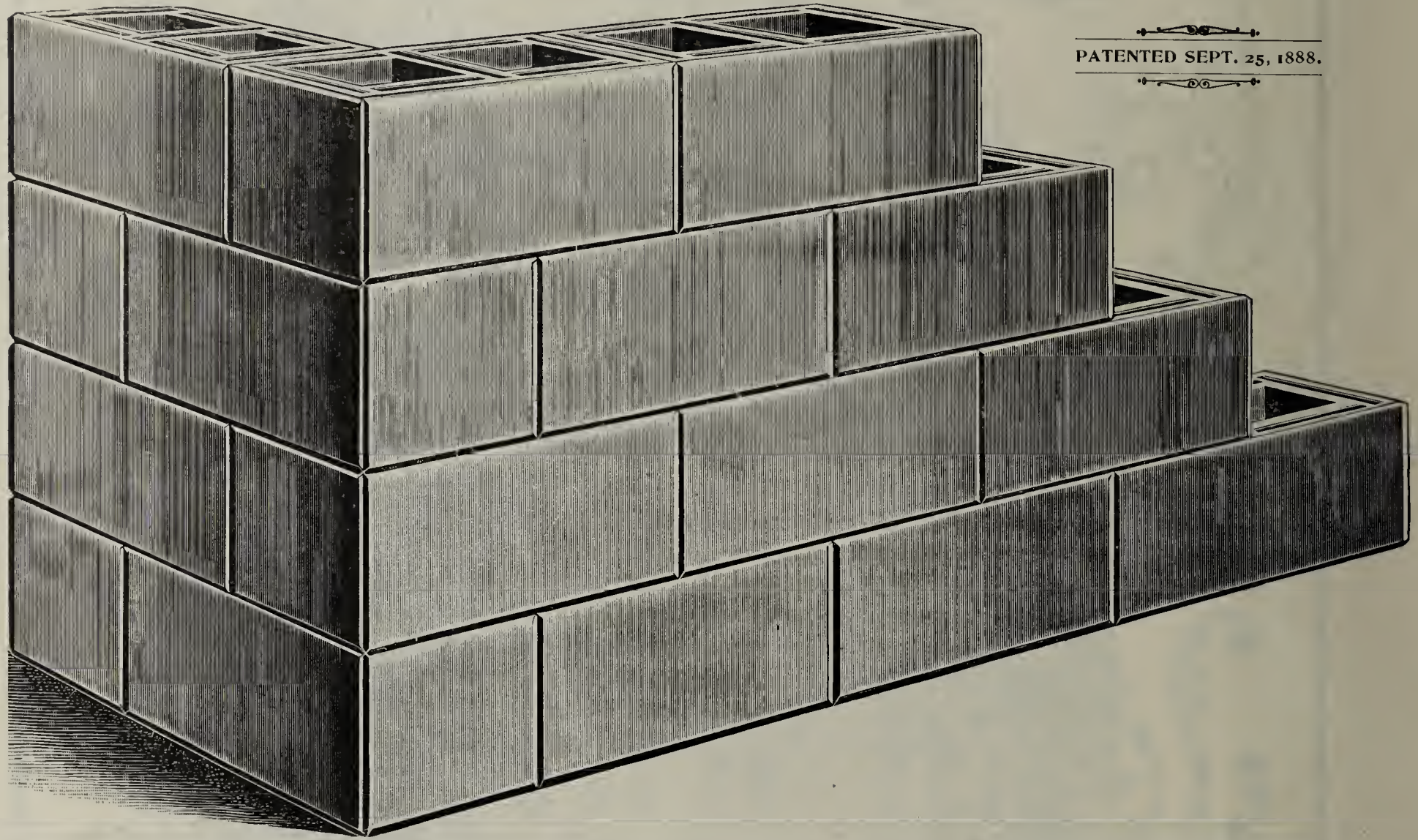


Dottle
94



BRICKYARD SPIDER:—(Vanishing)—“Business may be dull with Boss Shut-Down, but I am satisfied—plenty of flies here. I’m getting too fat for summer. Guess I’ll go out for a little exercise, and see how Cousin Webber is making it on the back inside cover page.”

THE AMERICAN BUILDING BLOCK.



PATENTED SEPT. 25, 1888.

WE would respectfully call the attention of architects, builders, capitalists and clay workers to this new building block, which for general use for building purposes, from foundation to top of building, is destined in the near future to supersede all other building material for building of walls. Do not confound this block with the hollow building block made on an auger machine. It is entirely unlike it in every respect. Instead of an open end, unsightly and crooked piece of material, one of beauty, strength and symmetry is produced, with corners nicely beveled, giving it the appearance of a nicely dressed stone. The block is hollow vertically, thus allowing a circulation from foundation to the top of the structure, insuring coolness in summer, dryness at all times, and warmth in winter.

After studying out this block, we were confronted with the fact that make it successfully we must keep on the line of invention and construct a press that would be strong, simple and durable, and at the same time work rapidly. We spared neither time nor expense until we had the problem solved and the press built. We now have a machine of great power and simplicity and which will turn out the perfectly finished blocks as fast as the expertness of the operators can perform their part. Neither the block nor machine can be appreciated from describing it, but their fitness and perfectness are at once acknowledged by all who have seen them. A few points we will here mention. The size of the blocks now made is 8x9x18 inches, and vertically hollow, as you will see by the larger cut, showing a corner laid up. They have cross partition in the center running down about half way. The thickness of the sides and ends are $1\frac{3}{4}$ -inch, and are nicely beveled in imitation of cut stone; but unlike stone or solid brickwork, this wall being hollow, thus allowing a free and unobstructed circulation, and free from dampness at all times. The walls of this block diverge on their inside both from upper and lower side, thus making it thicker in the center. They are also provided on each end with a vertical mortar groove, and when laid, this helps to hold them together and prevents any dampness from getting through at the joints. No mortar can be seen, as it is obscured when the block is in the wall. The upper and lower edges are also provided with grooves running clear around, for the same purpose as those on the ends. In the small cut, A represents the joist in the course where the joist would come, a piece is cut out of the block equal to one-half the thickness of the joist, so that when the blocks are laid into the wall the joist will drop into this slot and be securely fastened. All difficulties with the block and machine have been overcome. The clay is uniformly distributed, so that they dry and burn safely. The machine is not limited to the size above mentioned; it has a capacity for a block 24x36 inches, if desired.



To parties wishing a safe and profitable investment and wishing to engage in the manufacture of building blocks, inducements that will insure profitable returns without an extravagant outlay are offered and territory is for sale.

ADDRESS,

The Akron Fire Brick Co.,

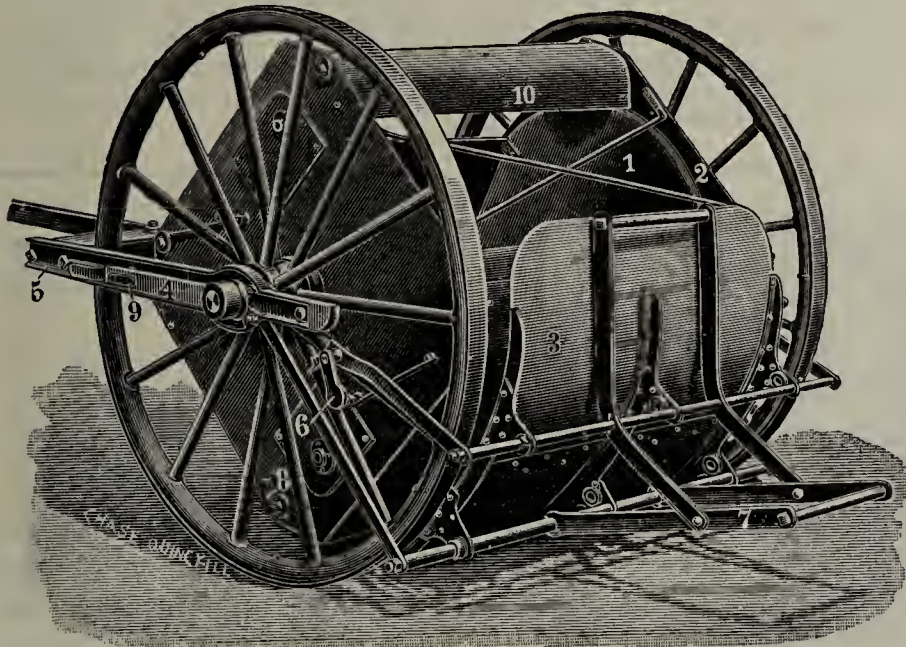
AKRON, OHIO, U. S. A.

PATENT BRICK BOXES,

Are durable, save labor and are practical for delivering brick in every way. Also rights and territory for sale. Write for circular. Address

J. BLUM, 1015 Lincoln Ave., CHICAGO, ILL.

The QUINCY CLAY GATHERER.



This is by far the best machine that has been introduced to gather dry clay for making pressed brick. No pressed brick works is complete without one.

For gathering and shedding Dry Clay it is unequalled.

It is self-loading and unloading.

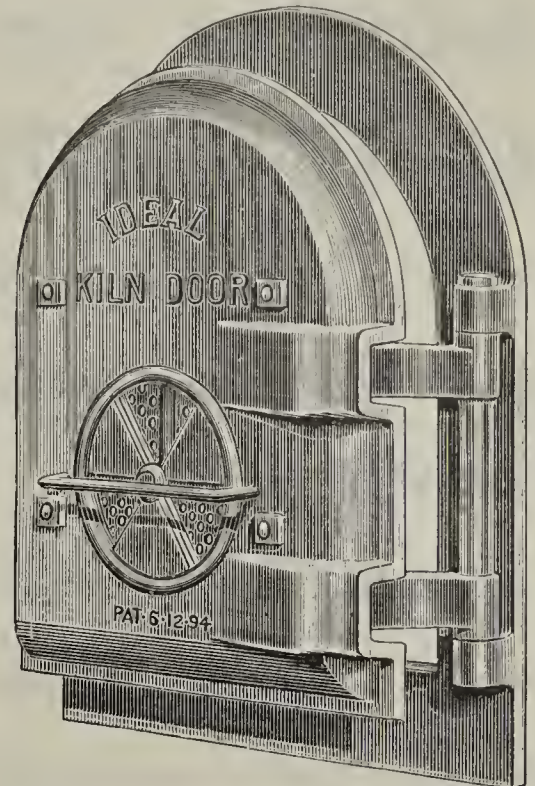
It is the cheapest and most approved Clay Gatherer.

Gathering Clay by this method dispenses with shovels and avoids strikes.

No Brickyard complete without the Quincy Clay Gatherer.

For prices and further information, apply to

ILLINOIS SUPPLY
& CONSTRUCTION
COMPANY,
ST. LOUIS, MO.



By using the **IDEAL DOOR** all evil effects of exterior air currents are obviated.

Increased percentage of high grade brick and of uniform color.

Economy in fuel consumption.

Absolute control of fire under all circumstances.

Address for particulars and cost,

CHARLES PICKLES, St. Louis, Mo.

NIAGARA FALLS EXCURSION!

Thursday, August 2, 1894,

—VIA THE—

Lake Erie & Western R. R.

"NATURAL GAS ROUTE."

On Thursday, August 2, 1894, the Lake Erie & Western R. R. will run their popular annual excursion to Cleveland, Chautauqua Lake, Buffalo and Niagara Falls at following very low rates, viz.:

| | | | |
|--------------------|--------|---------------------|--------|
| Peoria..... | \$7.50 | Fort Wayne..... | \$5.00 |
| Bloomington..... | 7.00 | Muncie..... | 5.00 |
| LaFayette..... | 6.00 | Connersville..... | 5.00 |
| Michigan City..... | 6.00 | Rushville..... | 5.00 |
| Indianapolis..... | 5.00 | New Castle..... | 5.00 |
| Tipton..... | 5.00 | Cambridge City..... | 5.00 |
| Lima..... | 4.00 | Fremont..... | 4.00 |
| Sandusky, \$4.00 | | | |

With corresponding reductions from intermediate points.

In addition to the above, the purchasers of these tickets will be given privilege of special excursion side trips to Lewiston-on-the-Lake, including a steamboat ride on Lake Ontario, for 25 cents. To Toronto and return by Lake from Lewiston \$1.00; to Thousand Islands, \$5.00. Tickets for the above side trips can be had when purchasing Niagara Falls ticket, or at any time on train.

Besides the above privileges, with that of spending Sunday at the Falls, we will furnish all those who desire a side trip from Brocton Junction to Chautauqua Lake and return FREE OF CHARGE.

Tickets of admission to places of special interest at or near Niagara Falls, but outside the reservation, including toll over the International Bridge on the Canadian side, elevators to the water's edge at Whirlpool Rapids on the Canadian side, will be offered on train at a reduction from prices charged after reaching the Falls.

Do not miss this opportunity to spend Sunday at Niagara Falls. The excursion train will arrive at Niagara Falls 7.00 A. M., Friday, August 3, 1894, and will leave the Falls returning Sunday morning, August 5, at 6 o'clock, stopping at Cleveland Sunday afternoon, giving an opportunity to visit the magnificent monument of the late President Garfield, and many other interesting points.

TICKETS WILL BE GOOD, HOWEVER, TO RETURN ON REGULAR TRAINS LEAVING THE FALLS SATURDAY, AUGUST 4, FOR THOSE NOT DESIRING TO REMAIN OVER. TICKETS WILL ALSO BE GOOD RETURNING ON ALL REGULAR TRAINS UP TO AND INCLUDING TUESDAY, AUGUST 1894. SECURE YOUR TICKETS, ALSO CHAIR AND SLEEPING CAR ACCOMMODATIONS, EARLY. THOSE DESIRING CAN SECURE ACCOMMODATIONS IN THESE CARS WHILE AT THE FALLS. FOR FURTHER INFORMATION CALL ON ANY AGENT LAKE ERIE & WESTERN R. R., OR ADDRESS

C. F. DALY, Gen. Pass. Agent,
Indianapolis, Ind.

NEW ..AND.. NOVEL,

The Columbian Pottery & Brick Kiln.

NO WASTE OF FUEL, LABOR
OR TIME.

ALL PERFECT GOODS.

THOROUGH REGULATION OF
HEAT.

OUTPUT UNIFORM AS TO TIME
AND QUALITY.

The fires remain in one division ONLY
and are continuous.

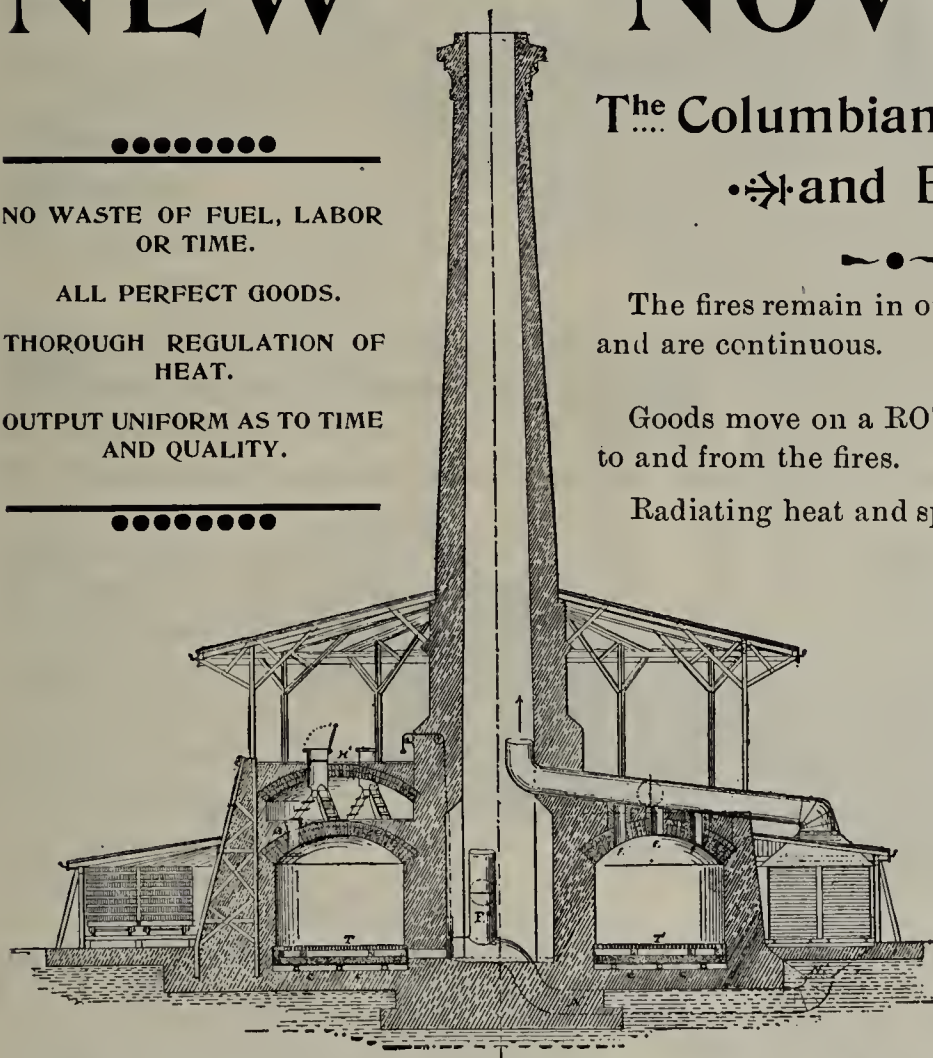
Goods move on a ROTATING FLOOR
to and from the fires.

Radiating heat and spare heat are used
for drying and
heating air for
combustion.

A perfect and
reliable factory
Winter and Summer.

Kiln and dryer
combined.

Full information
on application.



COLUMBIAN POTTERY & BRICK KILN CO., Dexter Bld'g., 84 Adams St.,
CHICAGO, ILL.

Special Low Rates —VIA— BIG FOUR ROUTE

FOR FOLLOWING MEETINGS

"ELKS" at Jamestown, N. Y.

June 18-25.

Knights of St. John, at Buffalo.

June 24-27.

"SHRINERS," at Denver.

July 23-27.

National Republican League

At DENVER, June 26.

"Y. P. S. C. E." at CLEVELAND.

July 11-15.

National Teachers Association

ASBURY PARK. July 6-13.

Baptist Young Peoples' Union

TORONTO. July 19-22.

League of American Wheelman

DENVER. August 13-18.

KNIGHTS OF PYTHIAS,

WASHINGTON, D. C., in AUGUST.

G. A. R. at PITTSBURGH,

September 10-15.

FOURTH OF JULY

Tickets will be sold for ONE FARE FOR THE ROUND TRIP between any two points on the Big Four, within a radius of two hundred miles.

Ask nearest Agent for Date of Sale, Return Limit, Routes, Train Service, etc.

E. O. McCormick, D. B. Martin
Pass. Traffic Mgr. Gen'l Pass. & Tkt. Agt.
CINCINNATI.

Home-Seekers' Excursions South.

The Baltimore and Ohio Southwestern Railway has arranged a series of Home-Seekers' excursions to points in Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi and Louisiana at one fare for the round trip.

The dates of these excursions are as follows: July 5th, August 7th, September 4th, October 2d, November 6th and December 4th.

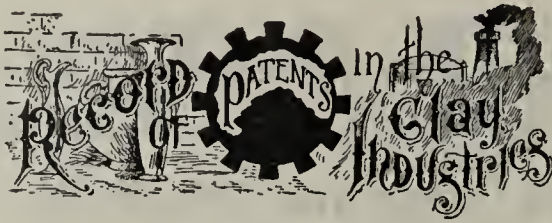
Tickets will be good for twenty days, with stop-over privileges in State to which ticket is sold.

A splendid opportunity to visit the Valley of Virginia and other points South.

For rates and further information apply to the nearest agent of the B. & O. S. W. R'y, or address O. P. McCarty, General Passenger Agent, St. Louis, Mo.

FOR SALE One Grand Automatic Brick Machine, pallets and racks for 20,000 brick. One boiler and engine; one lot of kiln doors and grate bars, cheap, and in good condition.

Address, X,
64 d Care "Clay-Worker."

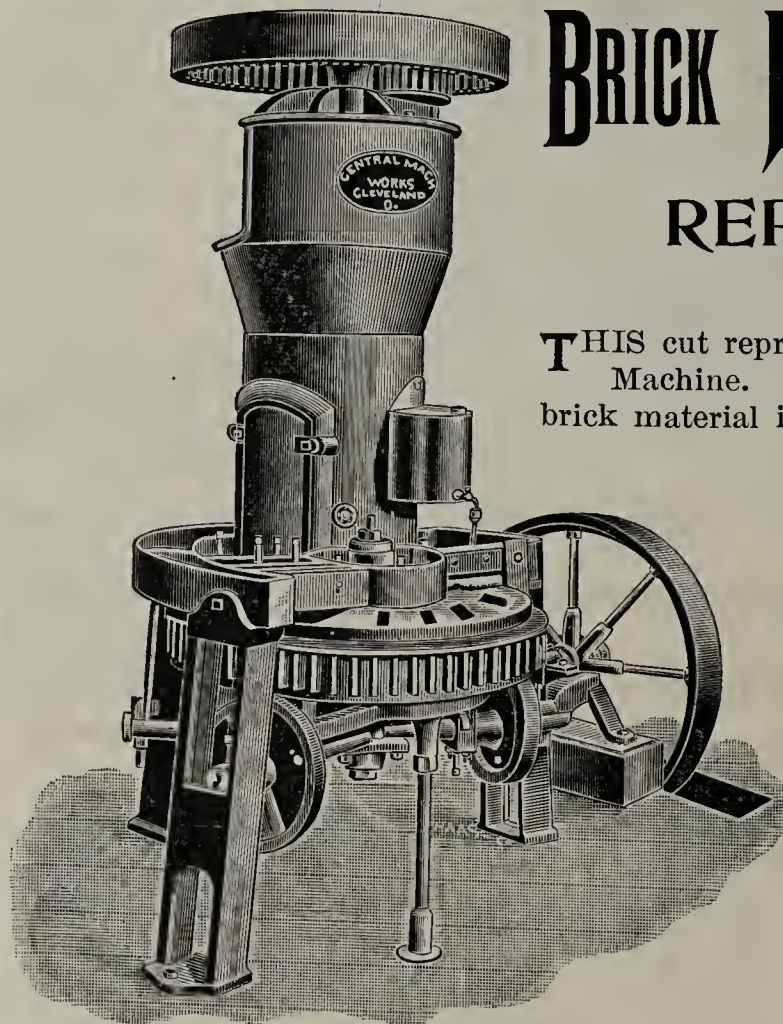


Complete specifications with drawings of any patent may be secured from Edward C. Weaver, Councillor and Attorney in Patent Law, 900 F. Street, Washington, D. C. Enclose fifteen cents in stamps to cover cost of each copy, and order by the number of the patent.

519,344—Kiln for Baking Bricks, etc., by Thomas Polivka, of Chicago, Ills.
519,590—Brick Machine, by Edwin E. Rankin, of Monongehela City, Pa.
519,600—Pottery Machine, by Austin Lowry, Roseville, O.
519,677—Brick Kiln, by Carl Krahe, of Roseville N. Y.

519,773—Tile Machine, by William W. Pride, of Springfield, Ill.
519,801—Die or Mold for Clay Product Machines, by William W. Wallace, of Willoughby, O.
519,814—Kiln for Burning Earthenware, by William H. R. Kunstman, of Chicago, Ill.
520,023—Brick Machine, by Jefferson D. Pace, of Shreveport, La.
520,455—Sectional Mould for Brick Presses, by Peter L. Simpson, of Chicago, Ill.
520,641—Kiln, by Frank Halbeisen, Erlin, O.

Edward Kreischer, of the firm of Kreischer Bros., brick manufacturers, Kreischerville, N. Y., committed suicide the 8th inst. Mr. Kreischer was apparently in good health, his domestic relations pleasant, his financial affairs in good condition, and it is thought he committed the deed in a moment of temporary insanity.



BRICK MACHINES AND REPRESSES.

•••••

THIS cut represents our Stiff Mud Brick Machine. It will work any kind of brick material including fire clay, shale or common clay right from bank without the use of a pug mill. Each brick is pressed separately and can be haked 7 or 8 high, or repressed right from machine.

Over 500 in operation.

Send for price and circulars

Manufactured by

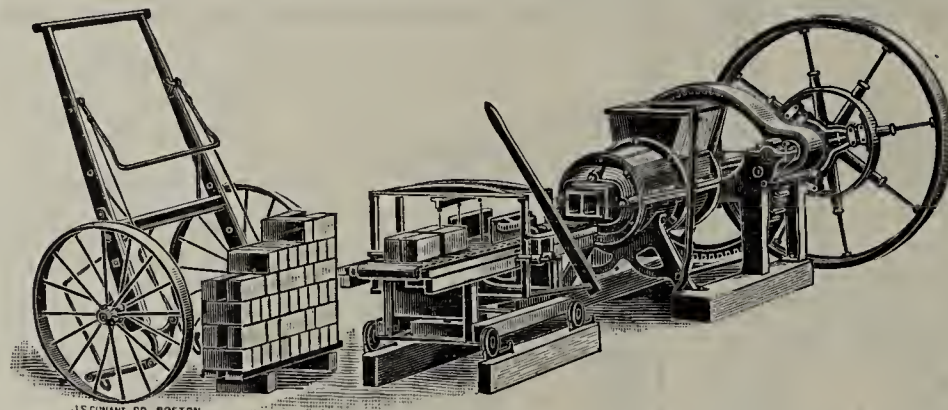
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MACHINE
WORKS,**

226-236 Abbey St.,

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The Only Manufacturers of Steele's Celebrated BRICK TRUCK for Portable Hack.



Kiln Castings,
Pug Mills,
Winding Drums,
Clay Cars,
Switch and Frogs,
Friction Pullies,
Etc., Etc.

THIS cut represents our "One X" Machine, which makes 10,000 to 15,000 per day. But we have a large Double Geared Machine for side or end cut brick which makes 15,000 to 20,000 per day. Write for Catalogue and Prices, and mention the CLAY-WORKER.

J. C. STEELE & SON, Statesville, N. C.

DO NOT BUY A [FOUNDED 1879.]

SOFT CLAY BRICK MACHINE

Until You Have Investigated Ours.

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We make a special High Grade Fire Brick (all shapes) for Brick Kiln Construction.

NOT EXCELLED By any. Our quotations will surprise you. We sell Fire Brick on their merits and their use will prove **AN ECONOMY.** GROUND CLAY INBULK OR SACKS.

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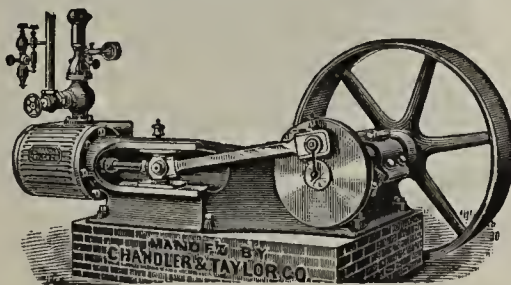
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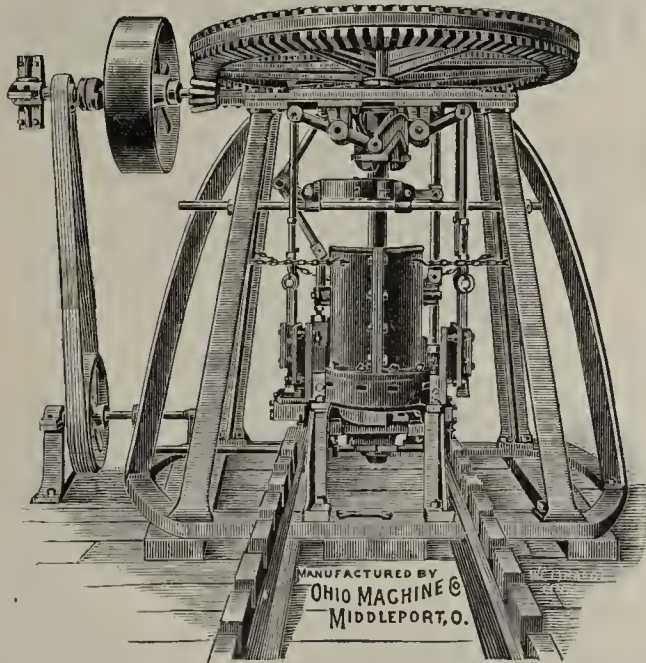
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WANTED. Man to run wire cut machine, also tilemaker. Must be experienced throughout. DINNICK TERRA COTTA CO., Carlton West, Ontario, Can. 61 c

FOR SALE. One Raymond Power Repress, daily capacity ten thousand brick. Size of box 8 3/4 by 4 3/8. Also several Miller hand presses. Address W. B. HARRIS & BROS., Zanesville Ohio. 61 f d

WANTED. A partner to conduct a well established brick business in best location in Virginia, Well equipped plant. Martin machine. References. Box 14, care Clay-Worker.

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PARTNER WANTED, OR PLANT FOR SALE. Partner wanted with some cash capital, to take one-third or one-half interest in a brick and tile plant. Must be sober, industrious and thoroughly understand manufacturing, setting and burning all kinds of brick and tile. A summer and winter plant. Tunnel dryer, etc., etc., all under cover. Henry Martin Improved Soft Mud Brick Machine and Fate-Gunsaulus wire cut brick and tile mill. Best of clay and lots of it. Good market and shipping facilities, three railroads and a belt line near by, and easy to egress and ingress; no hills, plenty of coal and wood near by and cheap. Or, if desired, will sell the entire plant, with from 5 to 10 acres of clay, including the buildings, and give right-of-way to and from the plant. Apply on the premises and investigate, or address A. D. BETZ, Barberton, Ohio. 612 p

FOR SALE. A new improved Simpson Brick Machine. EVENS & HOWARD, St. Louis, Mo.

FOR SALE. Steam engine 18x28, slide valve, ten foot pulley, five-inch governor, lubricators, heavy frame. In first-class condition. EVENS & HOWARD, St. Louis, Mo.

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PARTIES who want to go into the roofing tile business can get advice about patterns, machines, cars dryers, kilns, etc., at the address of ROOFING TILE, care Clay-Worker.

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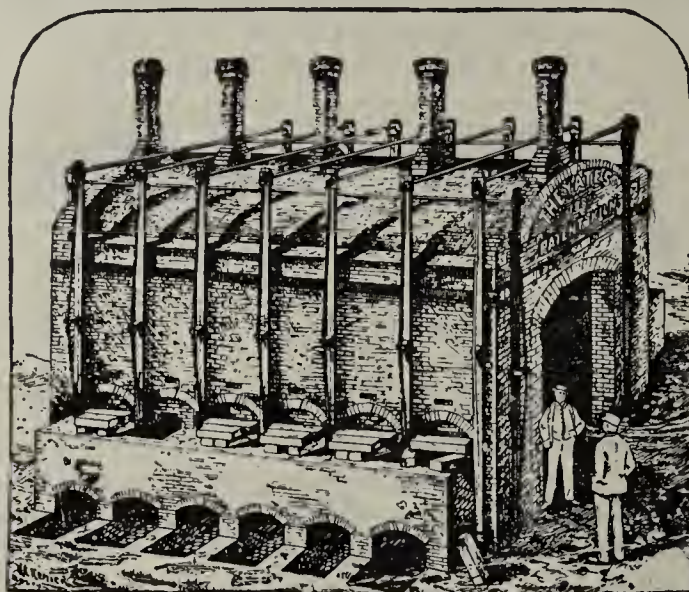
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| 1 Spur Wheel | 2 1/4 in. | 100 | 4 7/8 in. | 5 1/2 in. | 6 ft. |
| 2 " " | 2 1/4 " | 56 | 2 7-16 " | 3 " | 42 " |
| 2 " " | 2 3/4 " | 56 | 4 7/8 " | 5 1/2 " | 42 " |
| 1 " Pinion | 2 1/4 " | 14 | 3 7-16 " | | 12 " |
| 1 " " | 2 1/4 " | 14 | 2 15-16 " | 5 1/2 " | 12 " |
| 1 " " | 2 1/4 " | 17 | 3 11-16 " | 5 1/2 " | 14 " |
| 1 " Wheel | 2 3/4 " | 66 | 4 7/8 " | 5 " | 50 " |
| 1 " " | 2 1/4 " | 53 | 3 11-16 " | 5 1/2 " | 40 " |
| 2 " " | 1 1/2 " | 66 | 2 15-16 " | 4 " | 32 " |
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1 Steadman Pulverizer, 44 in x14 in. cage.
1 Carload scrap iron, one-half wrought, one-half cast.
6 Side dump cars, capacity about 3/4 yard clay.
1,500 ft. rails (20 lb. to yard) 50 splices, 200 ties, also spikes
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31 1/2 bbls. manganese, about 800 lbs. per bbl.
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134 3in. x15 ft. boiler flues. 133 3in. x12 ft. boiler flues.

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BOTH ROUND AND SQUARE KILNS.
Fully Protected by Patents.

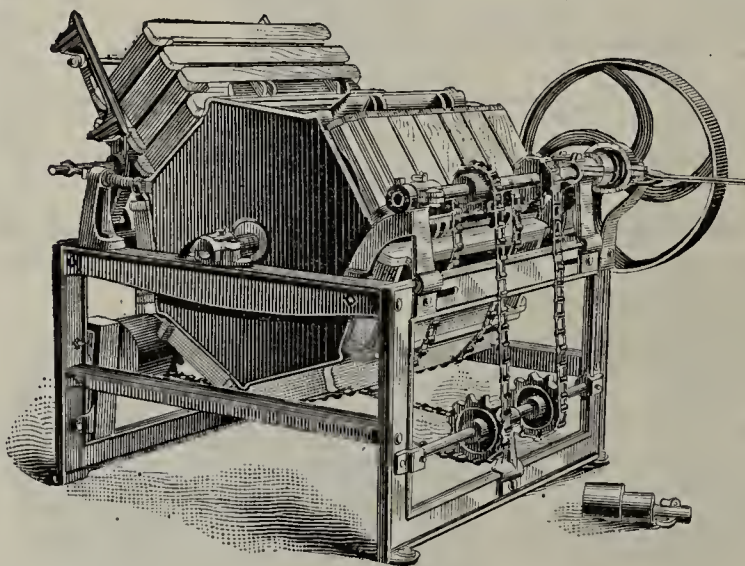
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Any person purchasing Champion machines from other than the above, render themselves liable to damages, as no other person has the right to manufacture said machines.

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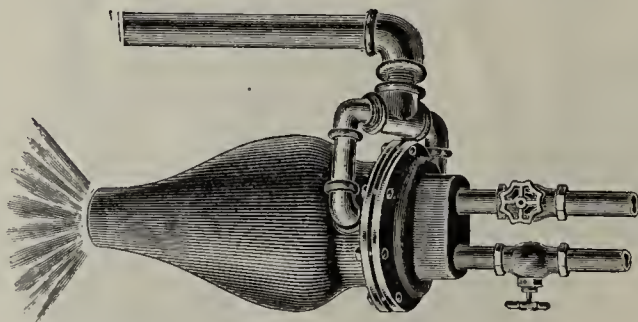
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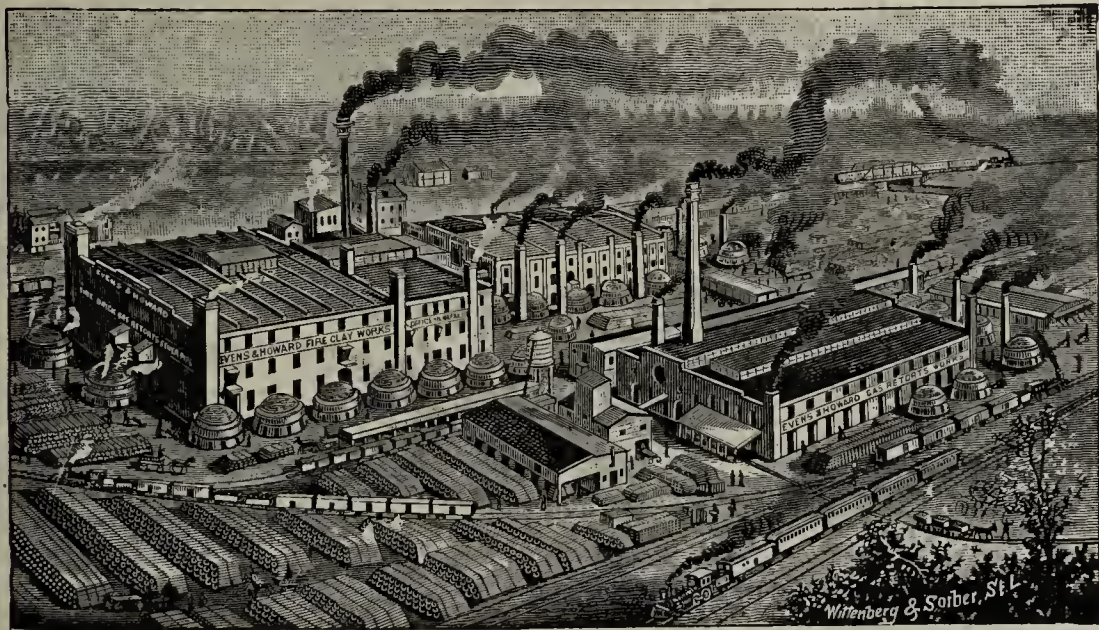
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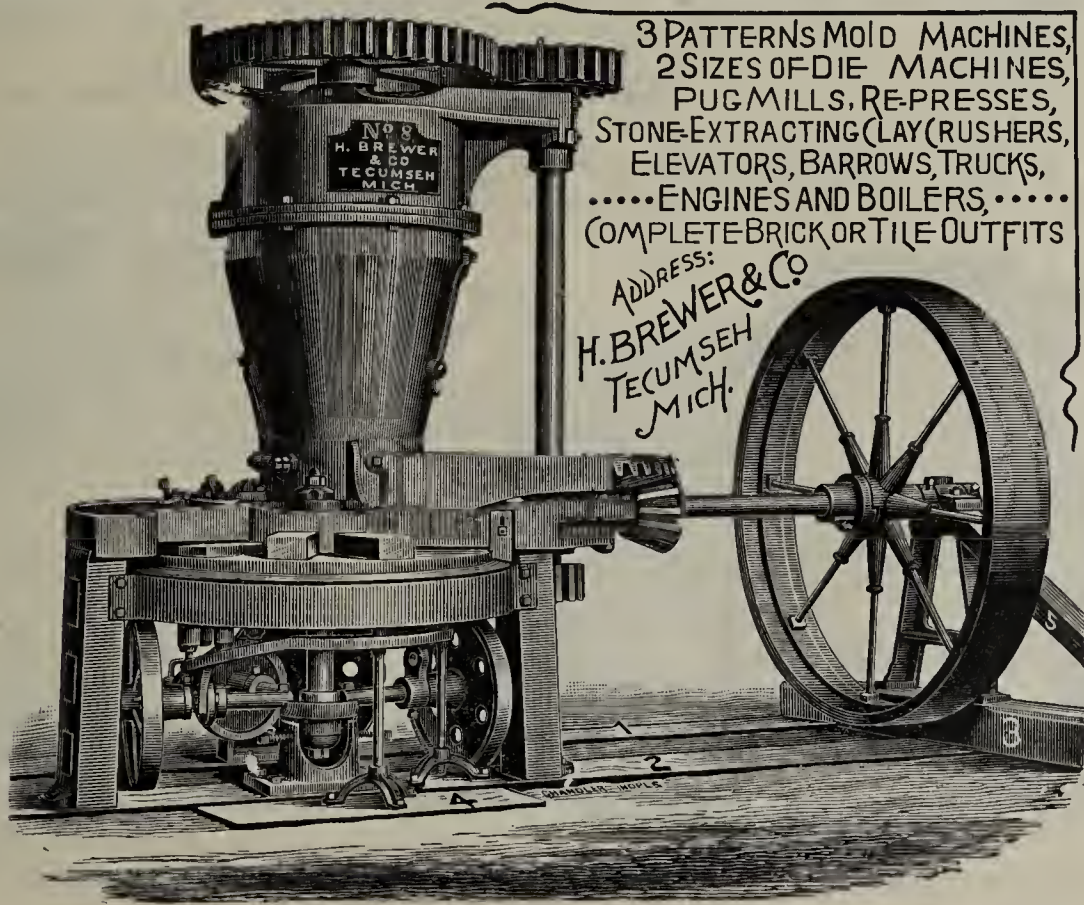


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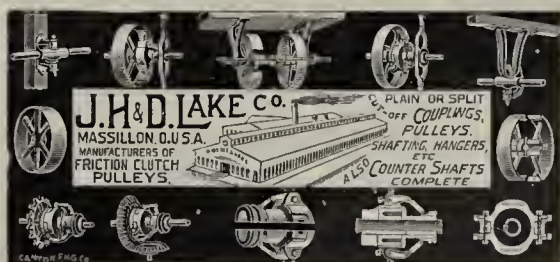
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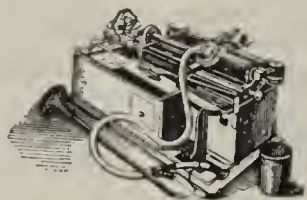
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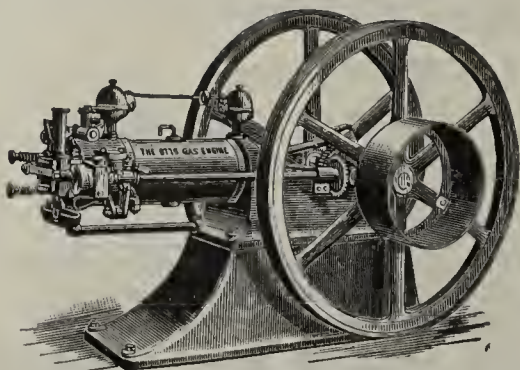
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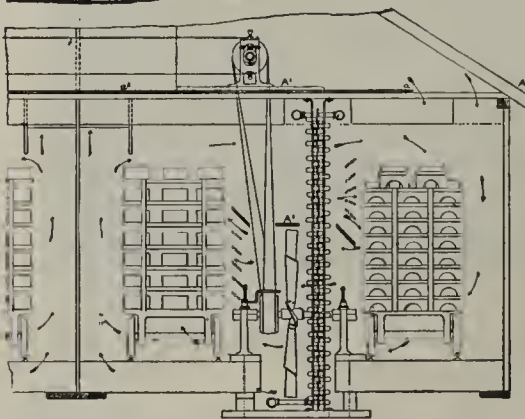
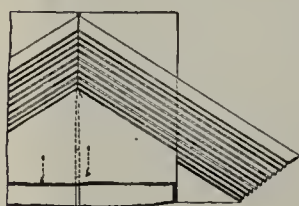
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British Pat. Mar. 31, 1891. No. 5,520.
Canadian Pat. May 30, 1892. No. 39,025.
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These times demand economy. You can save fuel by adopting this system. Write for full particulars of new features just patented.

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They take the inside track.

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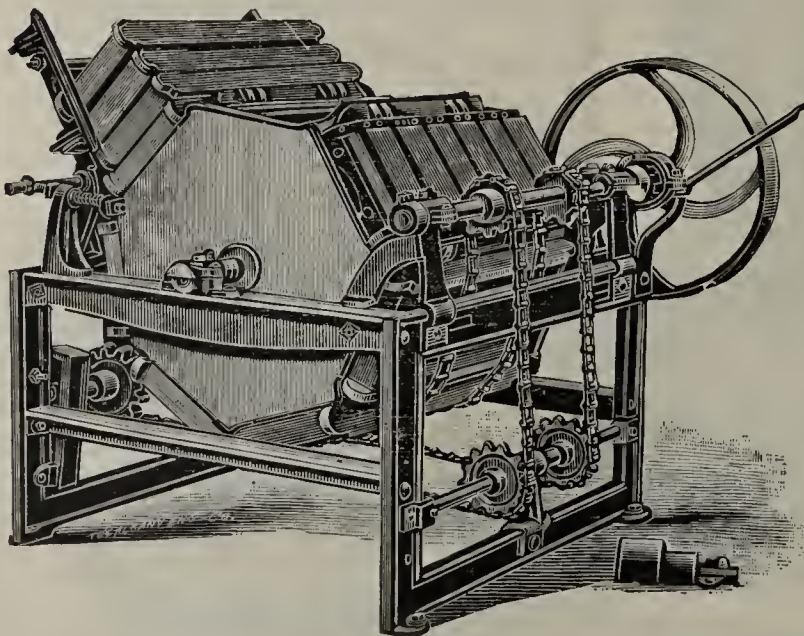
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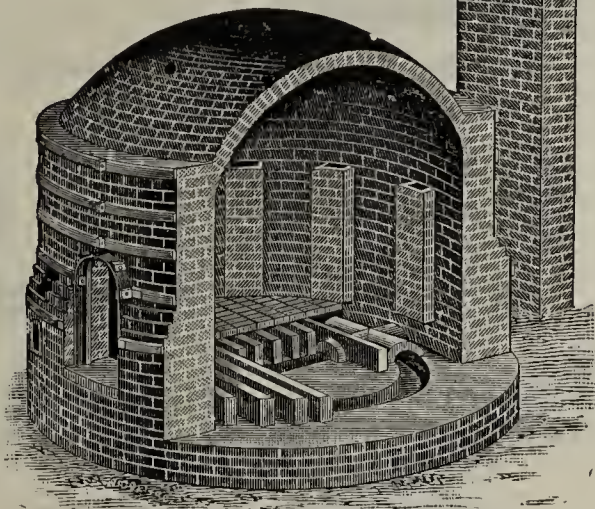
It is neat, compact, durable, easy to handle, constructed on scientific principles. Has been improved and now burning almost everything made from clay, such as Sewer Pipe, Vitriified Pavers, Etc., to Pottery and finer wares. Built any size up to 100,000. In short it leads the way.

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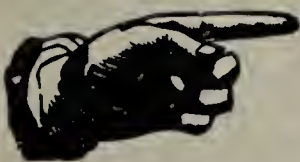
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TO ELEVATE AT ANY ANGLE.
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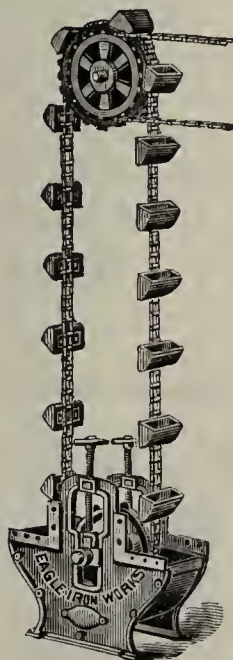
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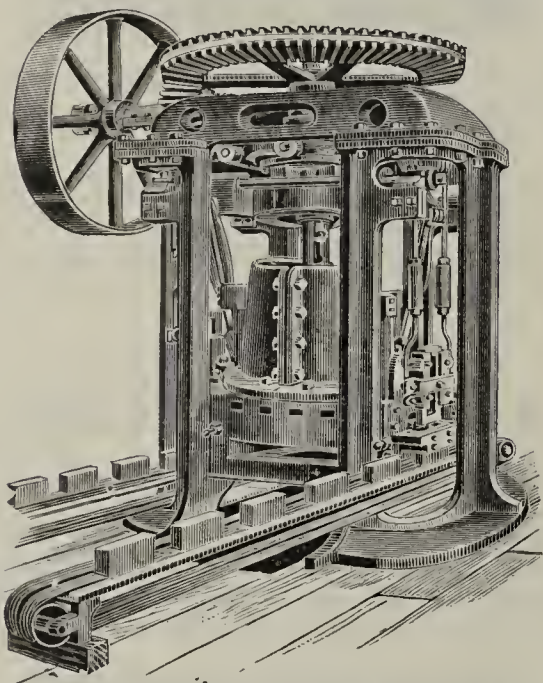
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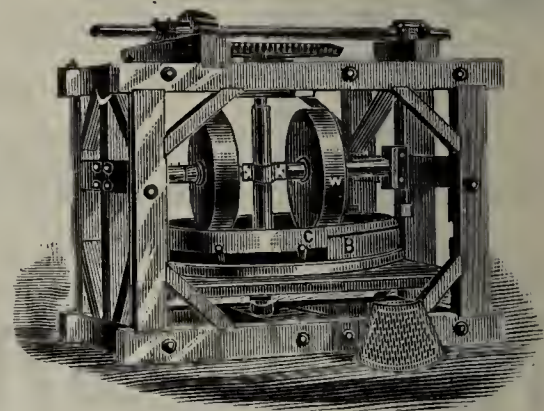
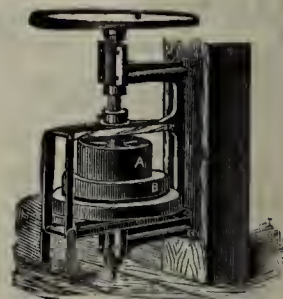
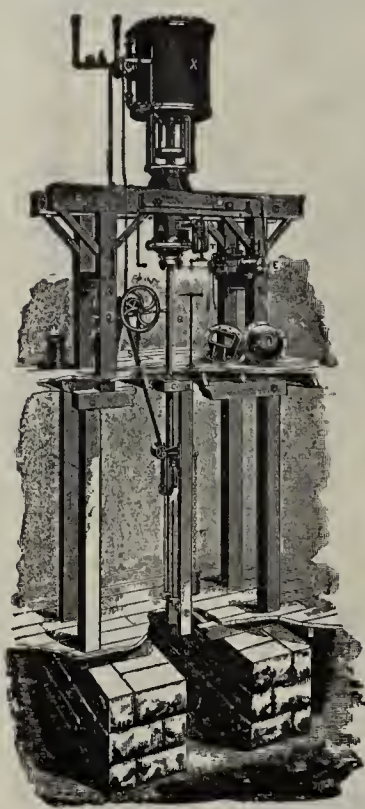
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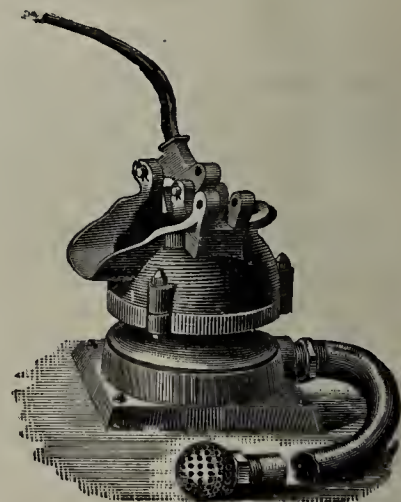
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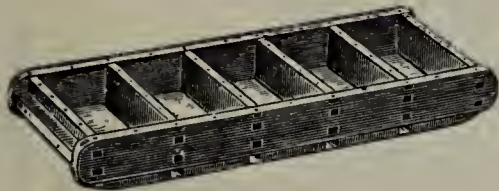
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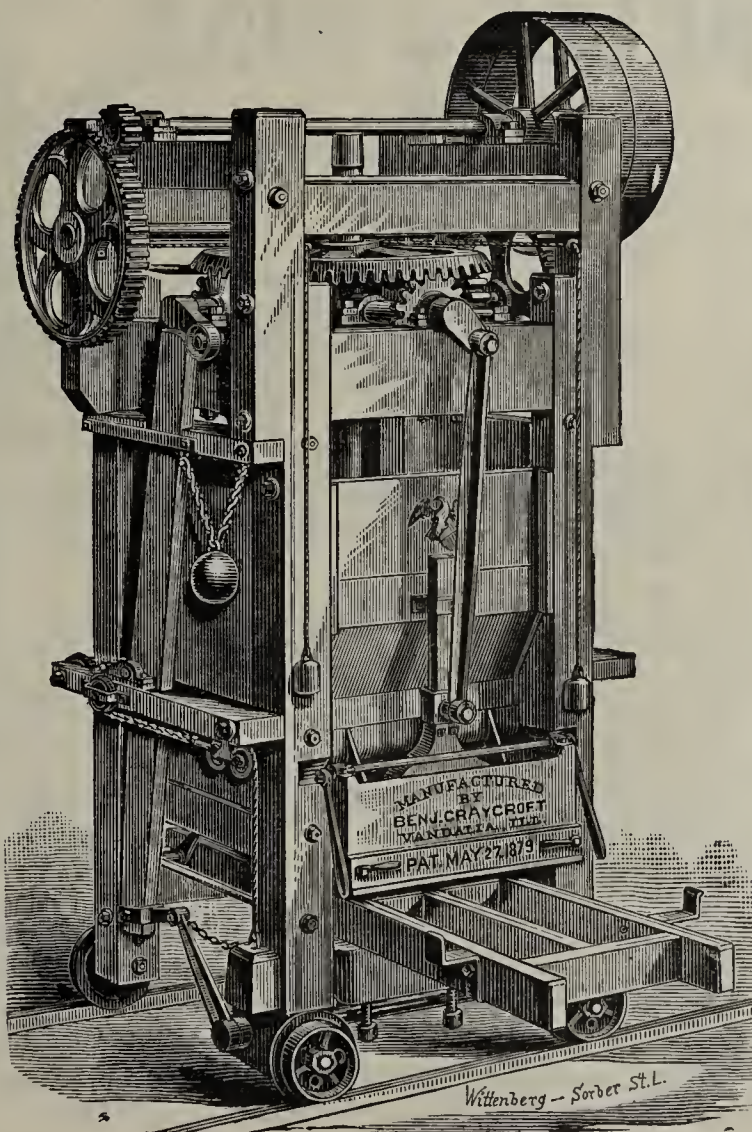
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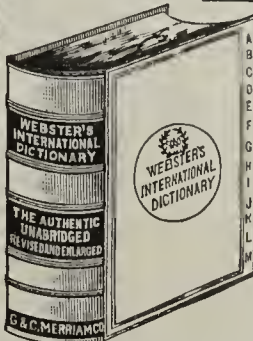
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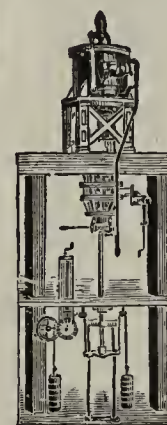
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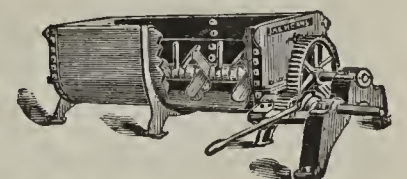
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|------------------------|------------|
| No. 20 Passenger..... | 7:05 a. m. |
| *No. 22 Passenger..... | 1:20 p. m. |
| No. 24 Passenger..... | 7:00 p. m. |

ARRIVE.

| | |
|------------------------|-------------|
| *No. 21 Passenger..... | 10:30 a. m. |
| No. 23 Passenger..... | 2:50 p. m. |
| No. 25 Passenger..... | 6:20 p. m. |

Trains not marked run daily except Sunday
*daily, †daily except Saturday.

No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. & A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west.

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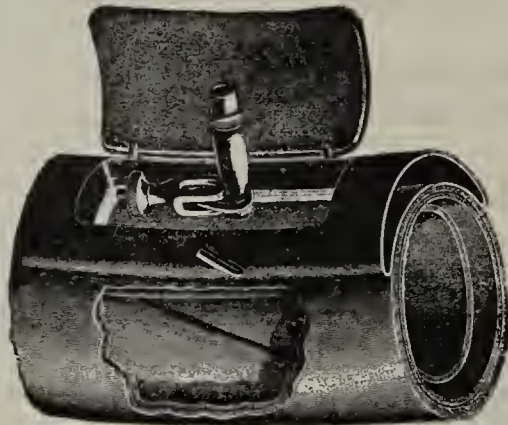
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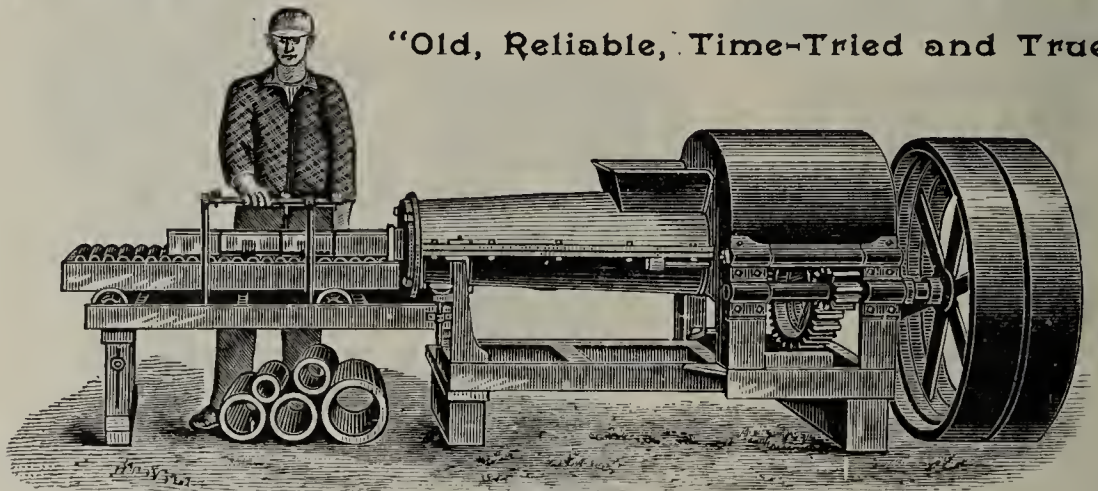
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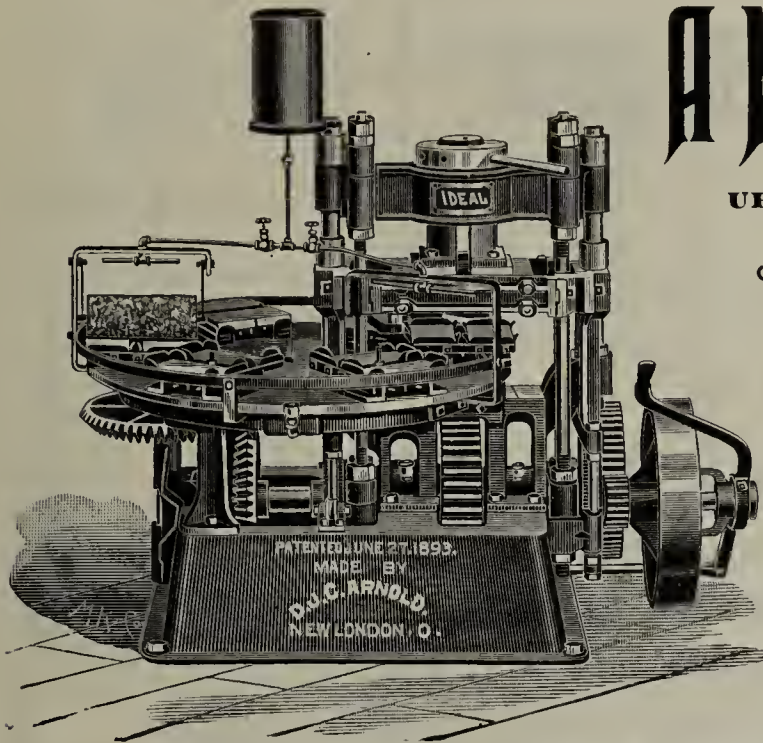
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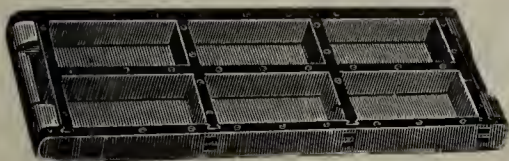
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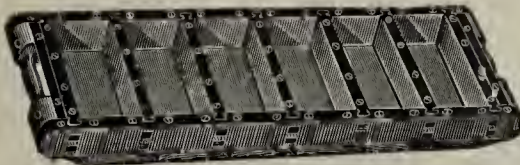
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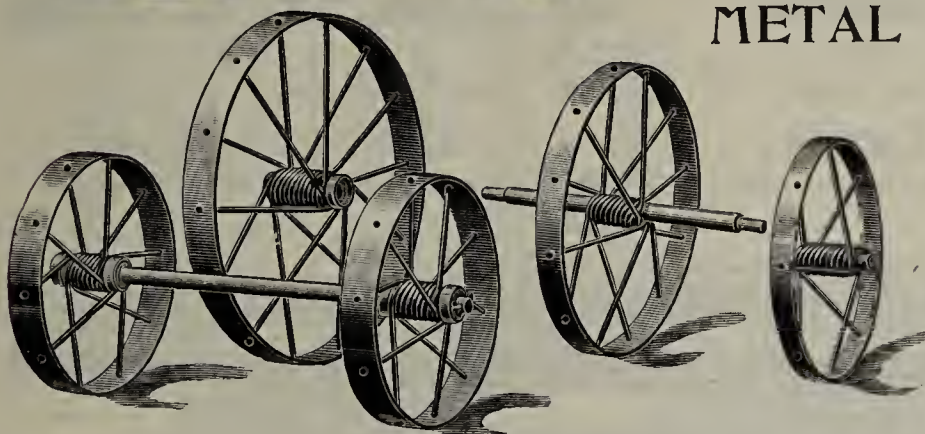
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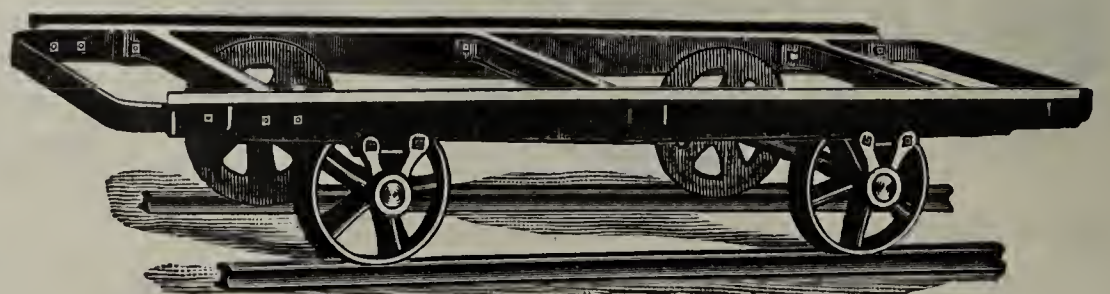
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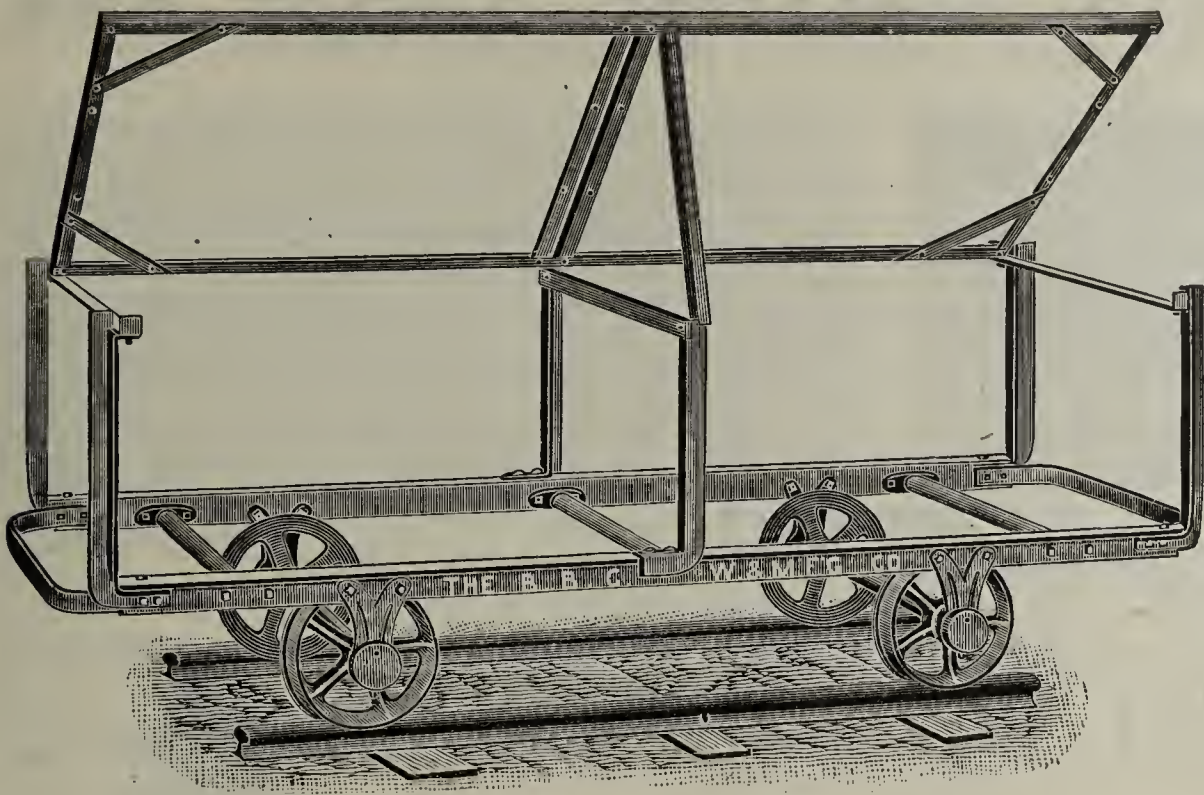
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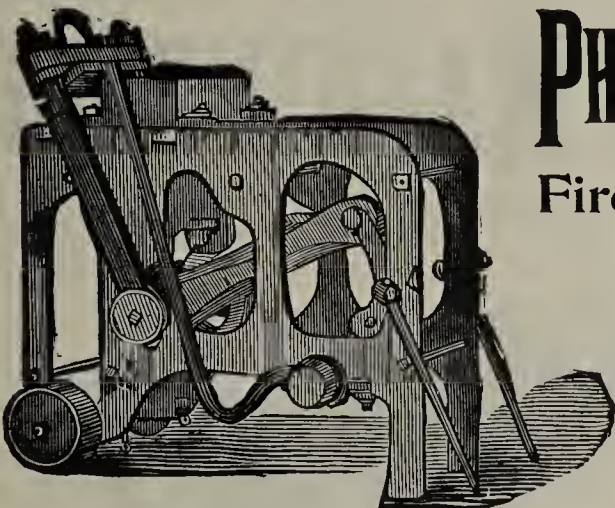
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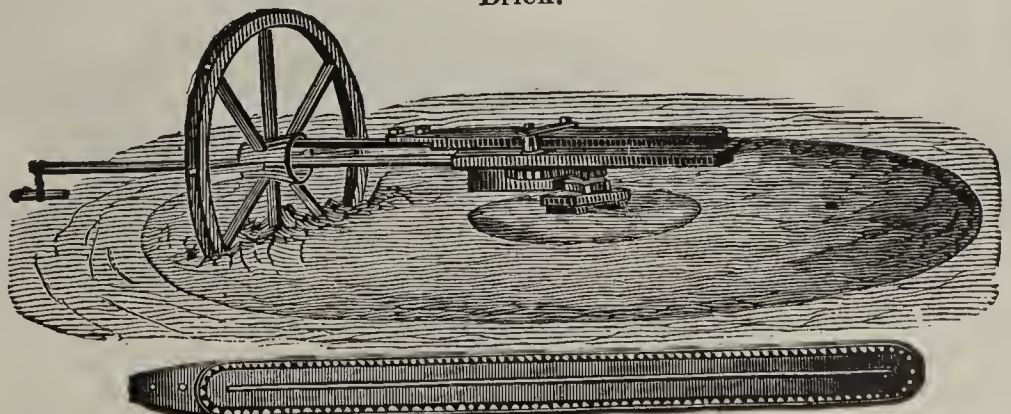
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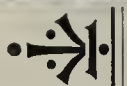
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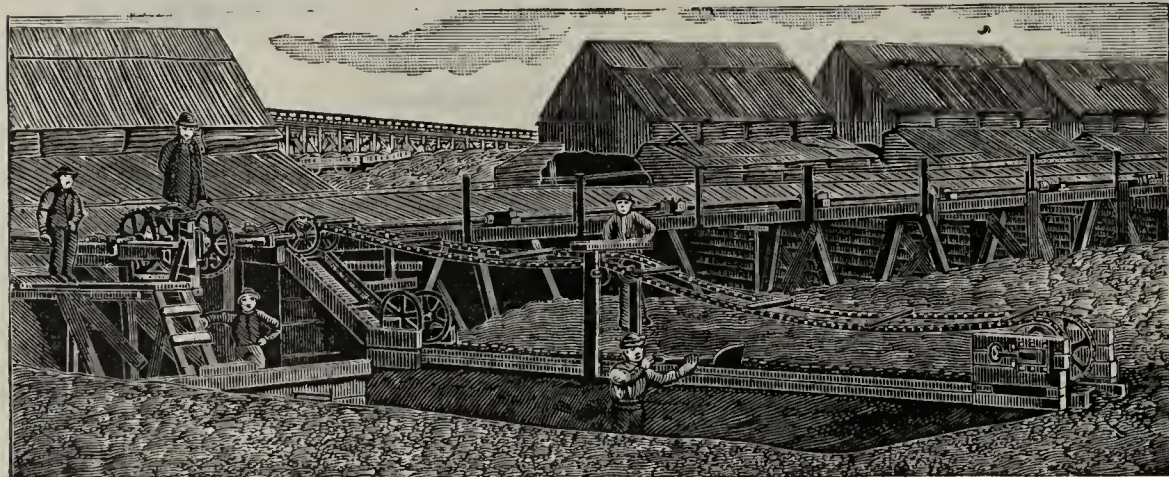
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at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

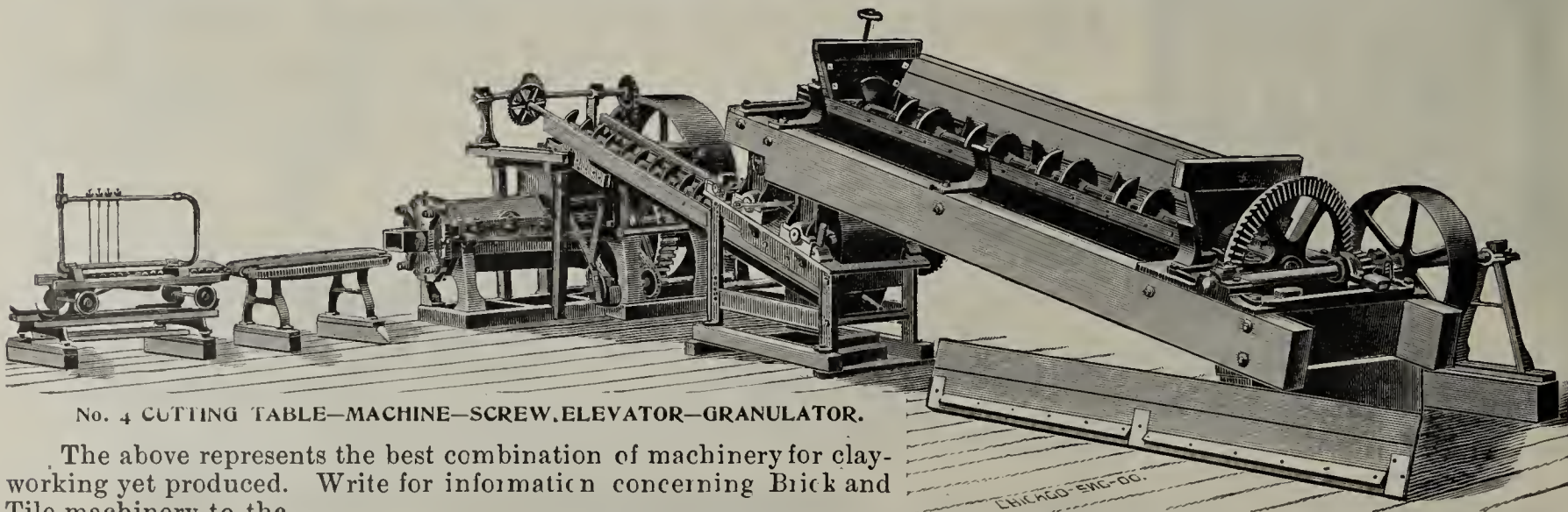
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of the best quality of brick in a day than he can by the old method thereby saving time and making money.

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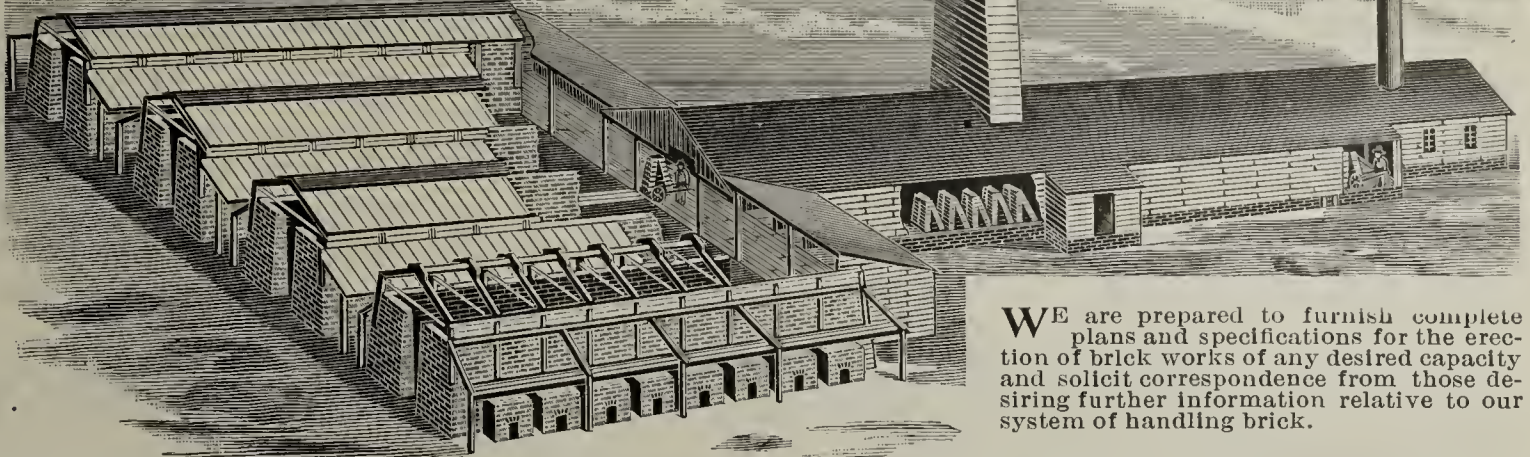
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The Most Expeditious, the Safest and Easiest Method of Handling Brick from Machine to Kiln.

IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.

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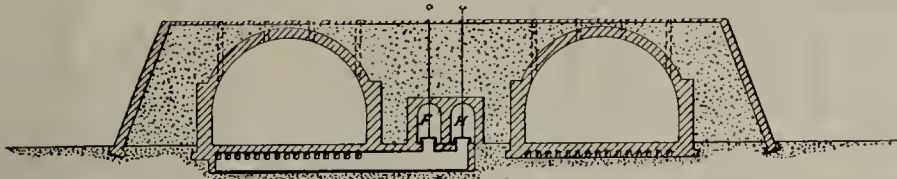
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Marks a Great Advance in the Art of Continuous Burning

Accuracy of results reduced to a certainty.
Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.
Under ordinary circumstances the kiln pays for itself in six months.
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Choose a kiln that is fully guaranteed as to results.
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Bickel's Improved Down Draft Kiln

GUARANTEED WITHOUT.

We will build this Kiln and guarantee it to give satisfaction, either by contract or on a per cent. basis.
This Kiln is Simple and Durable in Construction, and Economical in Operation, and does not require an expert to handle it. Any good burner, who understands his business, can easily manage it.
There are no small tile to break or burn out, and no iron exposed to the flames.
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BICKEL BROS. CONTRACTING CO.,

920 Market Street,

[Mention the Clay-Worker.]

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THE BEST KILN ON EARTH

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

St. Louis, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

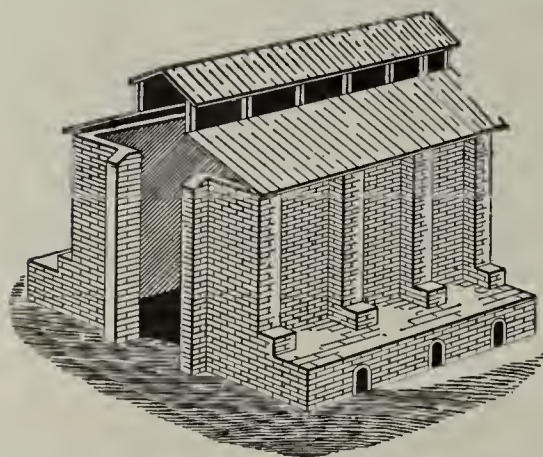
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

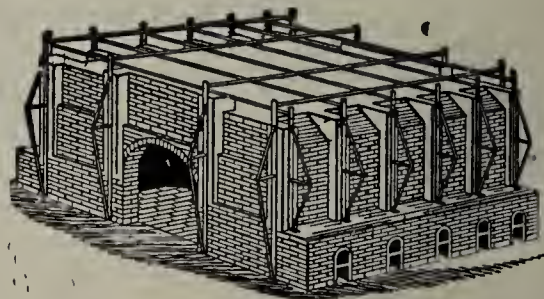
[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.



LOUIS H. REPPPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

VITRIFIED PAVING BRICK.

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }
NEVADA, Mo., July 17, 1892. }

H. REPPPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPPPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,

COTE BRILLIANT PRESSED BRICK CO.,
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

LOUIS H. REPPPELL,

1,913 Indiana Ave.



KANSAS CITY, MO.

The KAUL Continuous Brick Kiln.

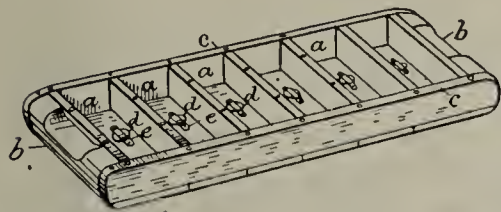
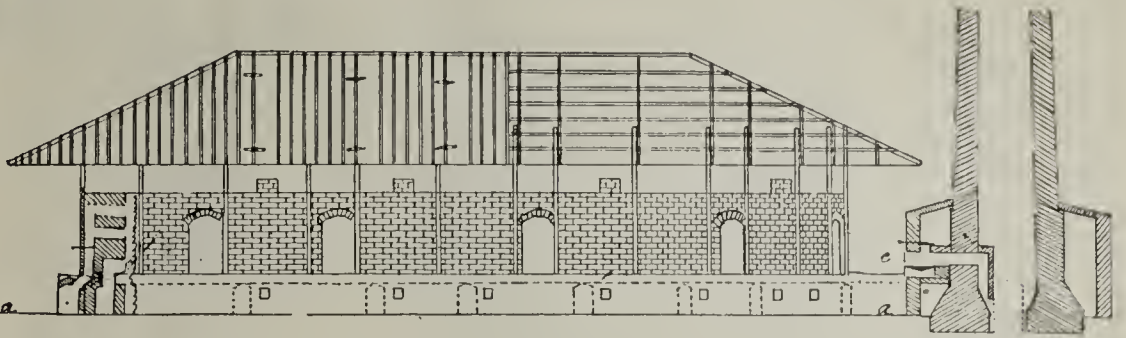
Patented March 23, 1892.

THIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.



KAUL'S PATENT BRICK MOLD

Something New, Practical and Profitable.

In the bottom of each chamber of this mold is a valve by which air is admitted when emptying the mold. Thus the brick leave the mold freely, insuring better edges and truer brick. It not only admits of more rapid and better work, but saves a great deal of sand which cannot run through the bottom as in the old way. It keeps the slats or rollers of

machine clean as it also does the table when molding by hand. By the use of this mold brickmakers can improve their product and save time and money. For full particulars, etc., etc., address

Mention the Clay-Worker.]

CARL F. KAUL, Madison, Neb.

THE BONNOT COMPANY, CANTON, OHIO, Build STEAM DRYERS and CLAYWORKING MACHINERY.

Parties in search of the **VERY BEST DRYER** would do well to write for particulars. Contracts for complete equipments are especially solicited. If you want the best machinery, no matter what particular machine it is, write **THE BONNOT COMPANY, Canton, Ohio.**

BRICK MARKER.

WHY NOT MARK YOUR BRICK?

COSTS BUT A TRIFLE.

STREAM OF CLAY OPERATES IT.

WRITE FOR PARTICULARS TO THE
BONNOT COMPANY
CANTON, O.

BRICK CARS •

—• WITH ROLLER BEARINGS

CARS RUN EASY AND ARE DURABLE
BECAUSE THEY ARE WELL BUILT.

FOR ORDERS
OF FIFTY OR MORE CARS LIBERAL INDUCEMENTS
WILL BE MADE — PRICES HAVE DECLINED.
ADDRESS **THE BONNOT CO. — CANTON, O.**

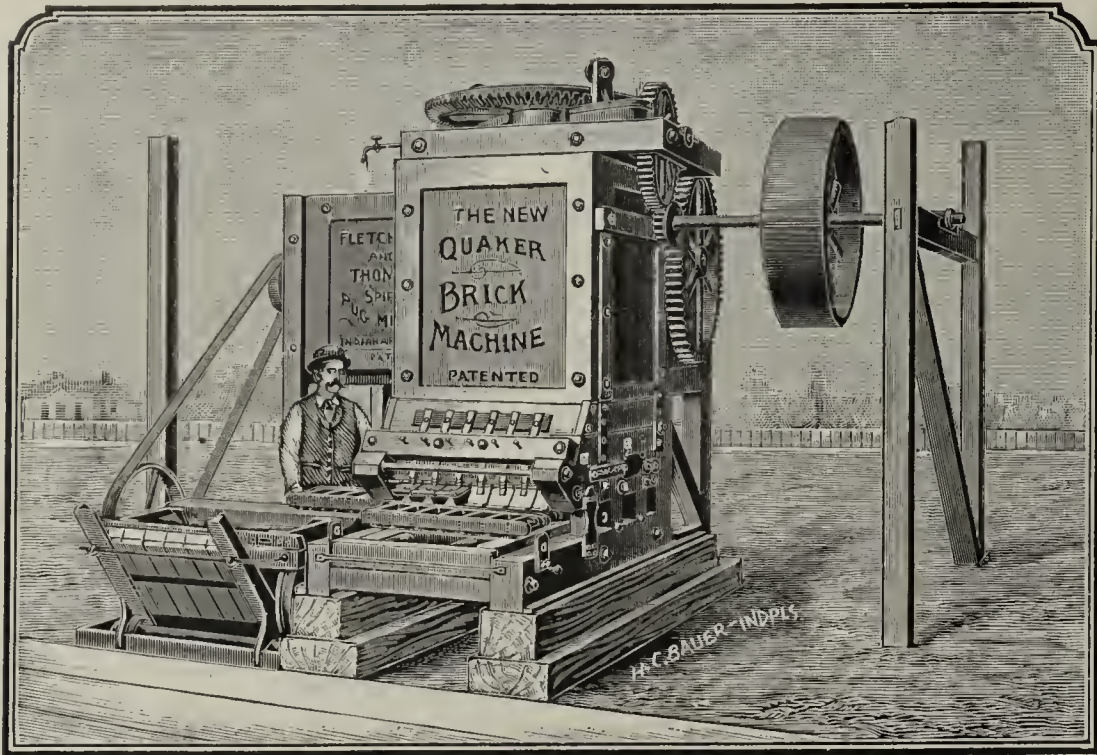
THE BONNOT COMPANY,
CANTON, OHIO.

CANTON, OHIO, March 26th, 1894.

GENTLEMEN:—We are using two of your Revolving Screens at our works and in reporting to you the satisfaction the Screens are giving, we do not exaggerate in the least when we say that these Screens are indispensable to the making of a high grade of brick. We attribute our success in establishing a record for high grade brick, largely to the use of Revolving Screens. These Screens are giving such splendid satisfaction that we can heartily endorse them and they are exactly what you claimed for them. The guarantee which you made on them has been fulfilled to the letter. The Bonnot Dry Pans, Pug Mill, and Dryer, are all first-class. The Dryer is especially worthy of praise. It dries the brick satisfactorily. We are sure that no other Dryer excels ours.

Yours truly,

IMPERIAL SHALE BRICK CO., E. D. KEPLINGER, Sec'y & Treas.



EXTRA HEAVY, COMBINED OUTFIT CAPACITY 40,000 TO 50,000 PER DAY.

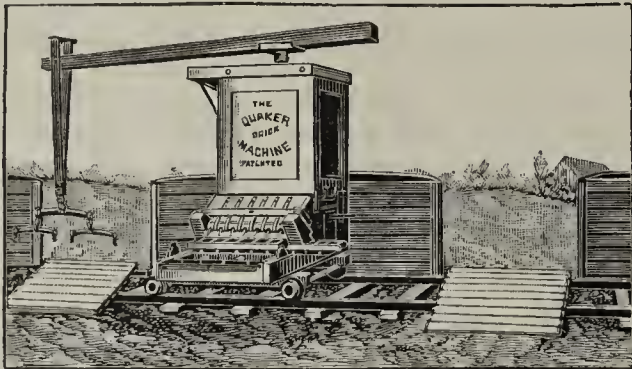
THE NEW MODEL

QUAKER

HORSE POWER.

The best machine for
the man of moderate
means ever used.

Capacity 15,000 to
20,000 per day.



WE CONTRACT TO ERECT AND EQUIP

PLANTS COMPLETE IN EVERY DETAIL.

Send for Illustrated Catalogue and Special prices before placing
your order, as we can save you money.

S. K. FLETCHER, General Agent,
Successor to FLETCHER & THOMAS,
INDIANAPOLIS, IND.

"Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our class of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,
WM. H. ASHWELL.

MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

**Thompson's Water-Proof Belt Dressing for
Leather, Rubber and Canvas Belting.**

No user of Belting can afford to be without it.



the End.



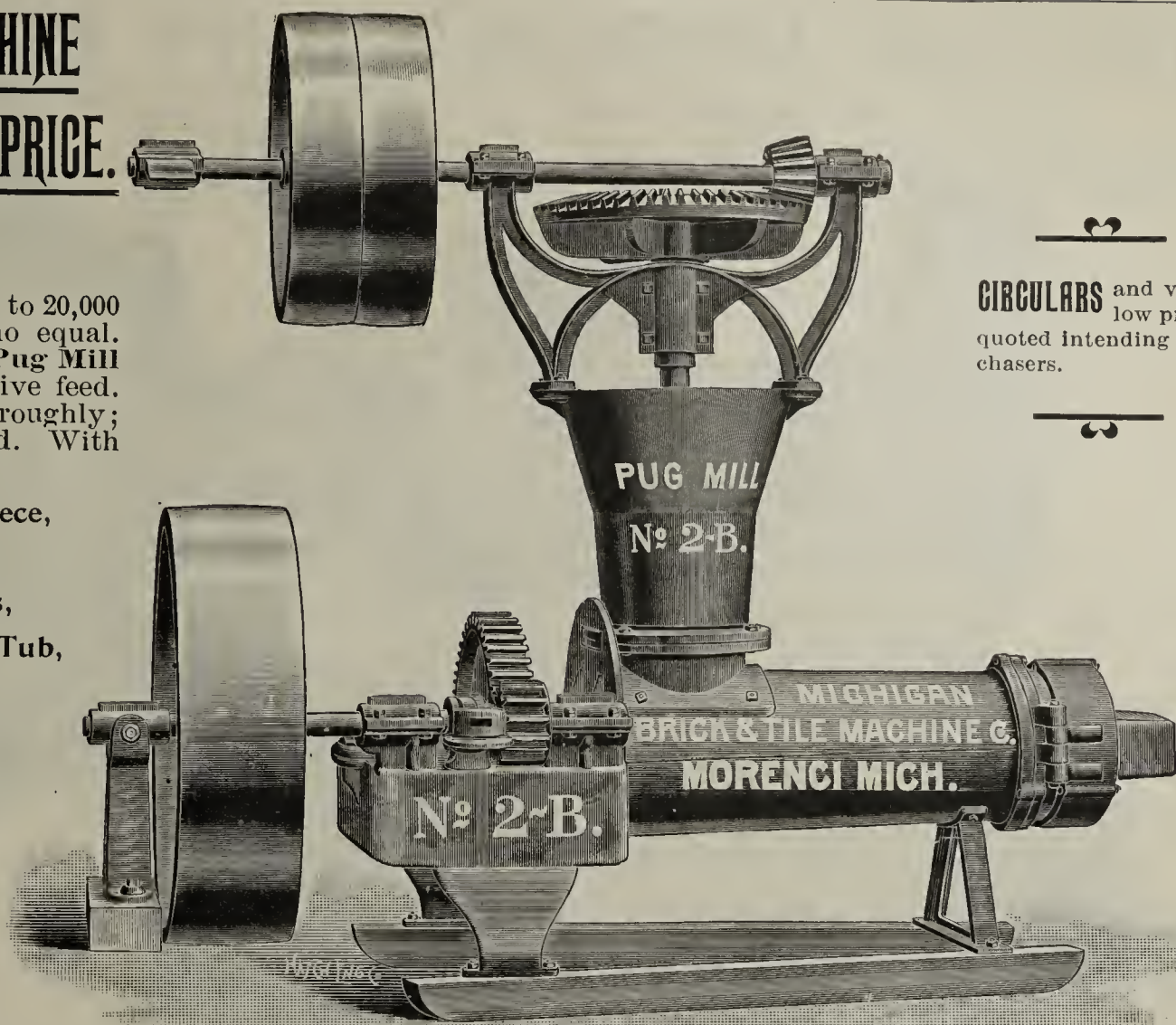
A SMALL SIZED MACHINE AT A VERY LOW PRICE.

FOR a daily output of 12,000 to 20,000 first class brick it has no equal. For tile it is superior. With Pug Mill as shown in cut it has a positive feed. Mixes and pugs the clay thoroughly; making the output unexcelled. With

Safety Hinged Nose Piece,
Steel Shafts,
Extra Long Bearings,
Solid Main Frame and Tub,

And many other important improvements; it is a very desirable machine to have. Address the Manufacturers,

MICHIGAN BRICK AND
TILE MACHINE CO.,
Morenci, Mich.



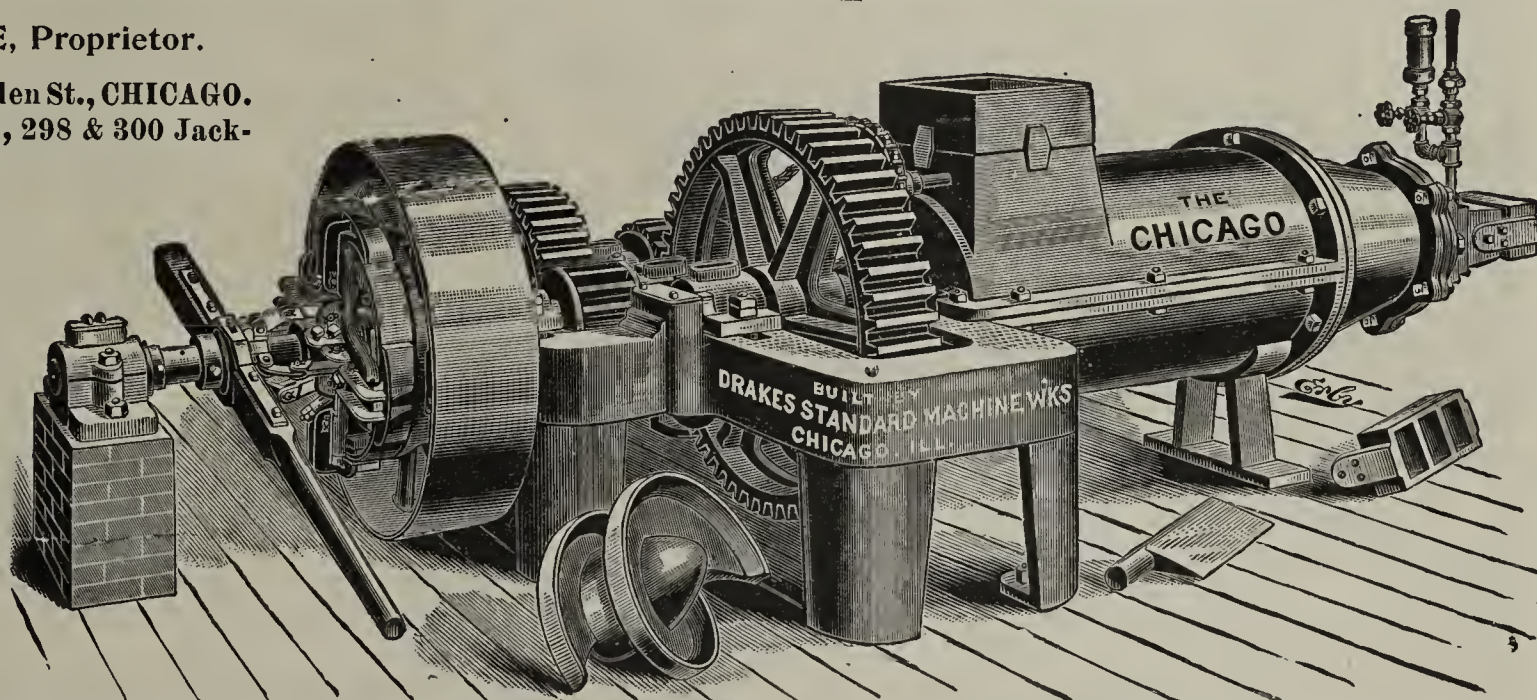
CIRCULARS and very low prices quoted intending purchasers.

DRAKE'S STANDARD MACHINE WORKS,

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY.

C. T. DRAKE, Proprietor.

Factory, 7 & 9 Garden St., CHICAGO.
Office & Salesroom, 298 & 300 Jackson Boulevard.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 50,000 brick per day. Surpassed by none. References: Turner Brick Co., Turner, Ill.; John Mooney, Highland Park, Ill.; A. H. Maynard & Son, Waukegon, Ill.; Myers & Toll, Chicago, and others.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, CLAY CRUSHERS, HAND REPRESSES, ETC., ETC.

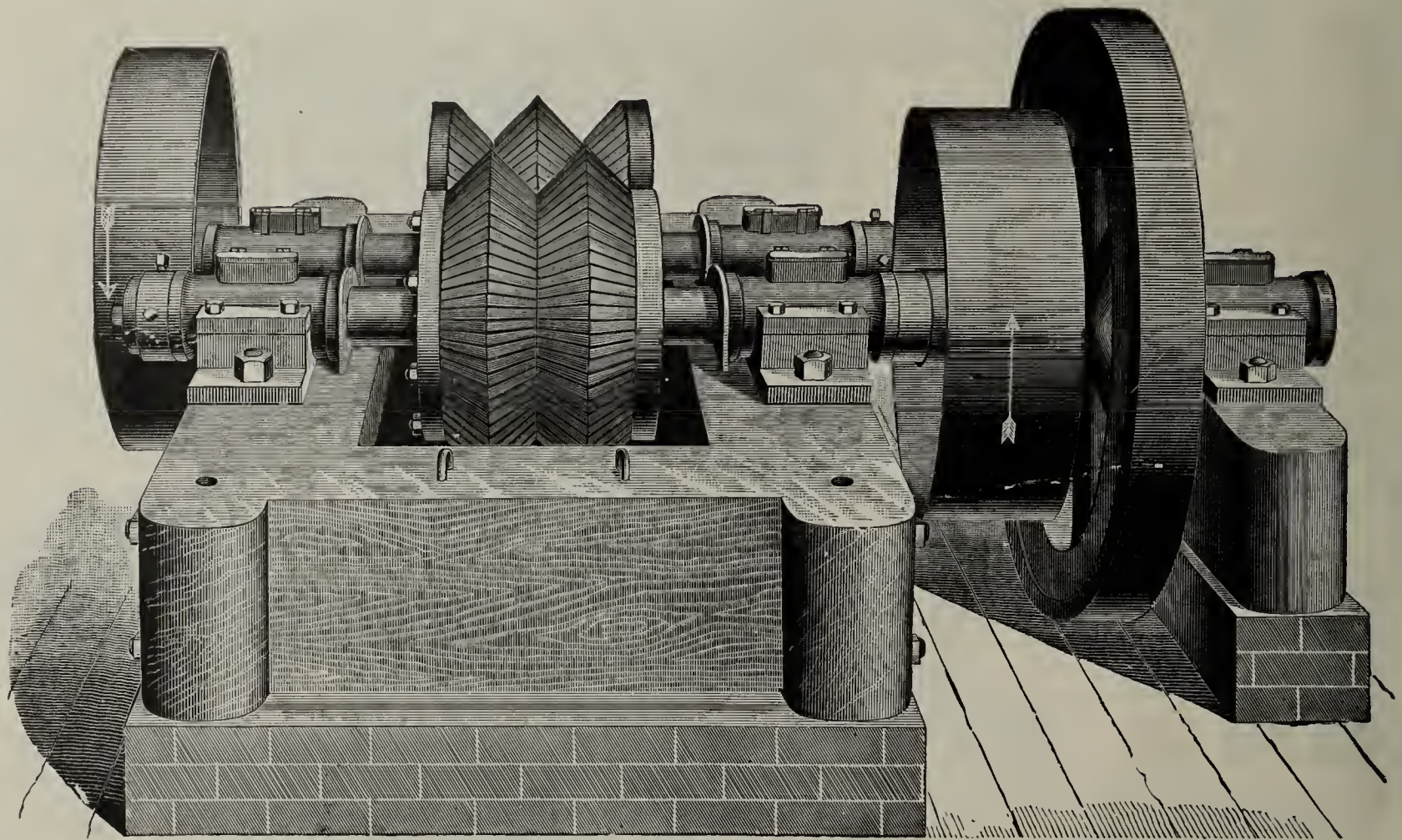
Our "GRANULATORS" are the leaders in Chicago. So says Alsip Brick Co., who are running 11 Granulators; also Hayt & Alsip May, Purington & Bonner Brick Co.; Purington-Kimbell Brick Co.; Purington Brick Co., and many others.

PRICES REASONABLE.

CORRESPONDENCE SOLICITED

NEWELL IMPROVED CLAY PULVERIZER

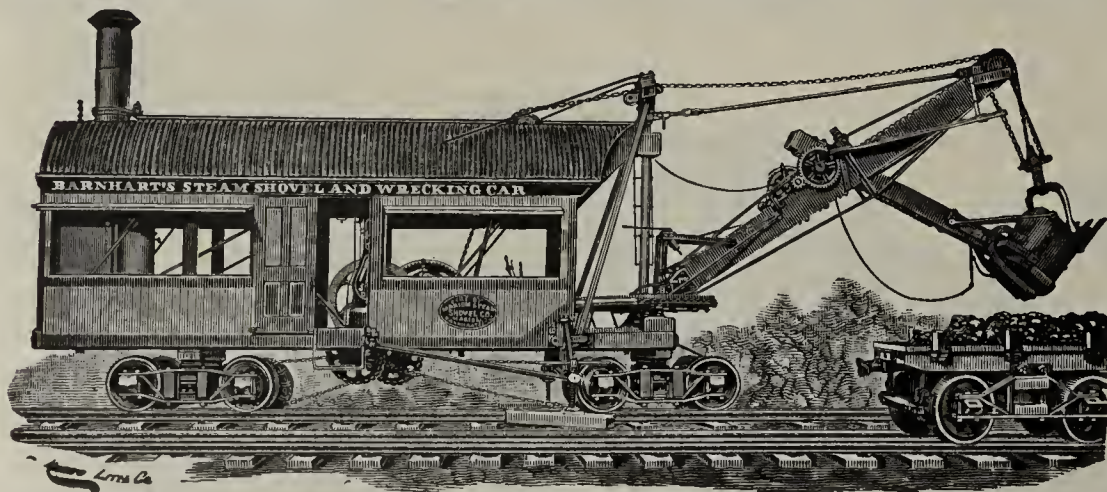
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeyer Building, 26 Cortland and 21 Dey Streets, New York, U.S.A.

STEAM SHOVELS FOR BRICKYARDS.



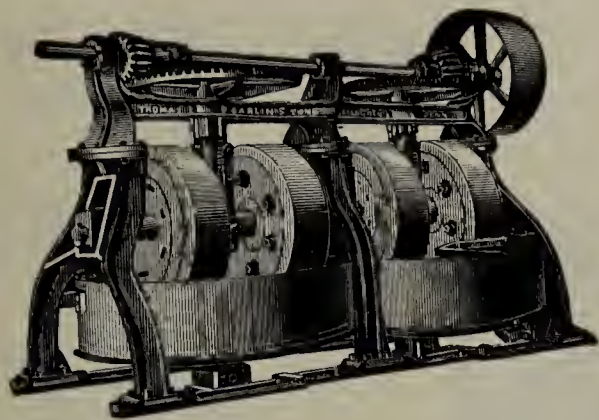
STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have many elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

The Marion Steam Shovel Co.,
603 West Center Street,
MARION. OHIO.



STYLE C—¾ YD



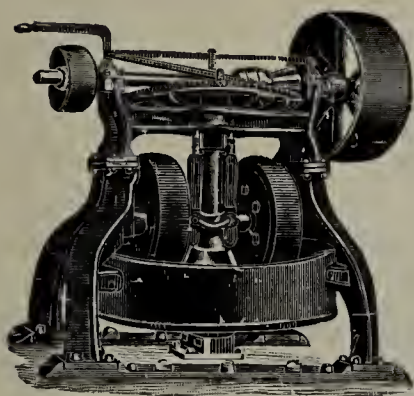
OUR SPECIALTY.

GRINDING AND MIXING PANS

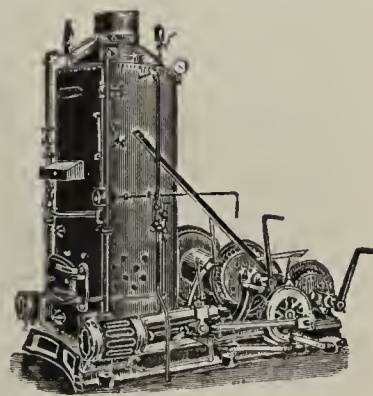
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,
 ENGINES AND BOILERS, HOISTING ENGINES,
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,
 ALLEGHENY, PA.



One 9 foot Dry Pan.
 One 6 foot Dry Pan.

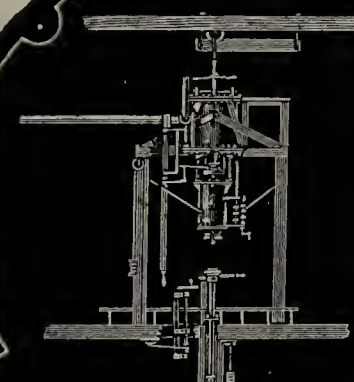
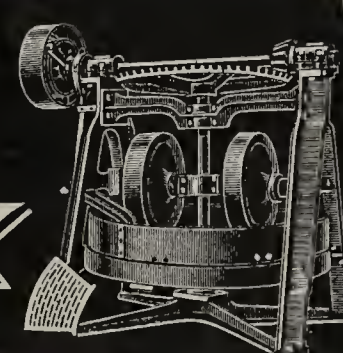
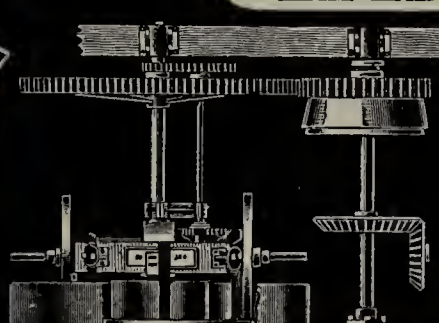
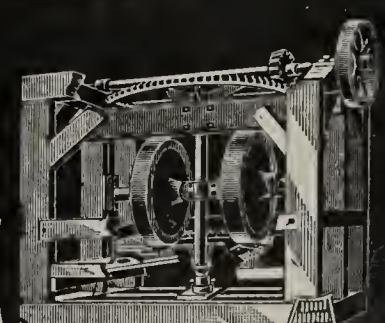
IN STOCK: { One 8 foot Wet Pan.
 Eight 3 foot gauge Dump Cars

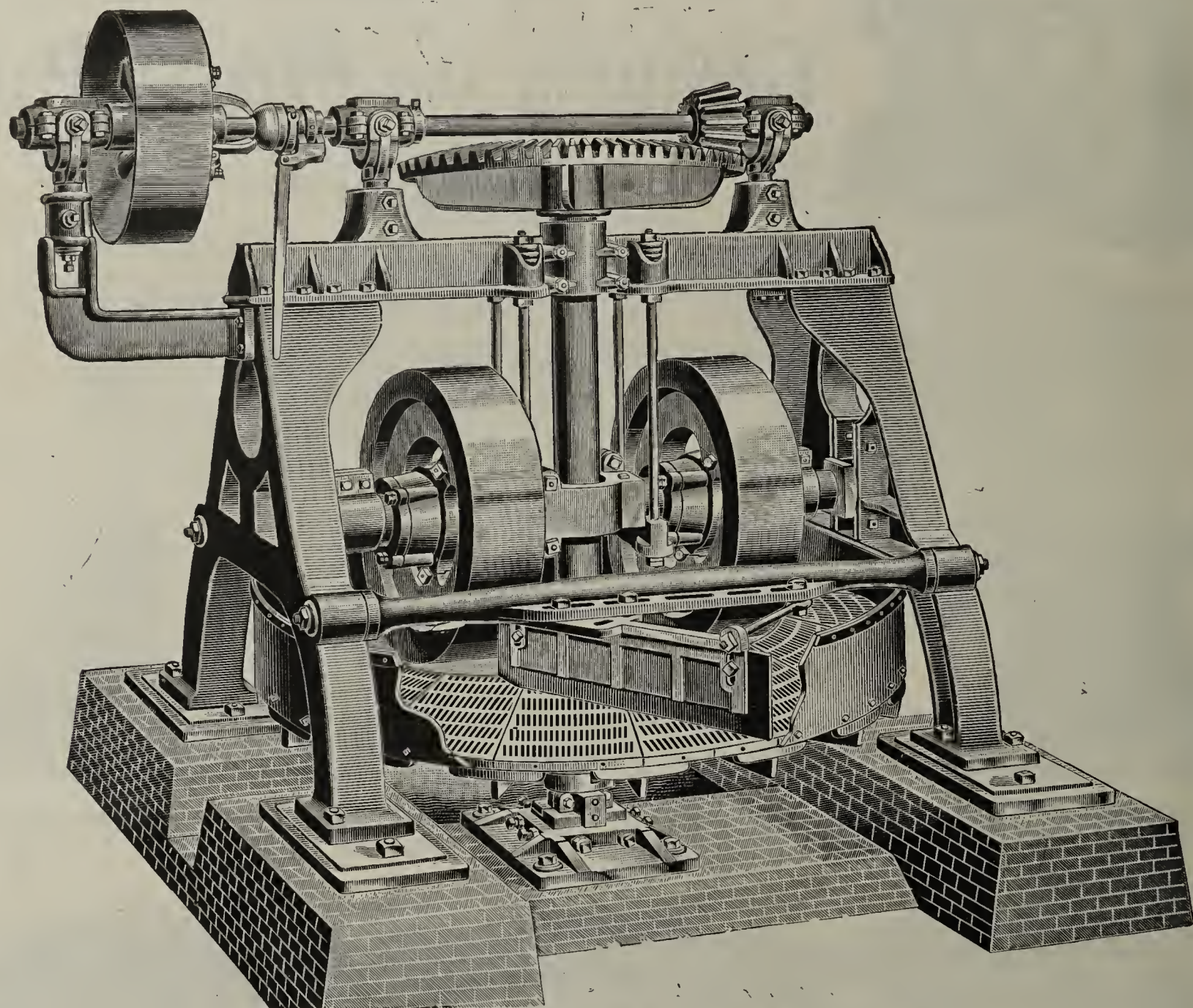
MANUFACTURERS OF
 IMPROVED
**CLAY WORKING
 MACHINERY**
 OF EVERY DESCRIPTION
TAPLIN RICE & CO.

CLAY MILLS,
 STEAM SEWER PIPE PRESS,
 DRY & WET PANS, DIES, CLAY BLOCKERS,
 POTTERS' WHEELS AND
 MACHINERY OF ALL KINDS.
AKRON, OHIO, U.S.A.

PROMPT ATTENTION
 & DISPATCH GIVEN
 TO ORDERS

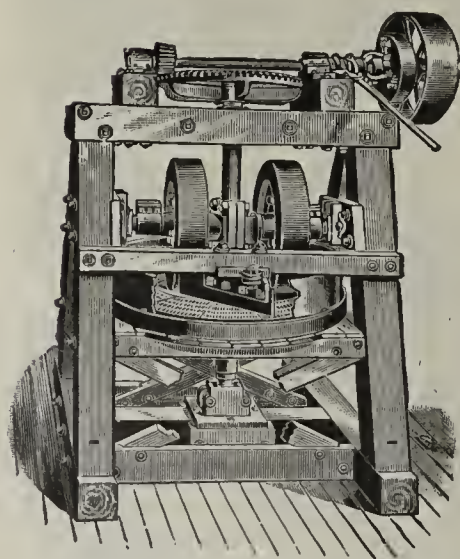
SEND FOR
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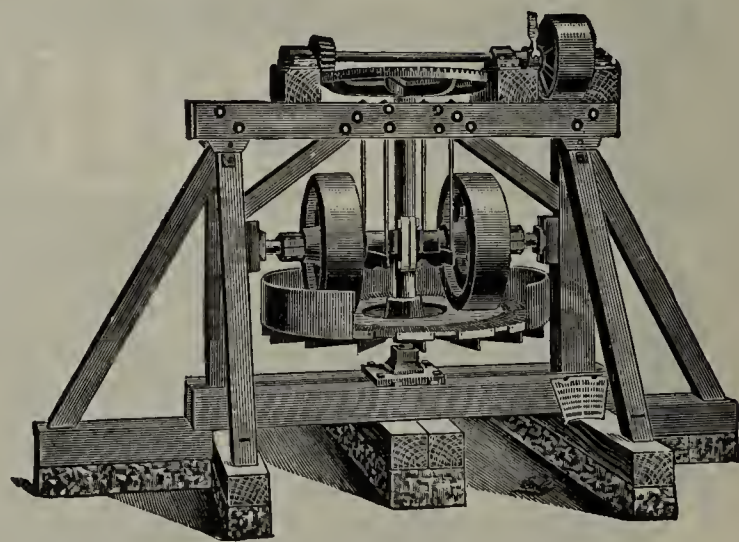
OUR SPECIALTY IS

DRY PANS.



IRON FRAMES,
WOOD FRAMES.

~~~~~  
All Sizes and Price  
to suit  
Any Size Plant.  
~~~~~



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

FROST ENGINE CO., Galesburg, Ill.,
U. S. A.

Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

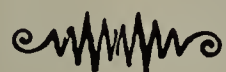
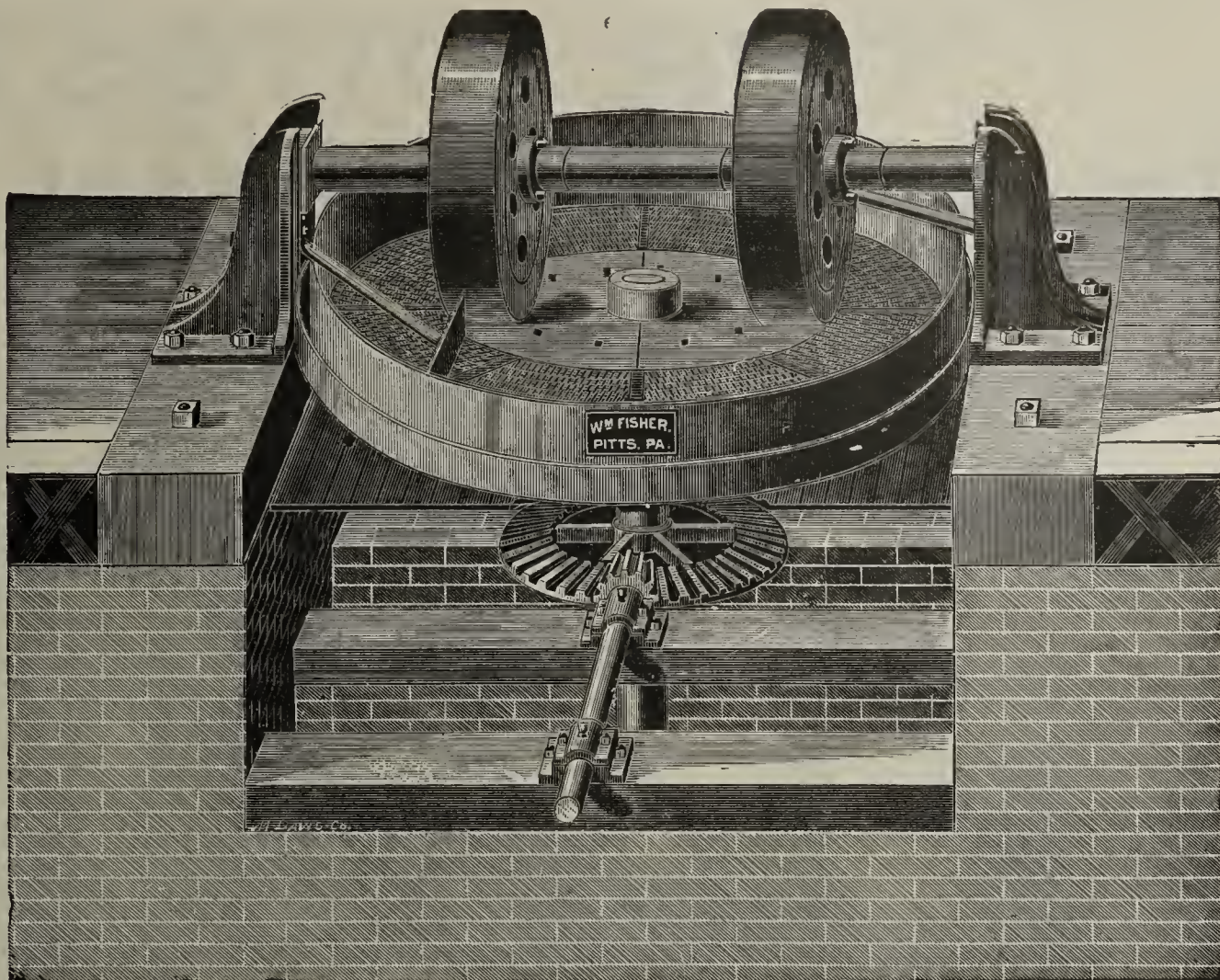
Pittsburgh, Pa.

Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and
Fire Brick Clay,
Limestone, Lime,
Sand, Phosphates,
Bones and other
refractory materials.



Wet Pans,

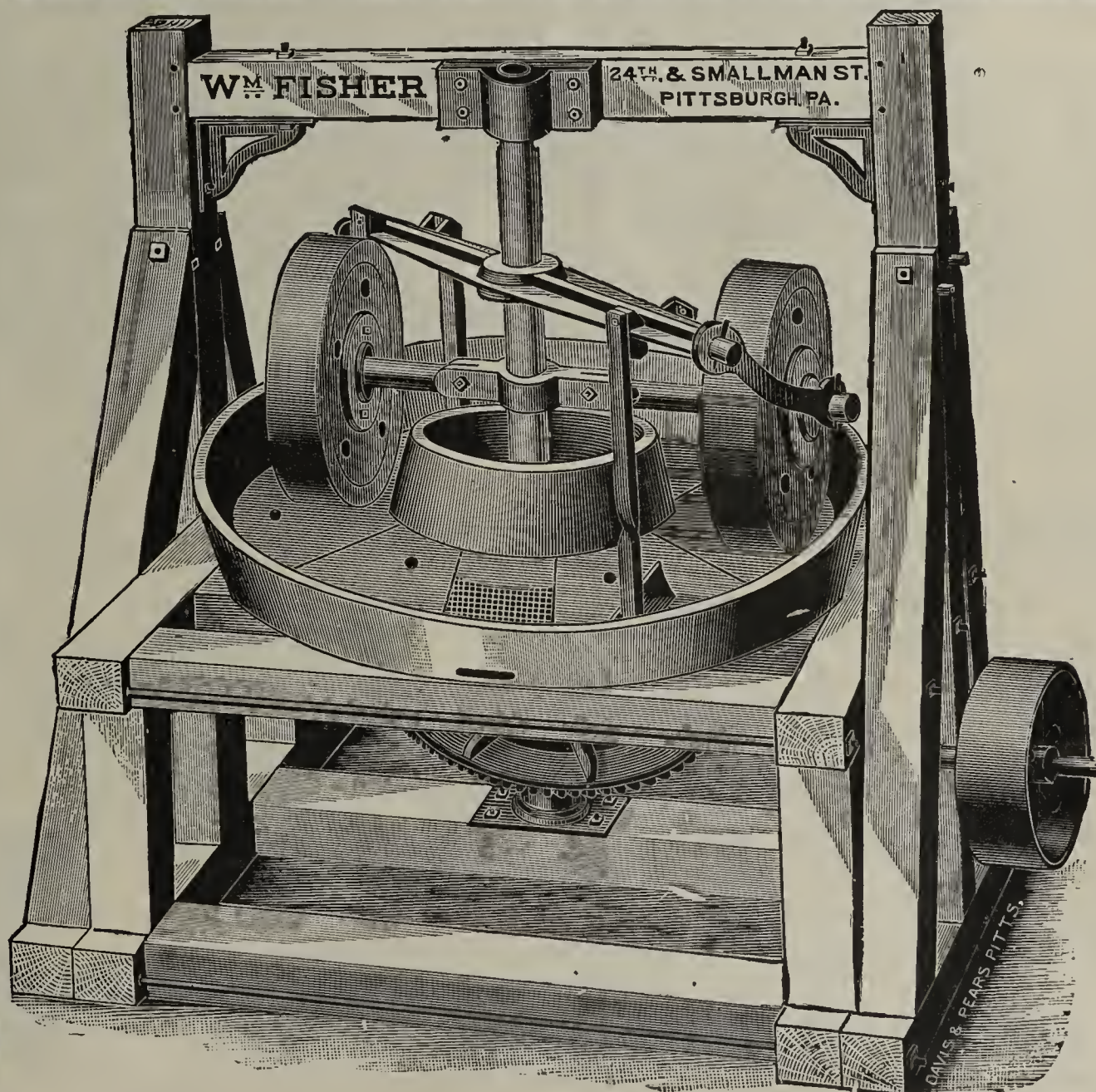
STATIONARY and REVOLVING,

FOR

Brick Works,
Steel Works,
Glass Houses,
Rolling Mills
and Paint Works.



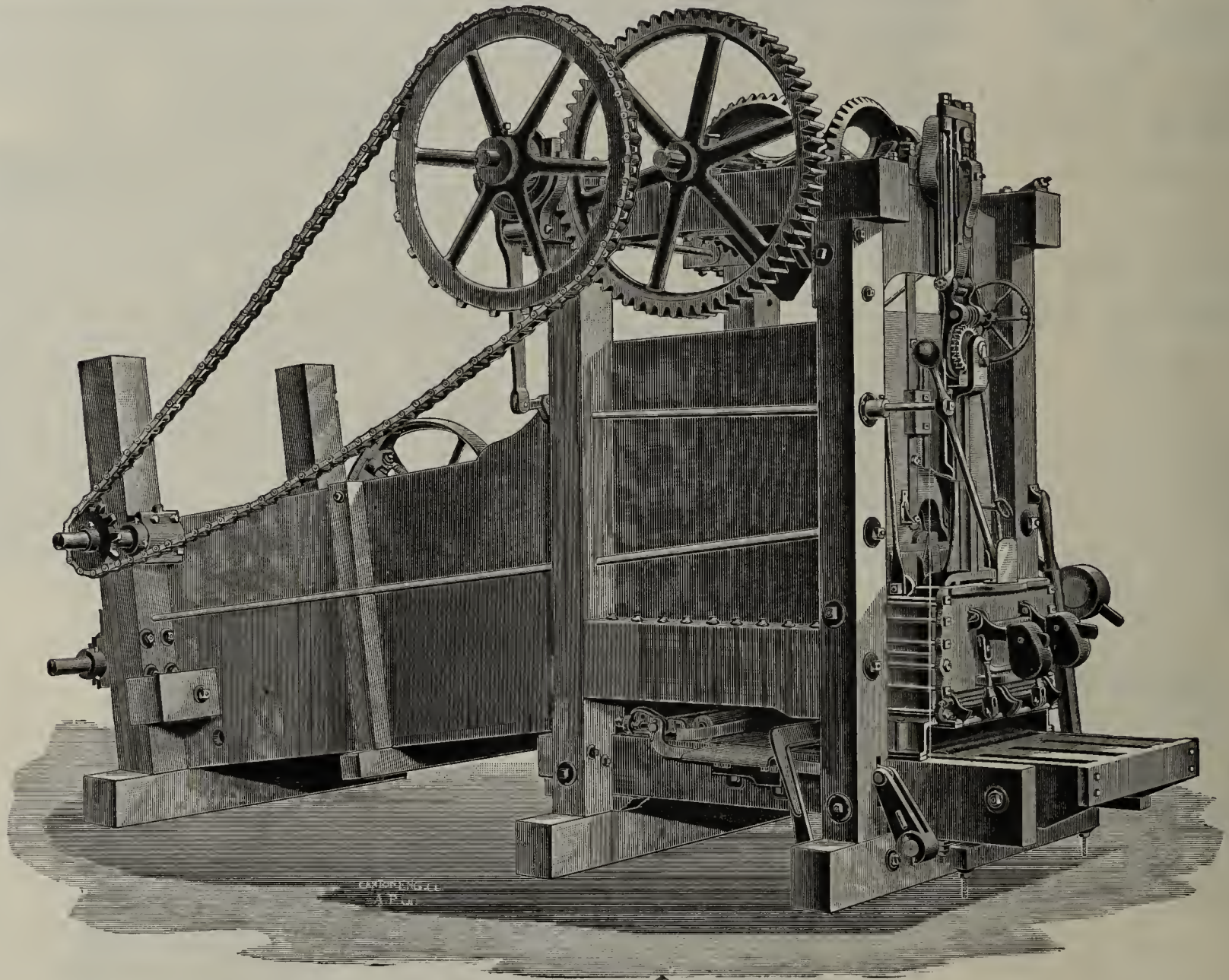
PUG MILLS,
BLAKE CRUSHERS,
BRICK PRESSES.



When writing for prices, state kind of material and capacity required.

OUR LATEST!

The "Tiffin" HORIZONTAL BRICK MACHINE



Possesses all the Good Points and
Patented Special Safety Devices

That have conduced to render our "Tiffin" Vertical Machine so popular with practical Brickmakers.

•❧ PRICES REDUCED. ❧•

| | |
|--|-------|
| Tiffin Horizontal Automatic Brick Machine..... | \$500 |
| " Vertical " " " | 400 |
| " Horse Power " " " | 300 |

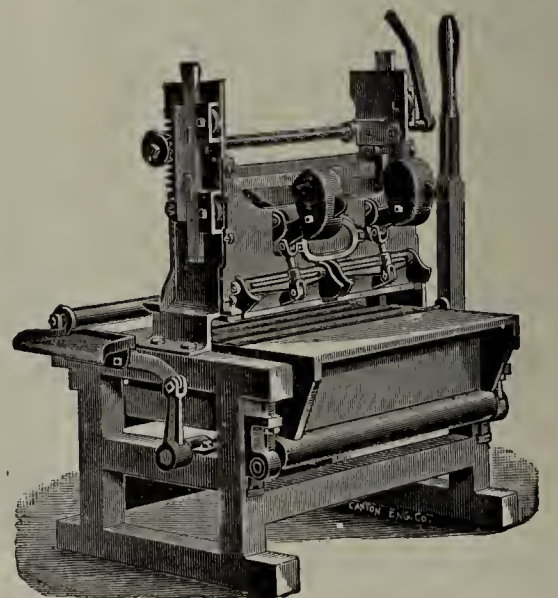
❧ If you have not received a copy of our Illustrated and descriptive Catalogue of Brick Machinery and Brickyard Supplies we will be pleased to mail you one.

TIFFIN AGRICULTURAL WORKS,

Manufacturers of Steam and Horse Power Automatic Brick Machines, Horizontal Pug Mills, Elevators, Crushers, Tilting Turn Tables, "Old Reliable" Brick Machines, Pug Mills, Trucks, Wheelbarrows, Molds, Etc., Etc.

TIFFIN, OHIO.

The "Old Reliable"



MAINTAINS THE REPUTATION of being the best Machine on the market for use in small yards.

Actual Use Decides the Durability of a Machine.

MARTIN'S LETTER "A"

IS PRONOUNCED BY....



Practical
Brickmakers

TO BE ~~~~~

THE STRONGEST,
MOST PERFECT
~~~~~ AND BEST  
Brick Machine in Use.

Are you looking for a machine that will work your clay? Before buying, do not fail to investigate the merits of the **MARTIN**.

There are over 3,000 of our Machines now in practical operation.

We will cheerfully furnish any information in reference to the manufacture of brick that may be desired.

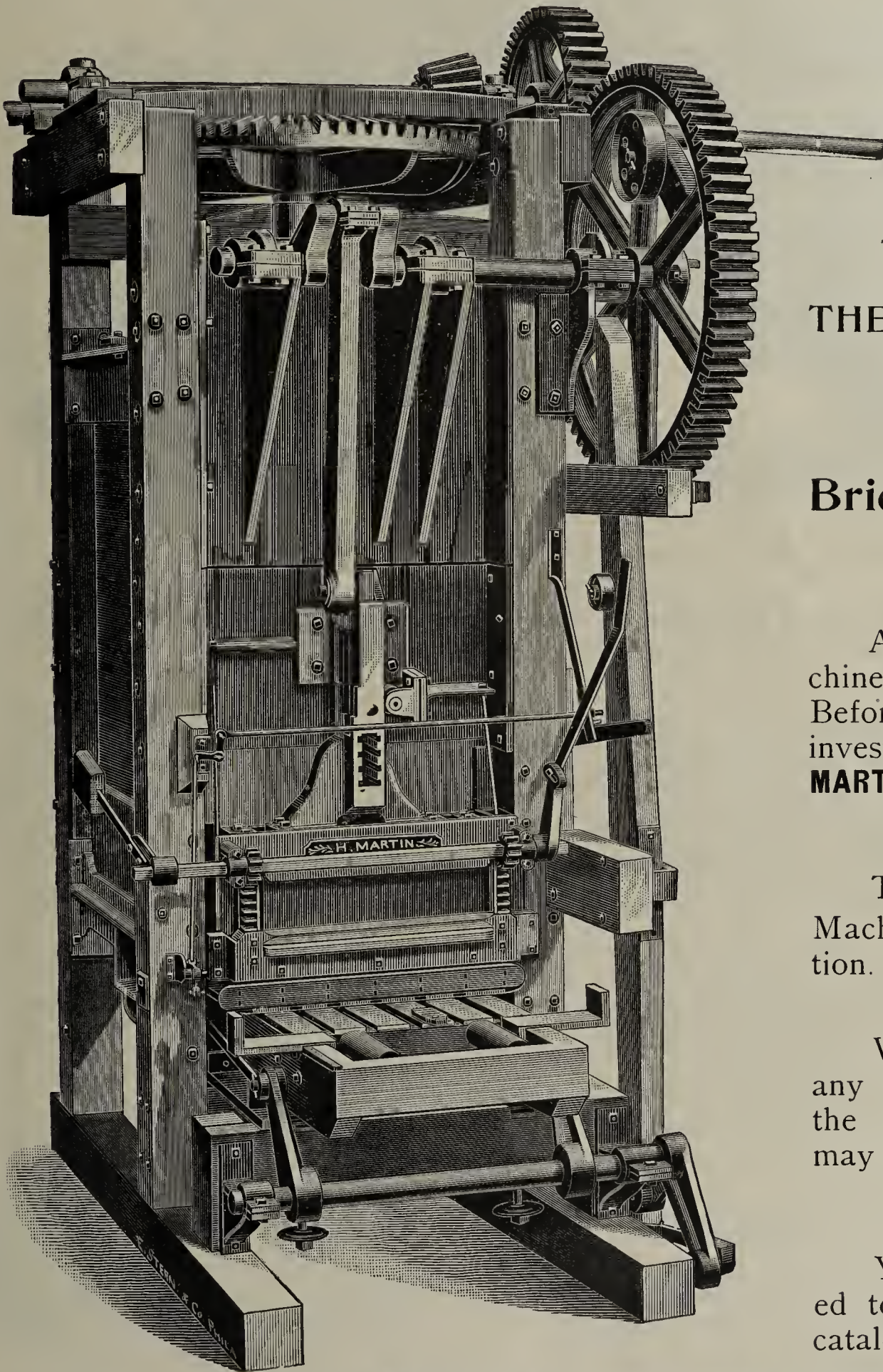
You are respectfully requested to write for our new 1894 catalogue

## THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

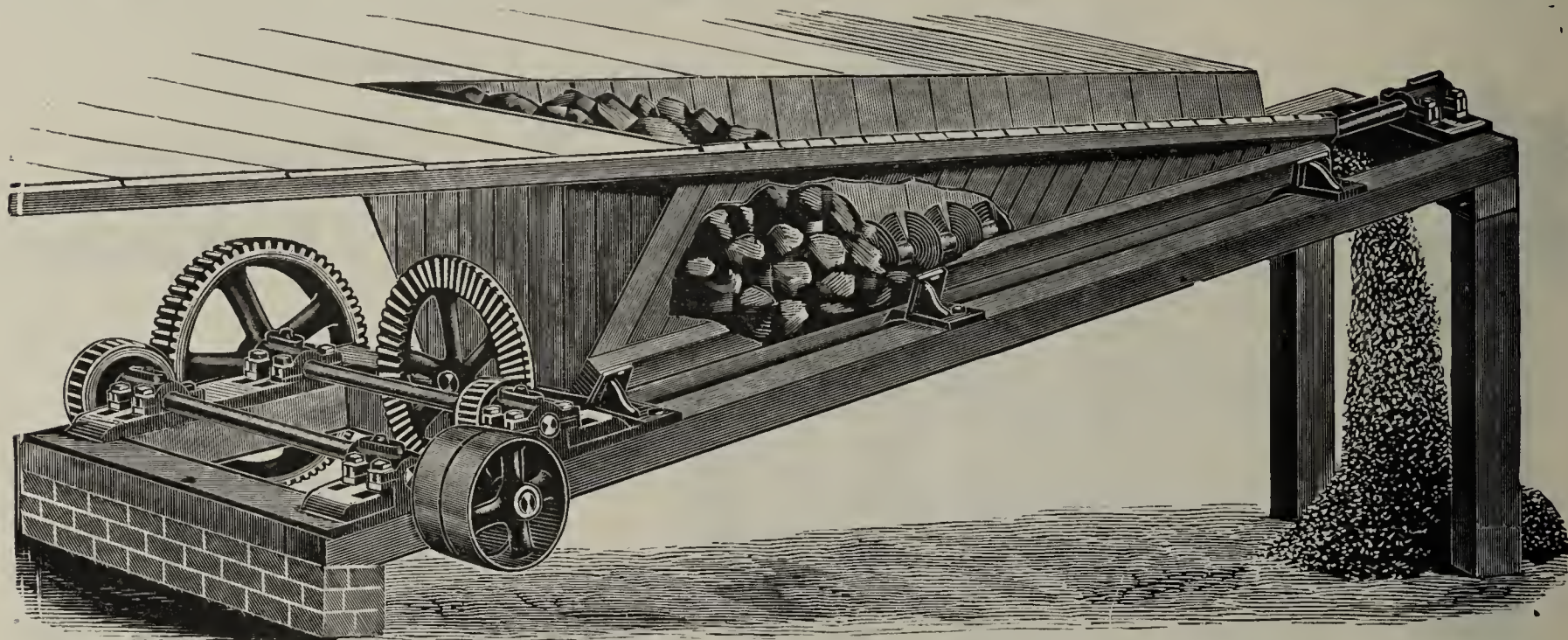
~~~~~ INCORPORATED ~~~~~

OFFICE: No. 36 E. James St.
WORKS: Cor. James and Christian Sts. }

LANCASTER, PA., U. S. A.



EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
 2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
 3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
 4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
 5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
 6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.
- This machine is sold entirely upon its merits.

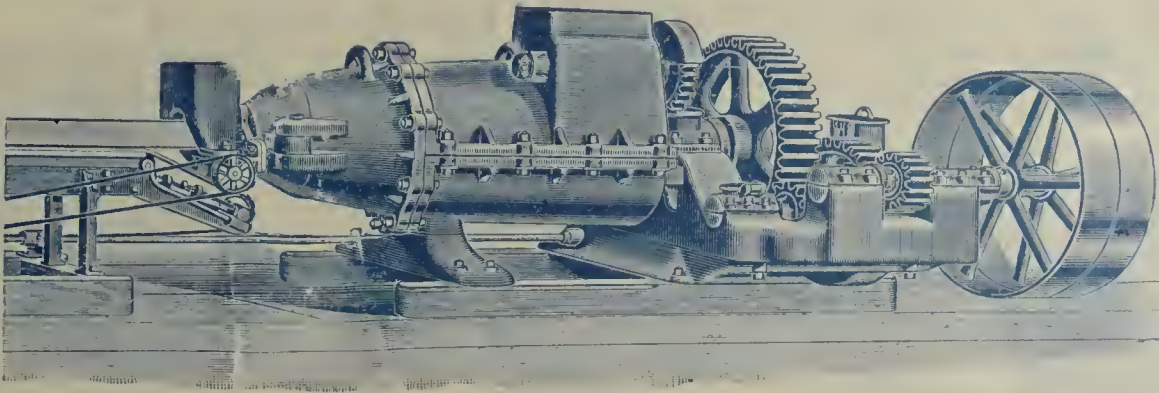
—REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

John Torrent,

MUSKEGON, MICH.

Mention Clay-Worker.



Penfield Auger Brick Machine.

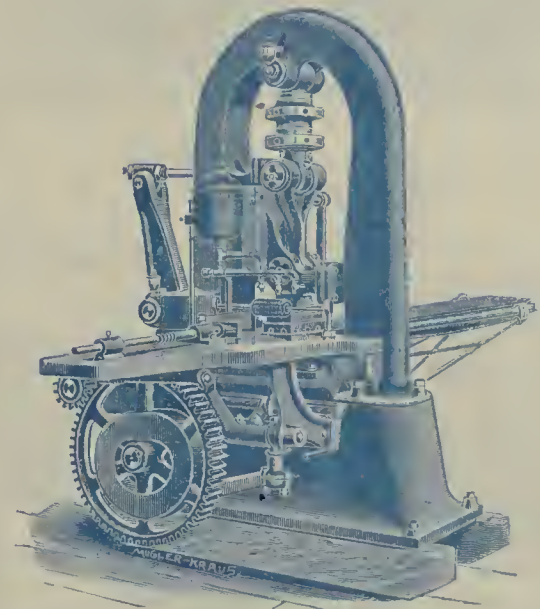
Don't Forget!!

'Tis generally easy to forget, but it's not often profitable. Forgetfulness is a leading forerunner of neglect and neglect never pays satisfactory dividends.

There are some things especially that wide awake brickmakers should keep well in mind:

1st. Don't forget Penfield Machinery.

2nd. Don't forget that it embraces all kinds of Brick Machines, (Dry Press, Auger, Plunger and Sand Moulding). Also a full line of Clay Preparing Machinery and Brickyard Supplies.



Penfield Power Brick Reprass.

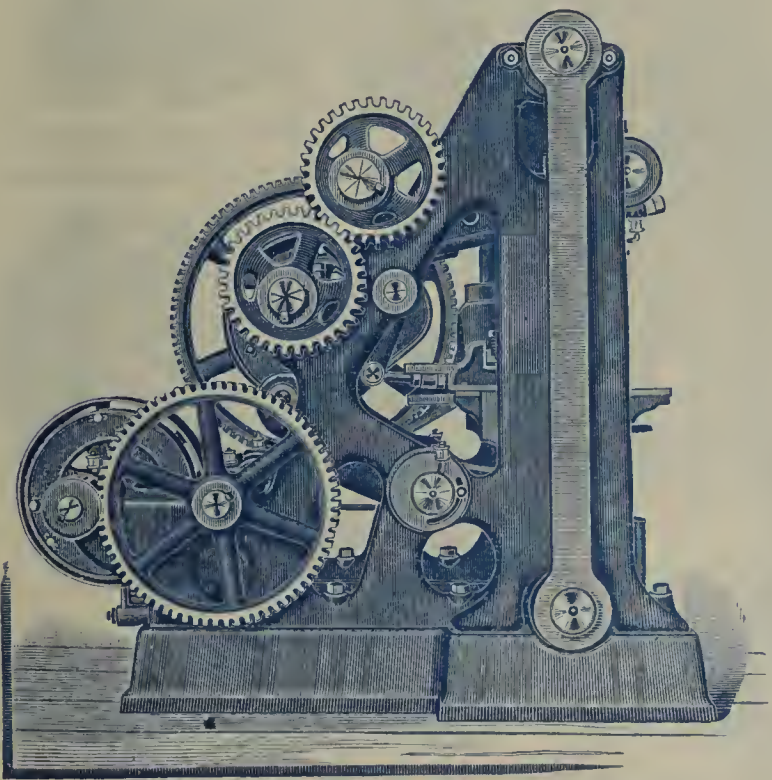
3rd. Don't forget that Penfield Machinery is the best, regardless of price.

4th. Don't forget to write us about it.

ADDRESS

J. W. PENFIELD & SON,

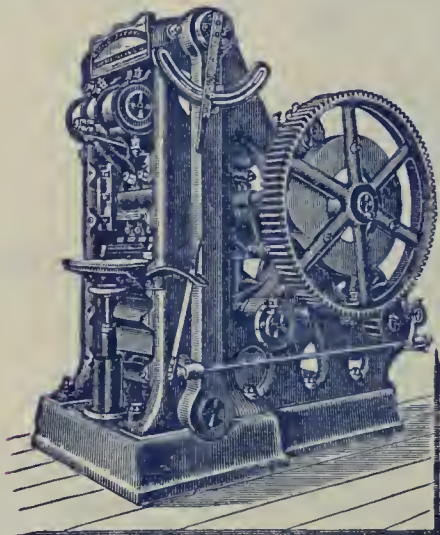
Willoughby, Ohio, U. S. A.



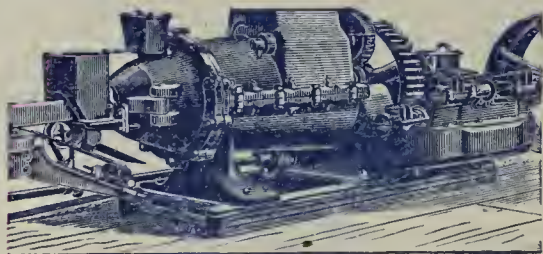
Penfield Dry Press Brick Machine.

J. W. PENFIELD & SON, WILLOUGHBY, OHIO, U. S. A.

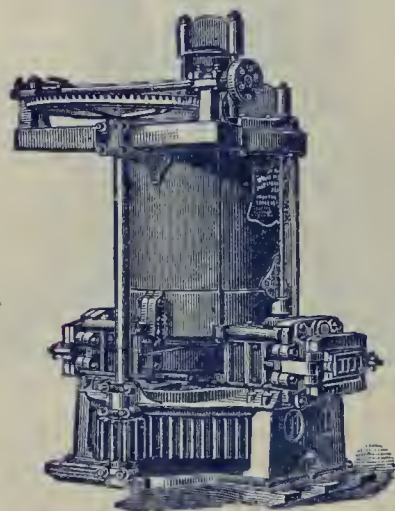
Some Things We Make:



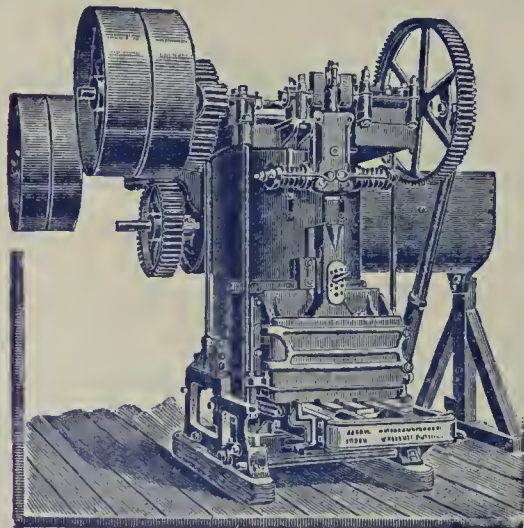
Dry Press Brick Machines.



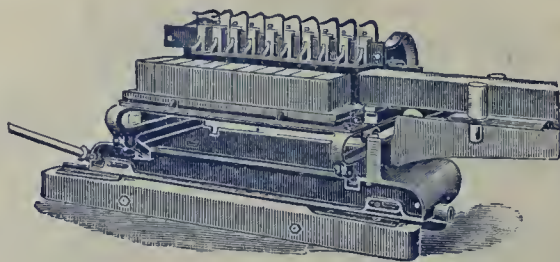
Auger Brick Machines;
Auger Tile Machines.



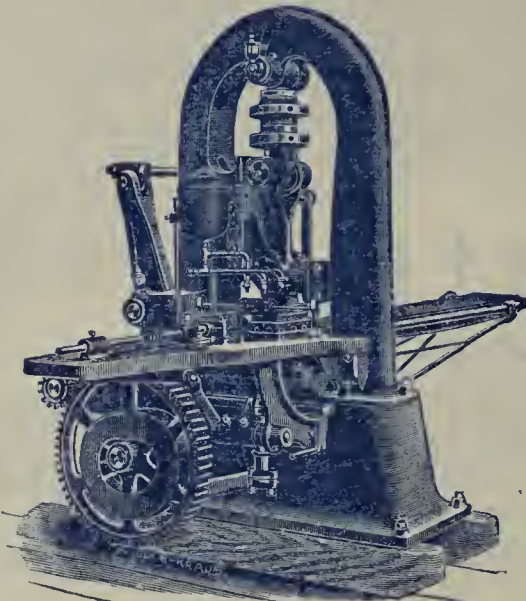
Plunger Brick Machines,
Also suited for making Tile, Fireproofing, Etc.



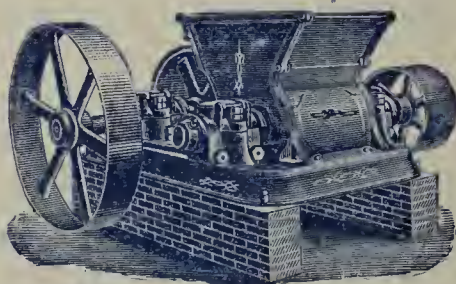
Stock Brick Machines,
For Sand-Mold Brick.



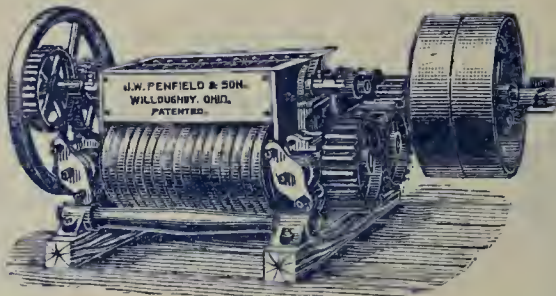
Board Delivery Brick Cutters.



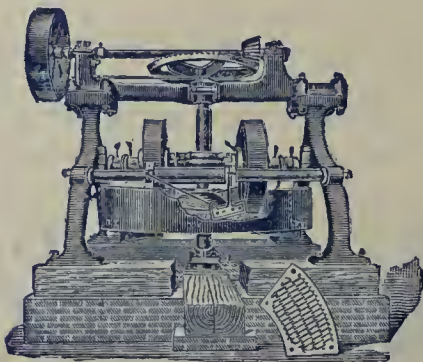
Brick Represses.



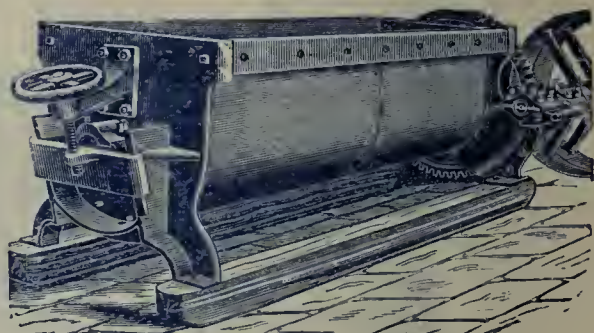
Disintegrators,
Singly or combined with Crushers or Pug Mills.



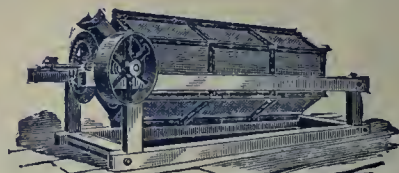
Clay Crushers; Stone Separators.



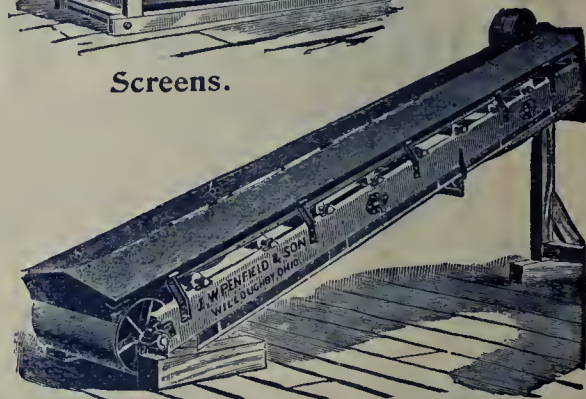
Dry Pans; Wet Pans.



Pug Mills; Granulators.



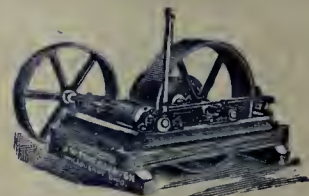
Screens.



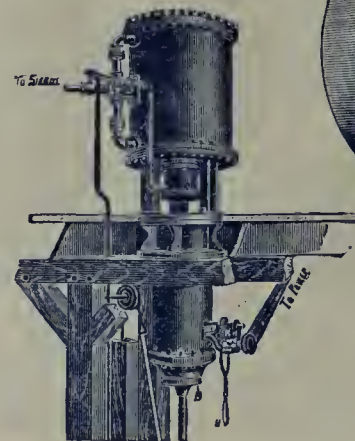
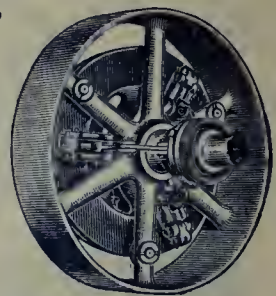
Clay Elevators; Conveyors.



Clay Cars.



Winding Drums.
Barrows; Kiln Castings, Clutch Pulleys,
Sewer Pipe Presses,
Etc.



Send for Catalogue.

J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A.

J. W. PENFIELD & SON,
WILLOUGHBY, O.

J. W. PENFIELD & SON,
WILLOUGHBY, O.

A New Departure in Brick Machinery

THE HORIZONTAL ANDERSON

OUR latest and most complete combination of Brick Machine, Pug Mill and Disintegrator for the price of one Machine. No outside Plunger with bothersome Gibs and Plates. A Machine that will run for years without requiring any adjustment and never leak. **UNEXCELLED** for **GRINDING** and **PUGGING CAPACITY**; simple in construction and durable.

This Machine is self-contained and requires no other Shafting, Pulleys, Hangers or even Foundation, other than that shown in cut. Manufacturers of Brick by the soft mud process will find it to their interest to investigate this Machine before making their contracts for new Machinery. Write for descriptive circular, prices, etc. We can save you money in the beginning, and make you happy in the end. Capacity equal to any other Machine on the market. We extend a cordial invitation to all prospective purchasers to pay us a visit and allow us to show them the Machine in operation.

INDIANAPOLIS, IND., March 20, 1894.

ANDERSON FOUNDRY AND MACHINE WORKS,

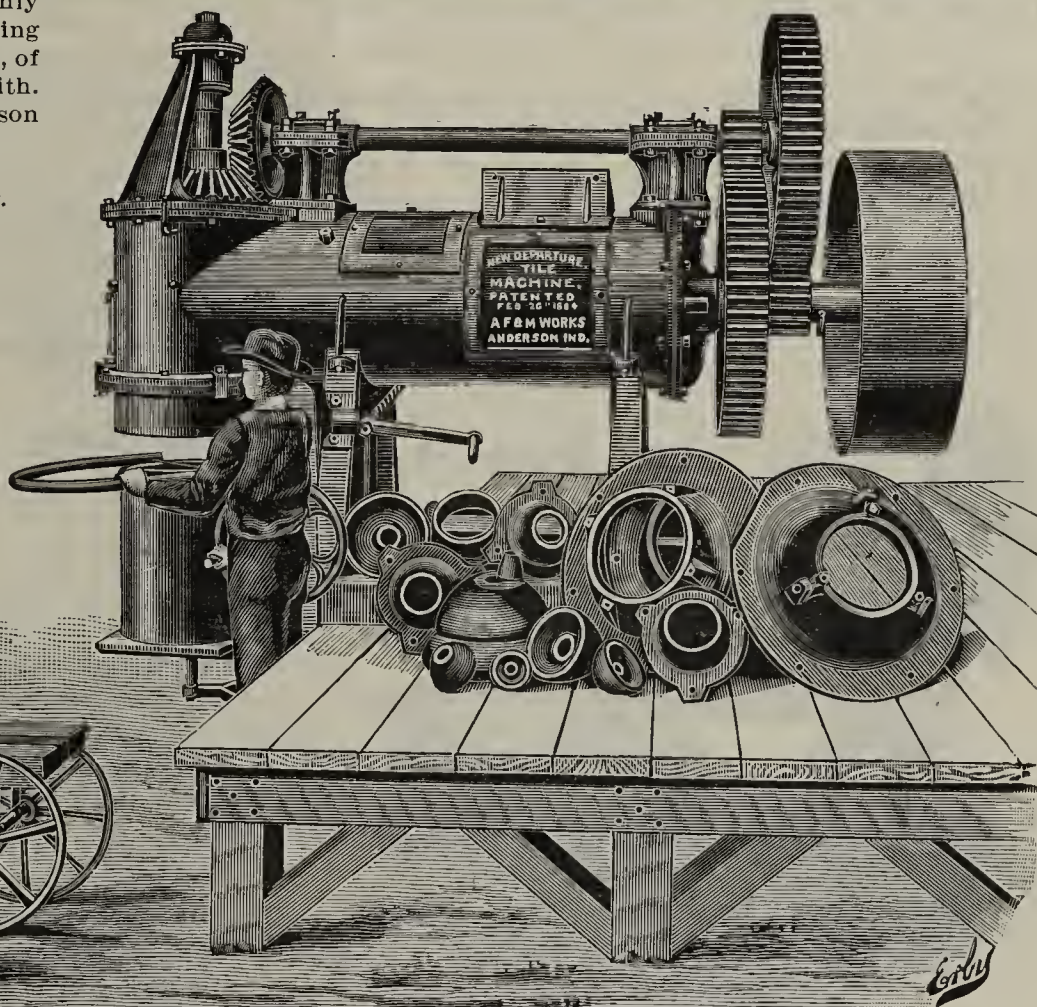
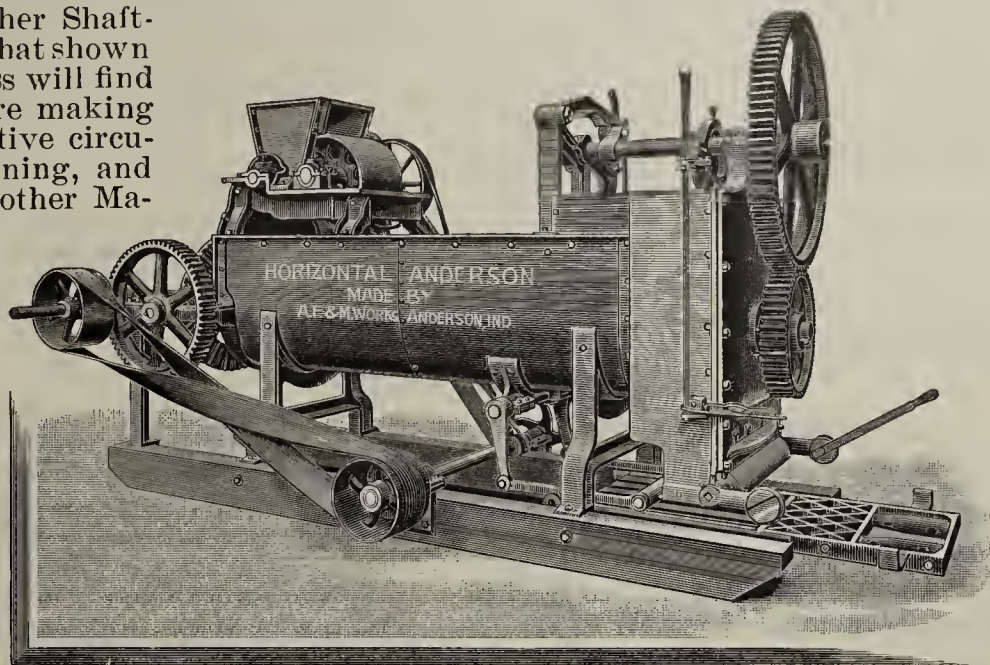
Anderson, Ind.

GENTLEMEN:—It affords us much pleasure to state that the Horizontal Anderson Brick Machine purchased of you last season has given us the best of satisfaction. We have owned and operated eight different Brick Machines previous to this one, and we do not hesitate to pronounce the Horizontal Anderson superior to any and all of them.

We operated the machine during the extremely dry weather of last season and found that no matter how dry and hard the clay was when taken from the bank, the machine thoroughly pulverized and pugged it to the proper consistency for making first-class brick, and at the same time dispose of all stones, of which, unfortunately for us, we have a great many to contend with.

We are willing at all times to show the Horizontal Anderson to our competitors who are in the market for new machinery.

A. BRUNER & CO.,
Willis Privett, Manager.



THE GREATEST ON EARTH

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 inches to 24 inches in diameter in a manner that defies competition.

DOWN DELIVERY FOR LARGE TILE.

SIDE DELIVERY FOR SMALL TILE.

THE ANDERSON FOUNDRY & MACHINE WORKS, - - Anderson, Indiana.

Fresh Evidence Monthly of the Highest Quality.



NEVER !!

No other "soft mud" machine ever did what Mr. Kline states below. His is a winter yard and now in operation. "Go and see" something *no other "soft mud" machine CAN do.*

THE WELLINGTON MACHINE CO.,
WELLINGTON, OHIO:

READING, PA., July 27, 1893.

GENTLEMEN:—The "Monarch" machine we bought of you last December is doing wonderfully well. It makes finer brick after it has been used a while, or worn in to operate the clay. This "Monarch" machine makes brick that we turn up without marking them, right after they are dumped on the pallets. The brick stay in perfect shape; the corners are perfectly filled out.

I manufacture with this machine thirty thousand brick in less than seven hours. The brick made for repressing are made in the morning and repressed in the afternoon, and then hacked in the shed to dry. I have turned out over four million brick with the "Monarch" machine while in operation from last December, and I have plenty of call for them. I don't need to go to make sale, they come to my works and buy before they leave.

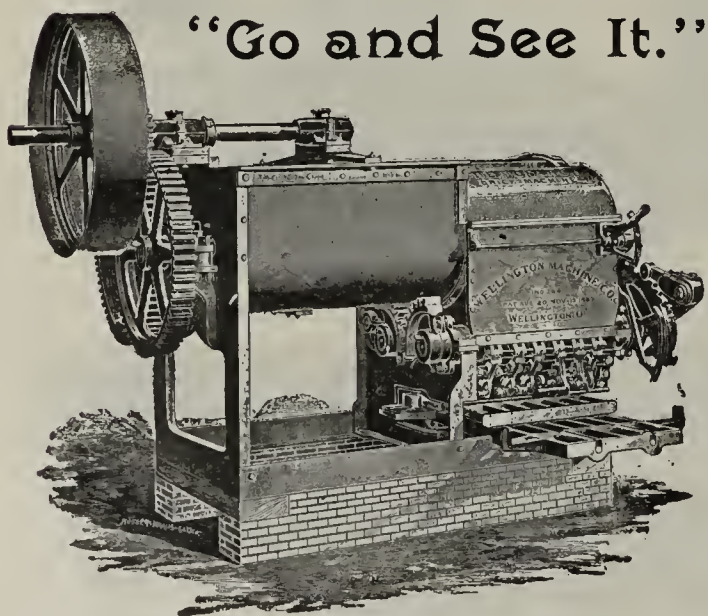
I have seen between thirty and forty brick machines, and none of them can do as fine work as the "Monarch." It is well geared and strong, and the expense of breakage is not worth talking about. It did not delay us.

I shall be pleased to show and fully recommend your machine to any one who is in need of one, and any one visiting our city can call upon us and inspect our "Monarch" personally.

Wishing you every possible success, which you deserve, I remain,

Very respectfully yours,

SIMON KLINE.



DON'T FORGET THESE FACTS.

That we worked five years developing the new principles in this machine, perfecting and simplifying every detail before we put it on the market.

That it is scientifically and mechanically constructed from the ground up, aiming not merely at goodness, but at perfection.

That it has 14 feet of pug mill (double), changing direction of movement of clay three times, cutting it all up.

That the presses are entirely in the mud. (This is the greatest point ever produced in a brick machine). Enabling moulding the stiffest possible material. Wear, leakage and friction are absolutely eliminated. This means much. Reflect on its importance.

That it is extremely simple. (Only four gears and none bevel.)

Immensely strong, (all iron and steel. Weighs 11,250 pounds.)

That long, easy moving, scientific leverages make its draft so light.

Investigate it now as it will last a lifetime, and is the "perfect machine" you have longed for so long. Only investigate is all we ask. GO AND SEE for yourself; the small cost of the trip, will be the best investment you ever made.

The Wellington Machine Co.,

Wellington, Ohio.

See the October CLAY-WORKER for list of 43 Happy Users.



THE "QUAKER"

Family of Machines, are the Most Used of Any Single Make of Machine.

The "New Model Quaker" Horse-Power Machine.

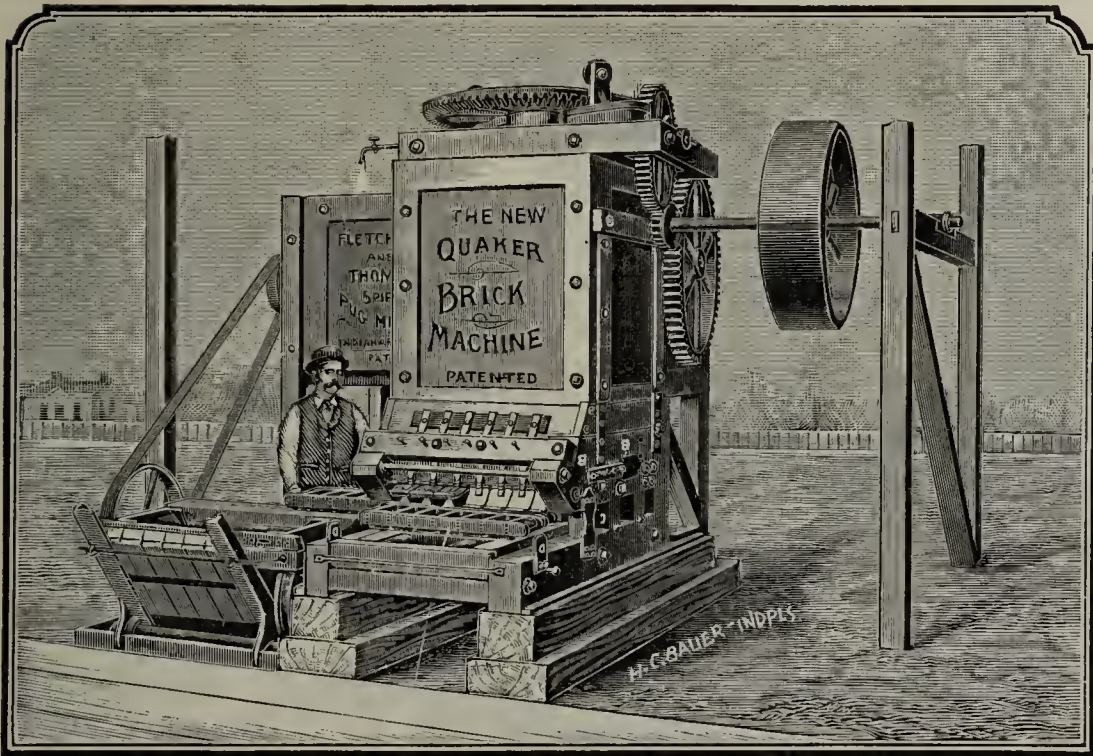
Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



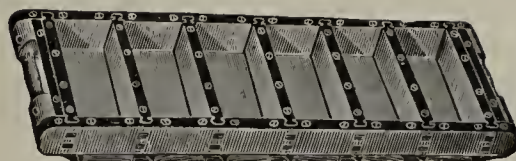
Steam-Power Machines—Two Sizes

The "Regular" is the Horse-power Machine with necessary gearing for steam-power added.

The "Extra Heavy" is a much heavier, specially built machine, and has for years stood at the head of all upright, wooden framed machines.



THE combination of our "Extra Heavy Steam Power Machine" with a "Horizontal Pug Mill" makes an outfit that will take clay from the bank, and make as many brick per day as any gang can take care of. Has made 50,000 per day.



(FOUNDERS AND MACHINISTS.)

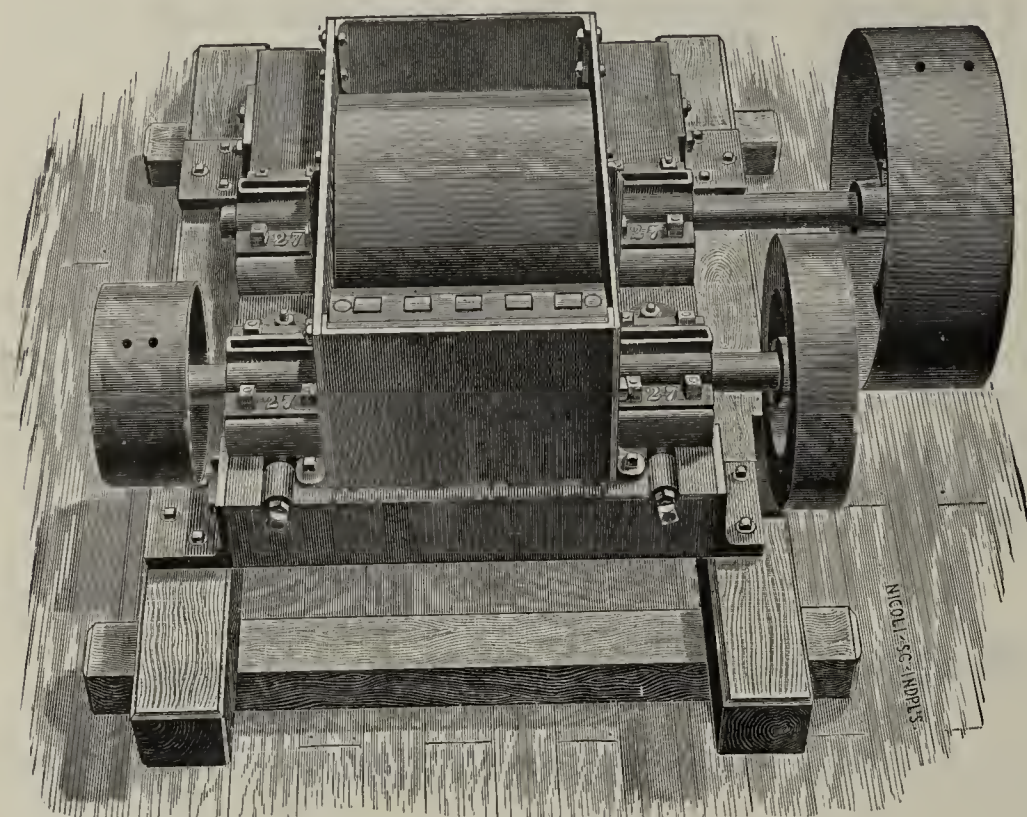
Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

The Wellington Machine Co.

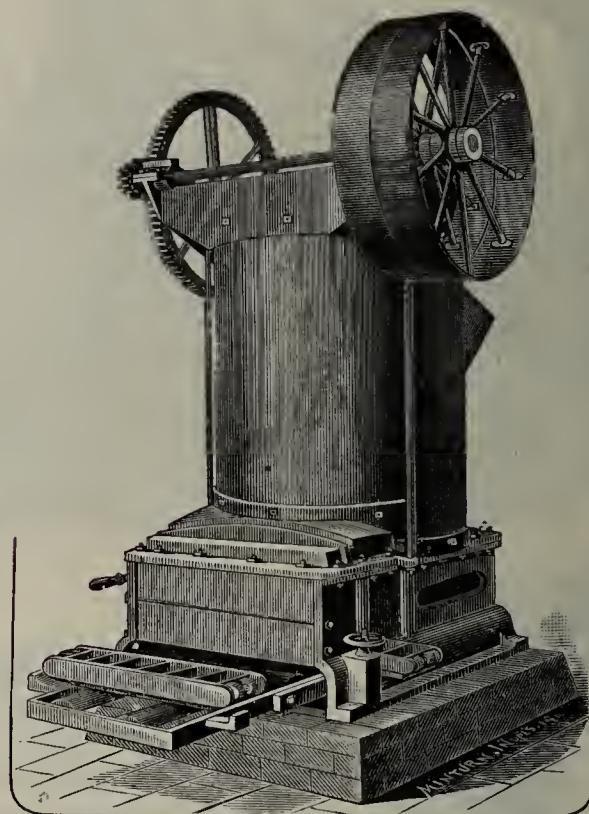
Wellington, Ohio.

GREAT BARGAINS IN GOOD



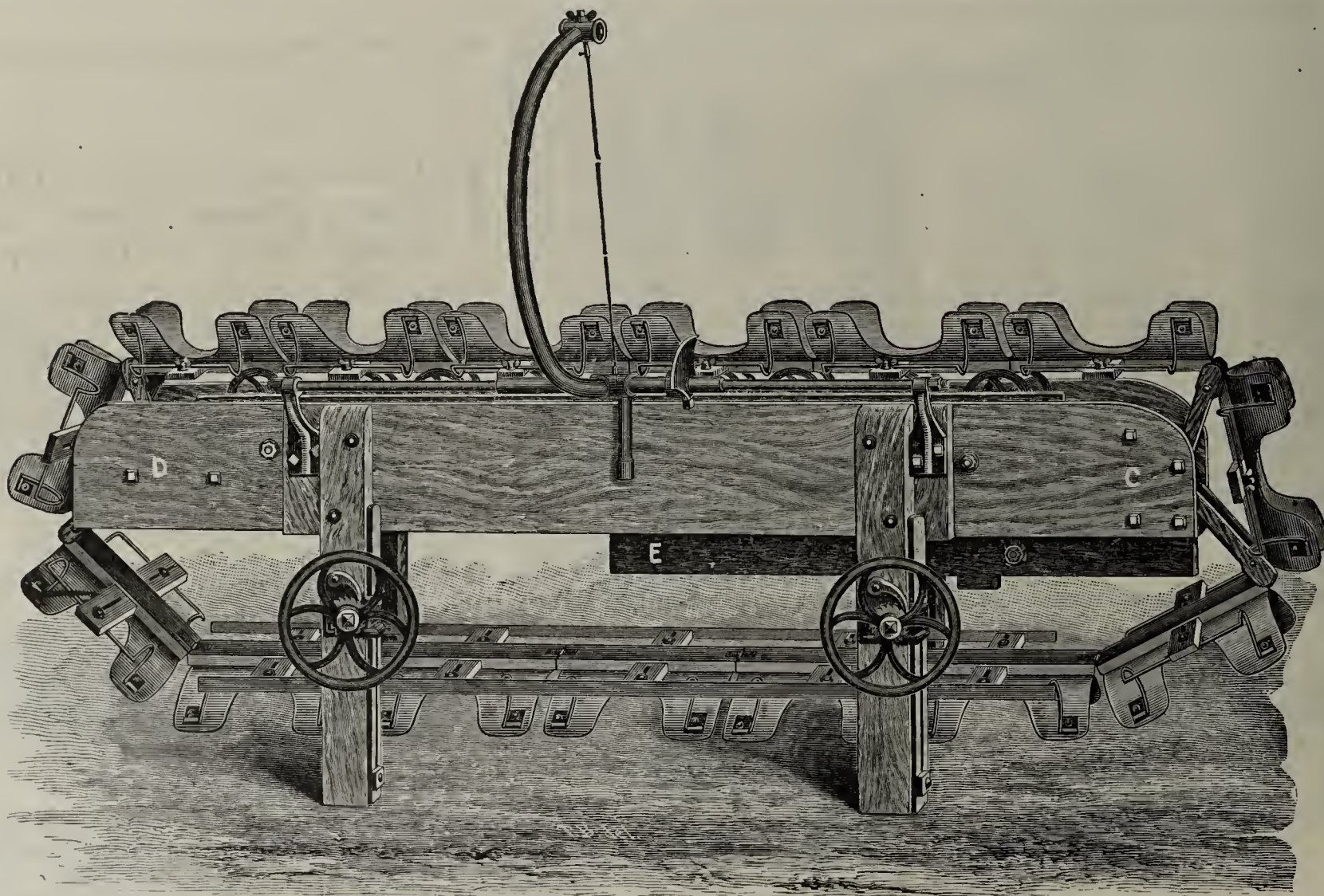
No. 1 Disintegrator.

This Disintegrator is plain, simple and strong, will separate the stone and will handle sufficient clay for 30,000 to 40,000 brick per day.



The Hoosier Brick Machine.

Machines for making sanded brick for both steam and horse-power. We have a number of these machines in stock and it will be to your interest to write us for prices before placing your order.

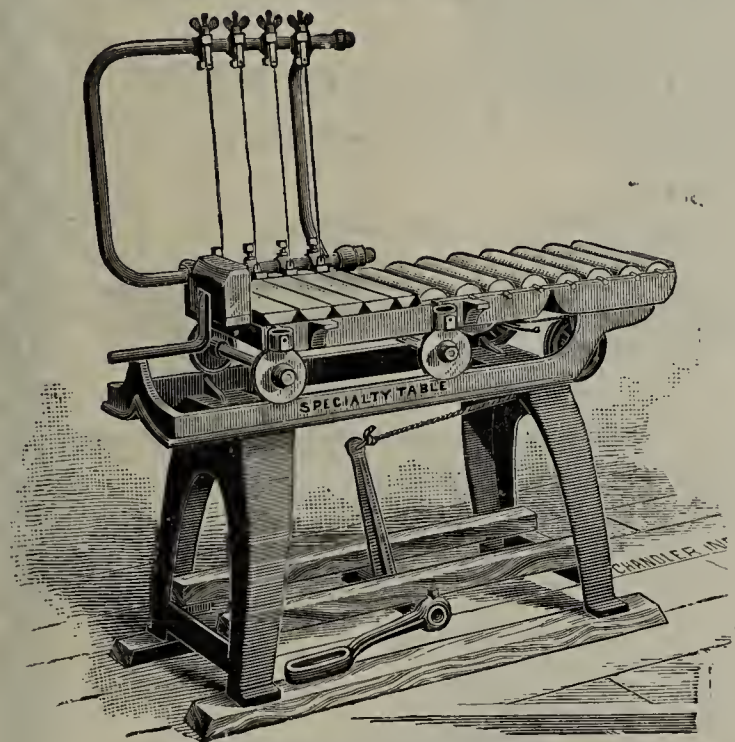


The Endless Belt Table (shown with No. 5 machine), is undoubtedly the best Tile Cutting Table ever made. It will carry tile from 3 to 12 inches. The No. 2 Table, which is only half the length of the Table shown, will handle tile from 12 to 15 inches, and delivers them on a pallet without handling.

Write us for rock bottom prices, address,

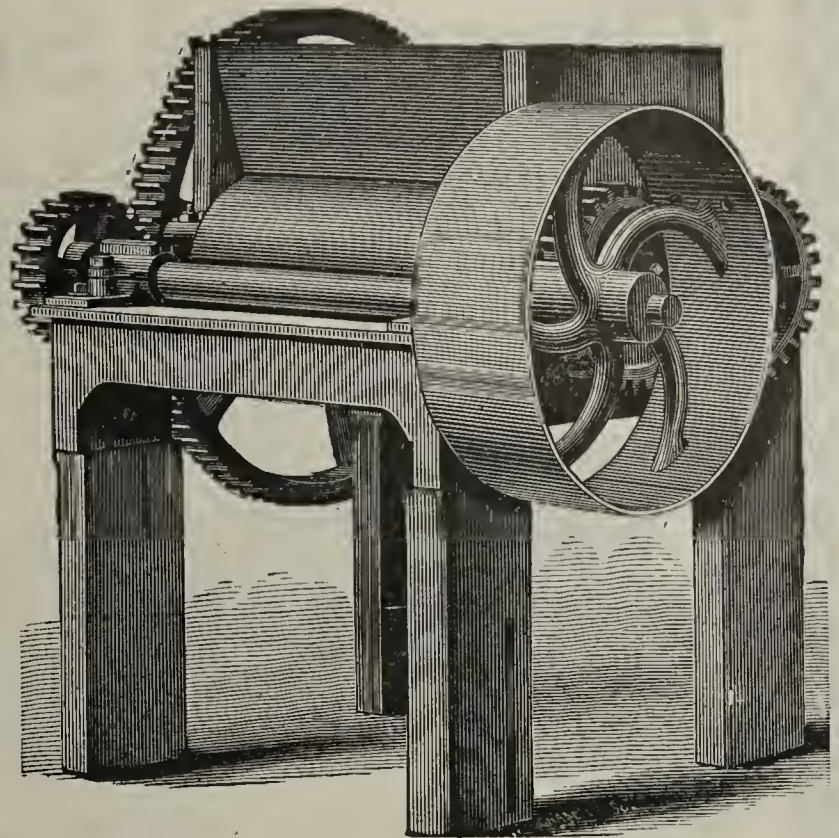
E. D. PUGH, Receiver,

BRICK & TILE MACHINERY.



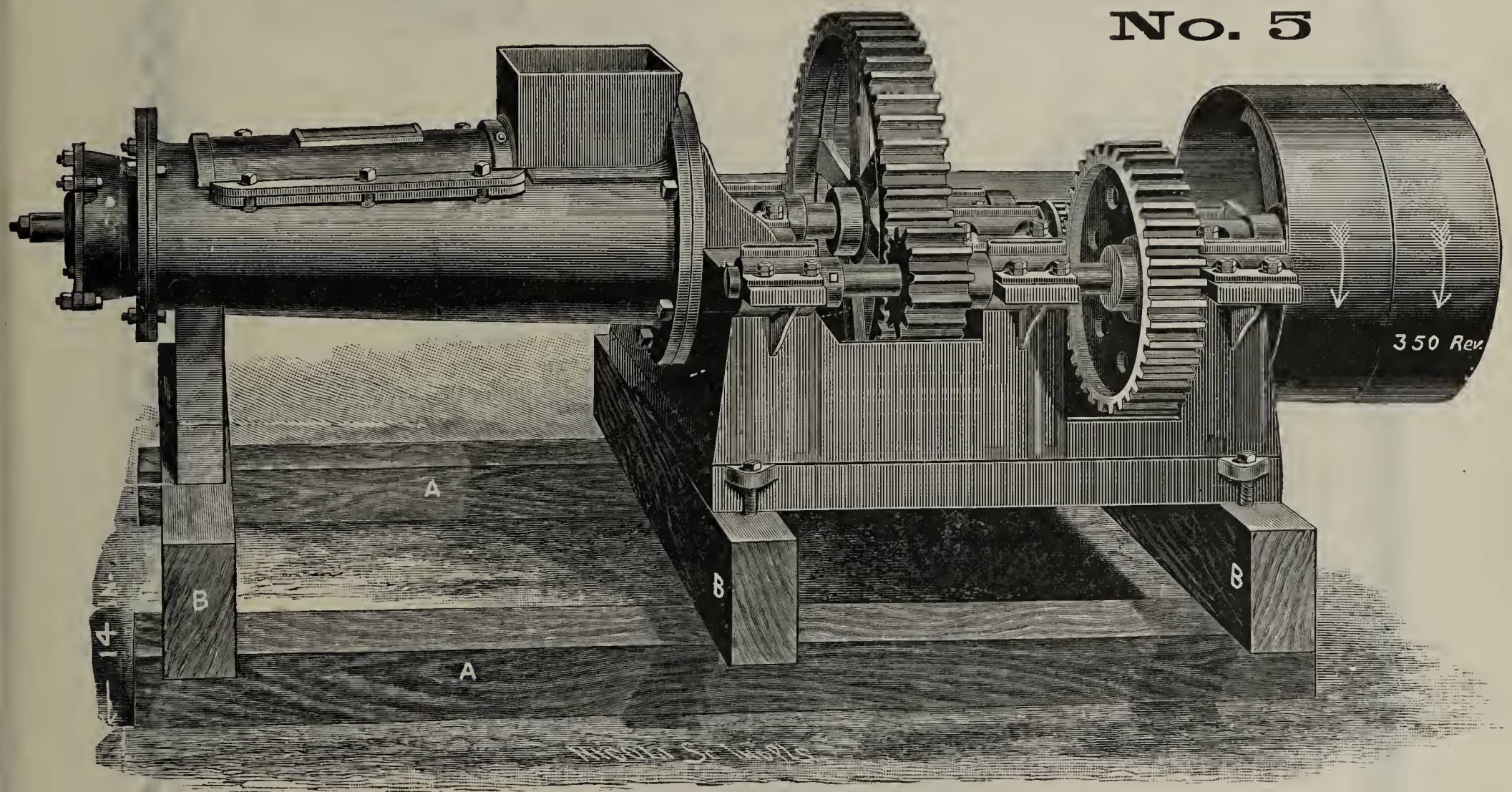
Down Cut Table.

This is a Down Cut Table. It will cut 8,000 to 10,000 first-class brick in ten hours.
Our Side Board Delivery Tables will cut and deliver on a board 25,000 to 30,000 brick in ten hours.



Clay Crusher.

We make this Crusher in two sizes. Both have chilled rolls, all set in a heavy iron frame. There is no better Crusher made than this.



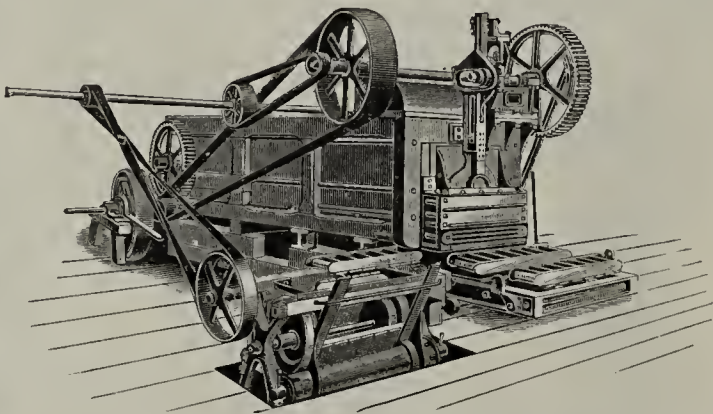
We make this machine in seven different sizes. No. 5 (one shown), will make tile from 3 to 12 inches. No. 7, for light power. We have a number of these in stock that we will close out cheap. With this machine is furnished Endless Belt Table and Dies 3 to 10 inches. Write for particulars.
Our No. 5 B and 6 B are machines for heavy work, where strength and large capacity are required. With these machines, Side Cut Lubricating Dies and Side Cut Board Delivery Tables are furnished in connection with Tile Dies when required.

NOLAN, MADDEN & CO.,

RUSHVILLE, IND.

These Are Small Pictures

*Because These Are Small Pictures WE DO NOT
Want You to Think the Machines Are Small.*



— THE FACT IS THE —

POTTS HORIZONTAL STOCK BRICK MACHINE

IS THE

**Largest and Strongest Sand Mould Machine
On The Market.**

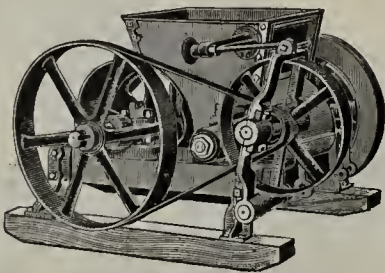
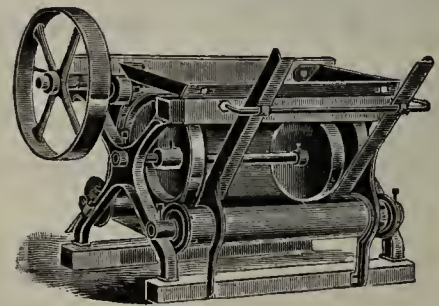
They are made in two styles, with wood Pug Mill, or all iron.

THE POTTS MOULD SANDER

Simple in Construction.....

Strong and Durable.....

It sands moulds perfectly and will save from \$1.00 to \$1.50 per day.
Every machine guaranteed and shipped on trial.



THE POTTS DISINTEGRATORS

Having Chilled Rolls

Are the **Best**, Strongest and most Durable. Made in 12 sizes. Having capacity from 15 to 150 M brick per day.

You cannot afford to use any other.

We are prepared to furnish complete plants of any desired capacity, either soft or stiff clay process.

We manufacture a complete line of Clayworking Machinery, Horizontal Stock Brick Machines, either wood or iron Disintegrators, Mould Sanders, Auger Brick Machines, Pug Mills, Elevators, Dry Pans, Moulds, Trucks, Barrows, Pulleys, Shafting and Boxes.

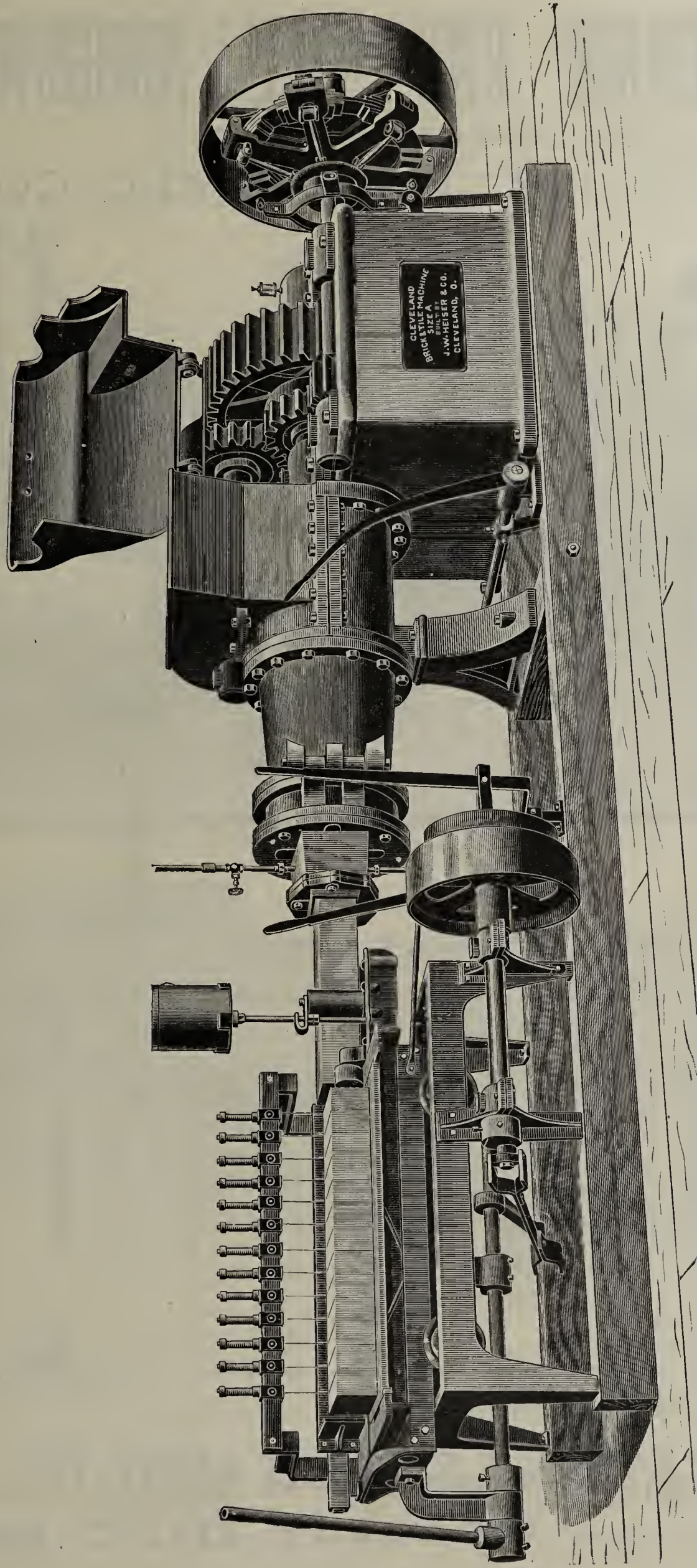
Remember we manufacture everything furnished. Thus we are in a position to give the best, at prices we know will be satisfactory.

Write for catalogue.

C. & A. POTTS & CO.,

INDIANAPOLIS, - - INDIANA.

The "CLEVELAND" CLAY WORKING MACHINERY.



Size "A" Machine with Patent Board Delivery Power Cutting Table. Capacity from 25,000 to 40,000 Brick per day.

ALL OF OUR MACHINERY IS BALL AND PIN BEARING AND....
GUARANTEED FOR ONE YEAR AGAINST WEAR OR BREAKAGE.

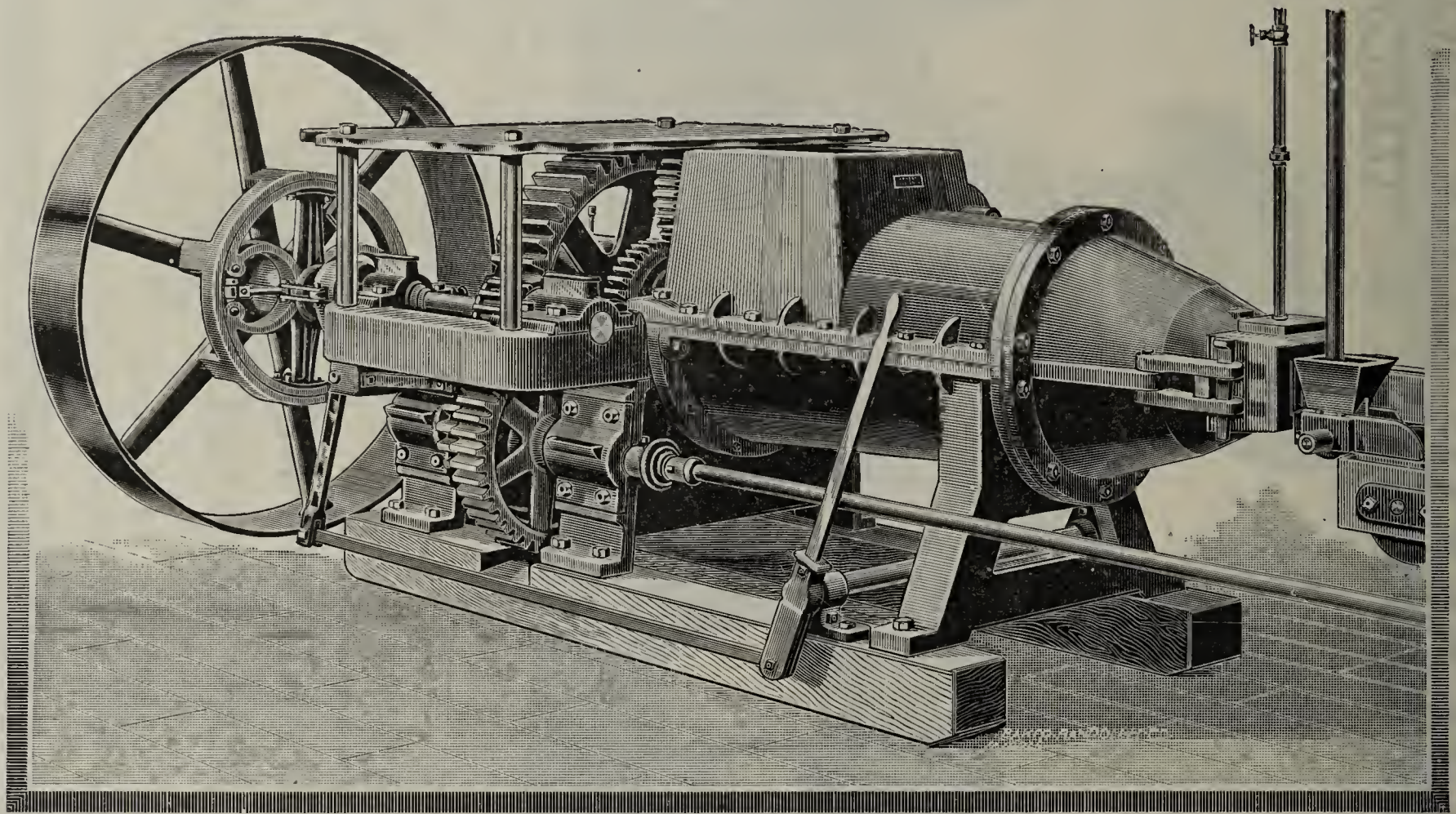
If you want superior machinery, improve your product, save money and have a balance on the right hand side of your Ledger, write to us for Catalogue and description of our machinery.

J. W. HEISER & CO., Manufacturers of CLAYWORKING MACHINERY, Cleveland, Ohio.

IMPROVED BRICK AND TILE MACHINERY,

MANUFACTURED BY

THE DECATUR LEADER MFG. CO.



Auger Brick Machine.

WHAT THEY THINK OF US AT HOME. . . .

—OFFICE OF—

The Tuttle Brick Company.

DECATUR, ILL., March 26, 1894.

THE DECATUR LEADER MFG. CO., City:

GENTLEMEN—The outfit of Brick machinery made by you for us gives entire satisfaction. We understand your automatic cutter is a recent design, and we would say that it deserves especial mention for its simplicity and perfect working.

Yours truly,

THE TUTTLE BRICK CO.,
JOHN DILLER, Manager.

Our line is complete. Send for printed matter.

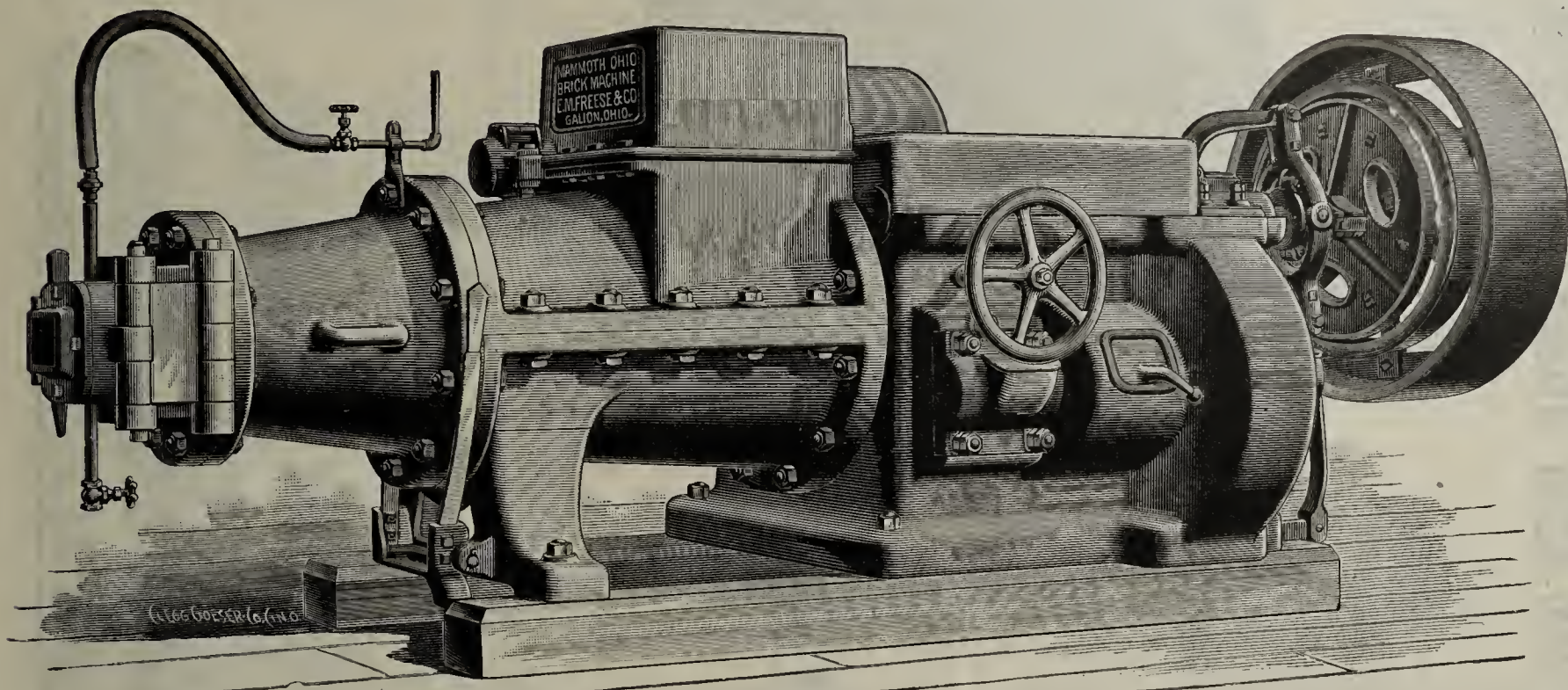
THE DECATUR LEADER MFG. CO.,

[Mention the Clay-Worker.]

Decatur, Ill., U. S. A.

SUPERIOR BRICK MACHINERY.

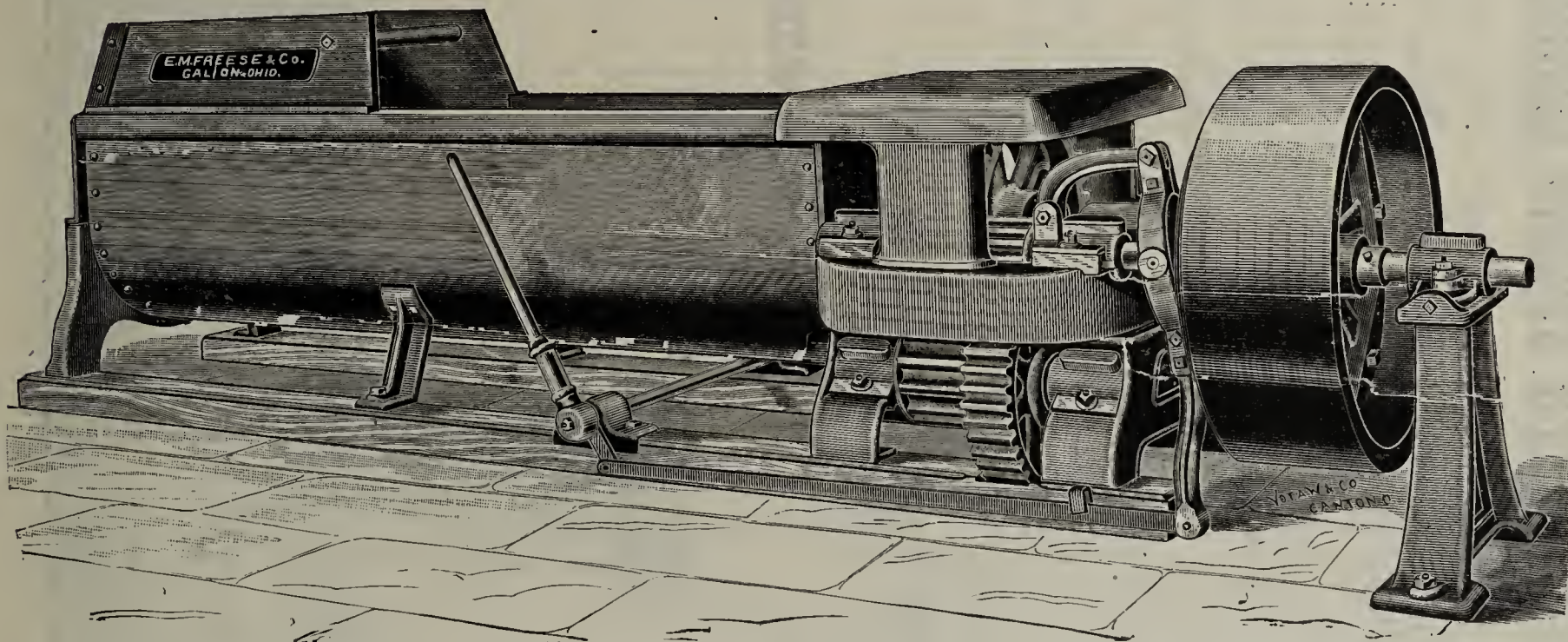
*For Paving, Building and Fire Brick.
Substantial, Simple, Practical.
Best Material and Workmanship.
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

PUG MILLS THAT PUG THE CLAY.



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

IT WILL PAY

ADDRESS **E. M. FREESE & CO.,**

GALION, OHIO.

NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

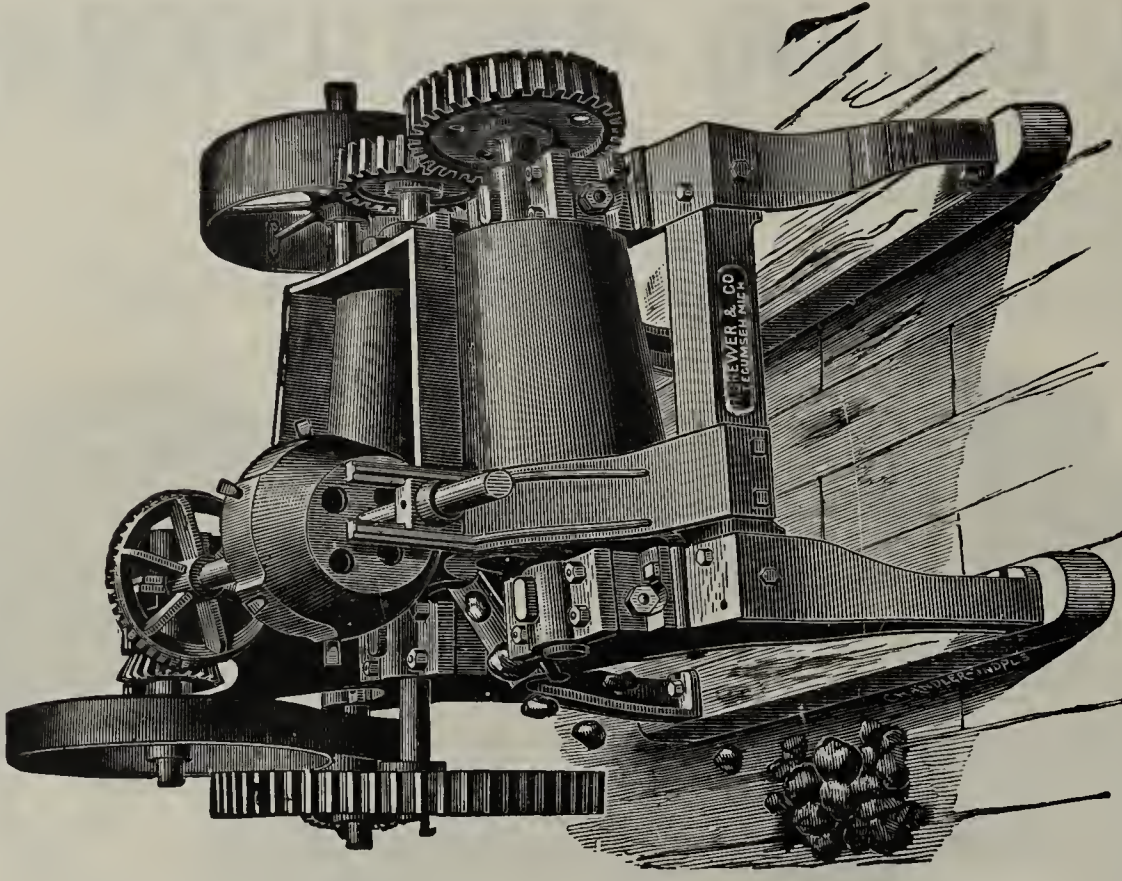
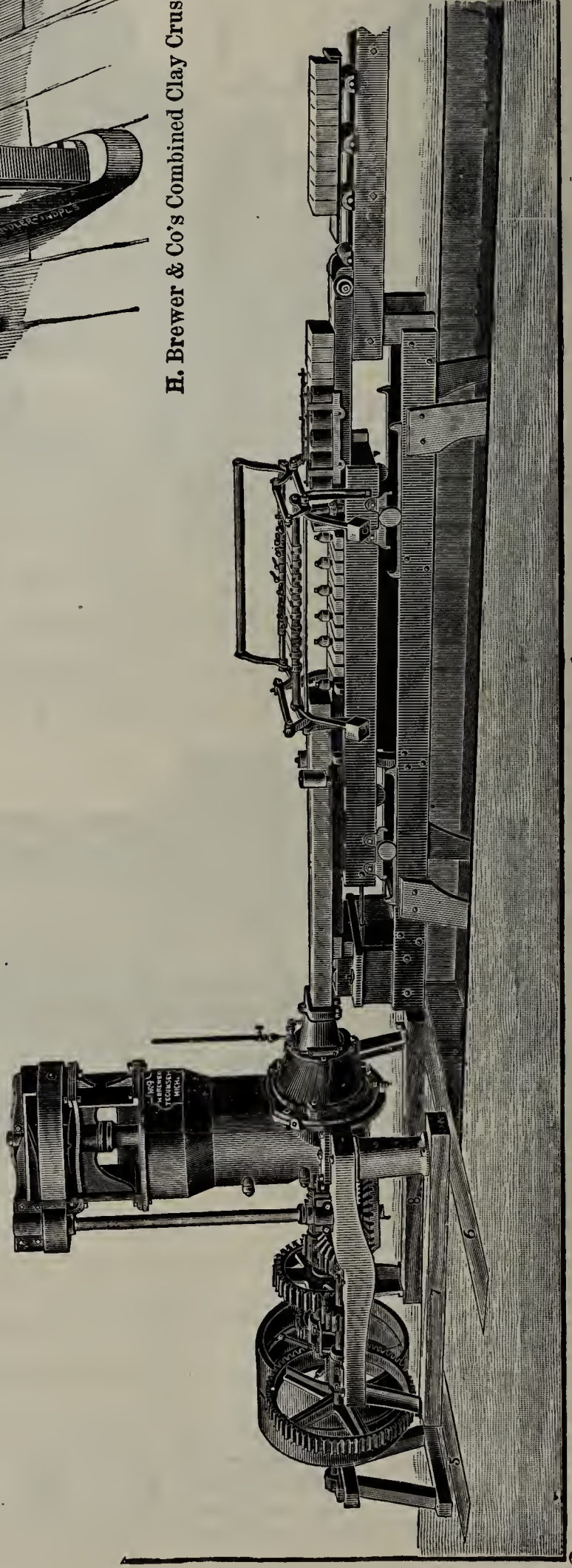
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

H. BREWER & CO.,

Tecumseh, Mich.

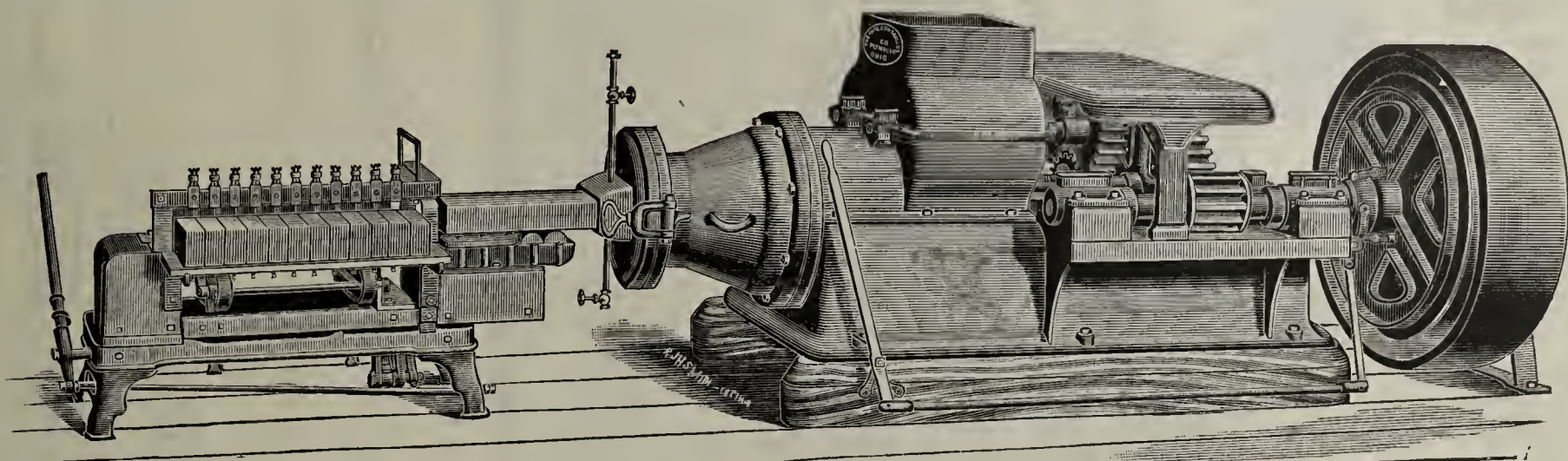
[Mention the Clay-Worker.]



H. Brewer & Co's Combined Clay Crusher and Stone Separator.

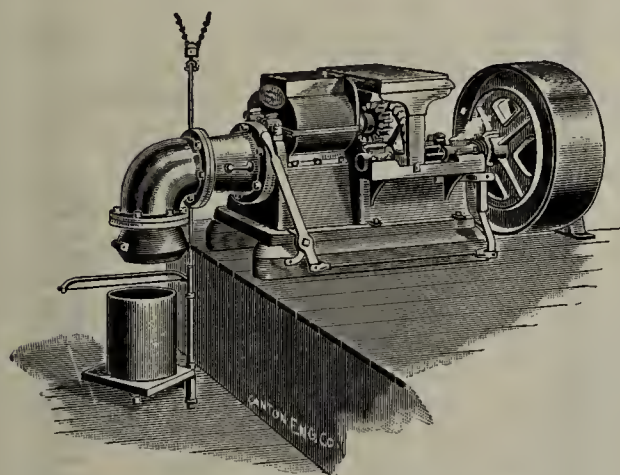
The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.

"PLYMOUTH" BRICK AND TILE MACHINES



"A" Machine, with Board Delivery Cutting Table.

COMPLETE, RELIABLE,
STRONG, DURABLE,
INCOMPARABLE.



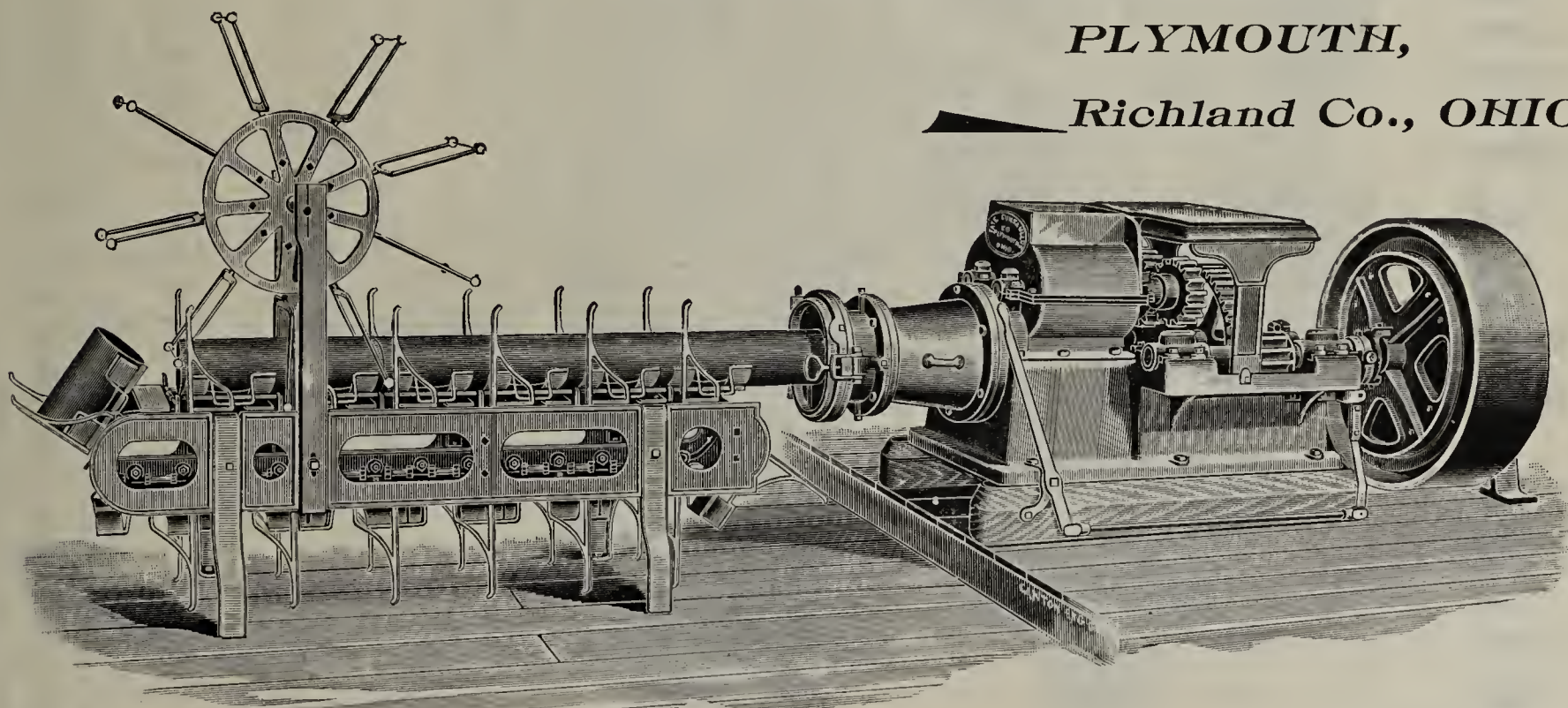
"D" Machine. With Elbow Attachment for Delivering Large Tile on End.

Send for Catalogue and Estimates On Entire Outfits

THE FATE-GUNSAULLUS CO.,

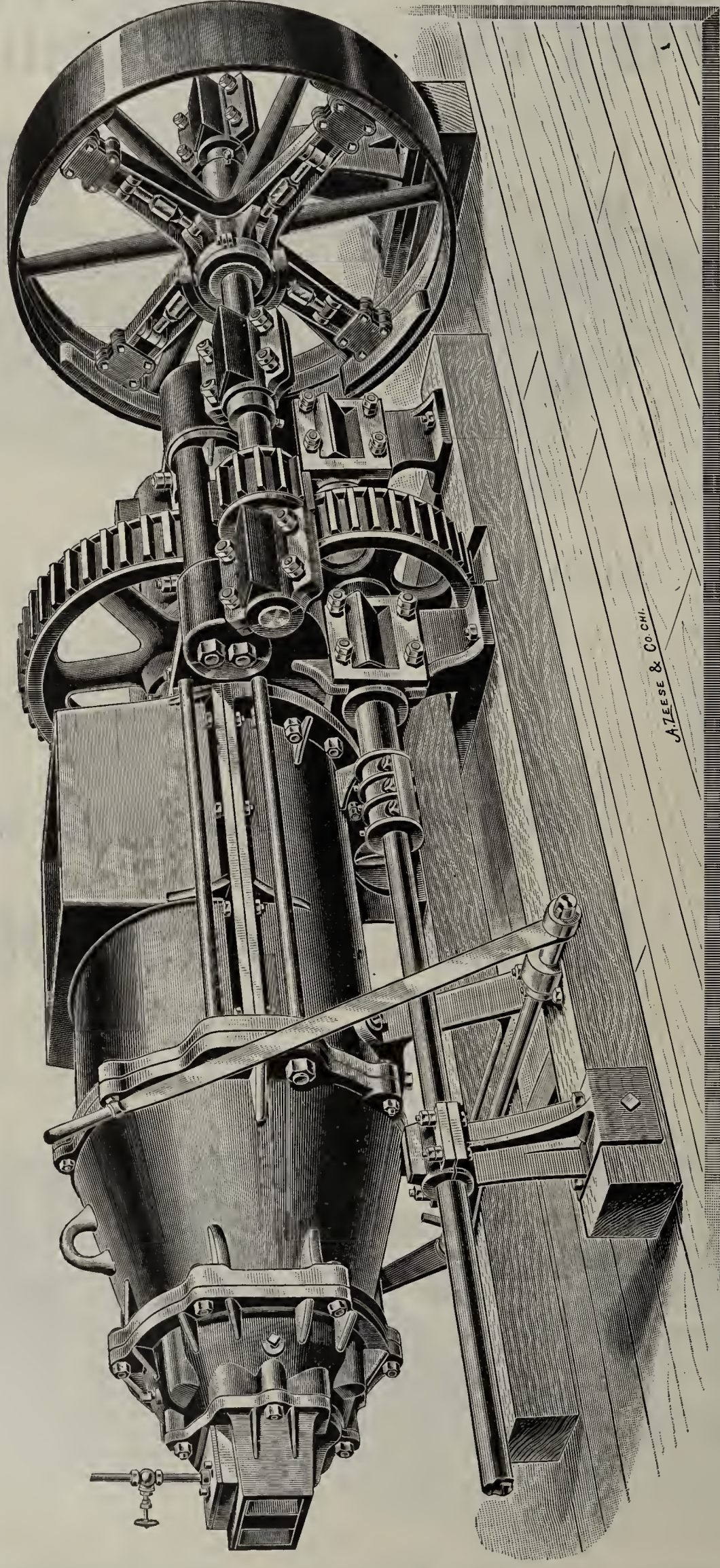
PLYMOUTH,

Richland Co., OHIO.



"D" Machine, with Automatic Cutting Table. For cutting tile from $2\frac{1}{2}$ to 8 inches; also building blocks.

Brick Machinery with a REPUTATION



Our No. 1 BUCYRUS GIANT BRICK MACHINE.

We construct our machinery on indisputable, practical, and scientific principles, consequently it withstands the most rigid and critical tests given it in every day work.

Our machinery has an enviable reputation for unequaled efficiency. When you purchase, be very sure you buy the best. We lead while others follow.

THE FREY-SHECKLER COMPANY,

MANUFACTURERS OF A

Complete Line of Clay
Working Machinery.

BUILDERS OF

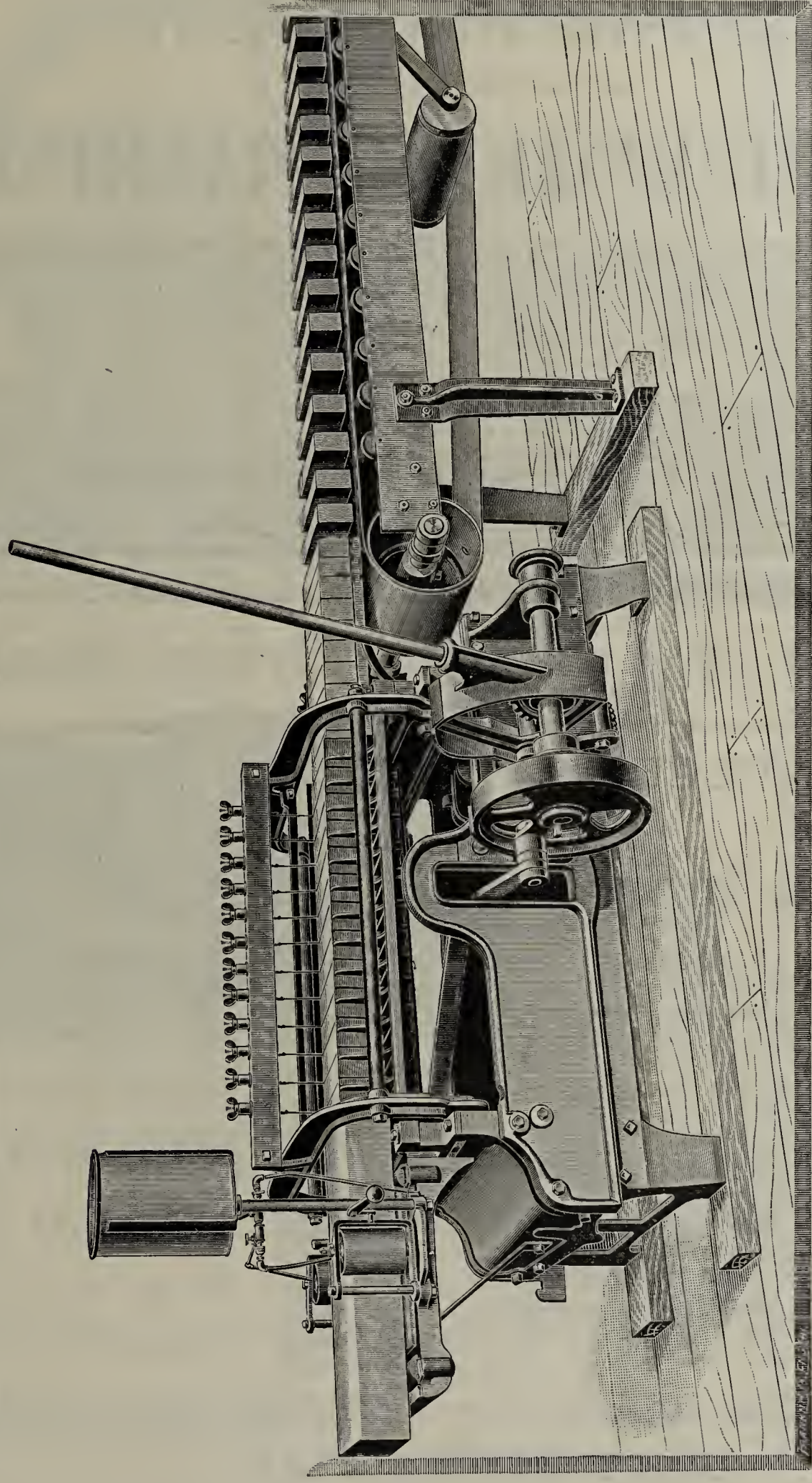
The Bucyrus Steam
Tunnel Dryer.

BUCYRUS, OHIO, U. S. A.

—Send for 1894 Machinery and Dryer Catalogues.—

A CUTTING TABLE

THAT BEATS
THE WORLD.



OUR WELLSVILLE SIDE CUT TABLE.

This Cutting Table severs the column of clay at one movement of the lever, cutting both forward and backward ; thus doing away with the lost motion found in other Side Cutting Tables.

It certainly has no equal. We challenge any competitor to beat it, either in point of mechanical construction or its efficacy for making side cut brick. We guarantee its most successful operation.

Send for our 1894 Machinery and Dryer Catalogue

THE FREY-SHECKLER CO.,

Manufacturers of All Classes of Clayworking Machinery ;
Also Builders of the BUCYRUS STEAM TUNNEL DRYER

BUCYRUS, OHIO, U. S. A.

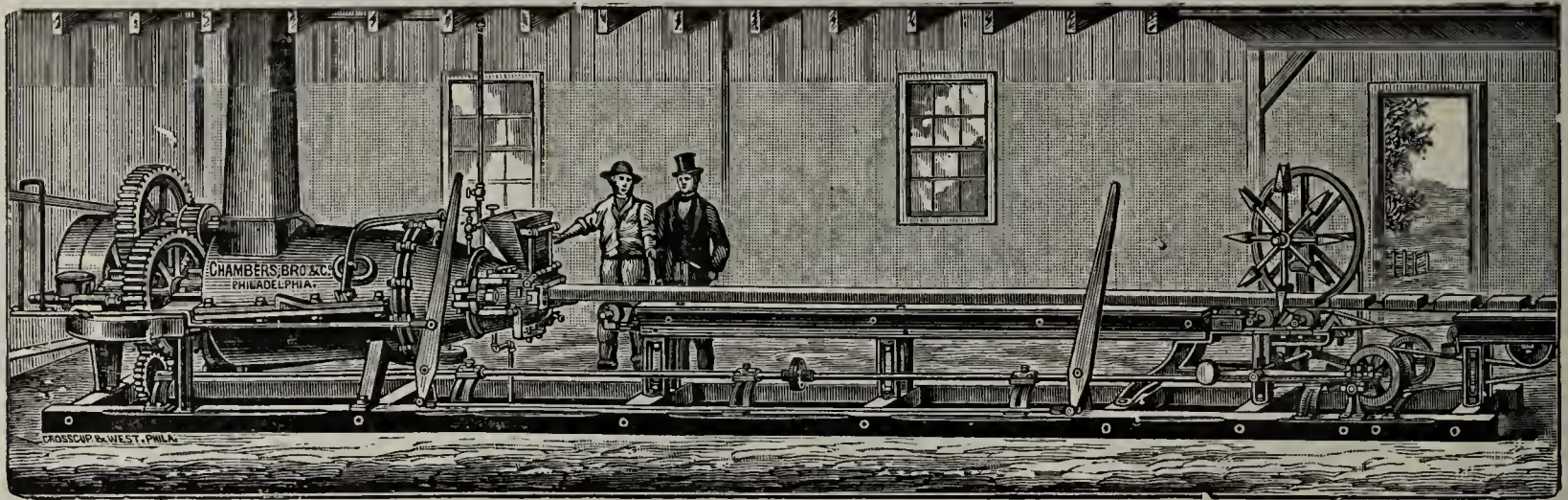
CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••



IMPROVED BRICKMAKING MACHINERY.



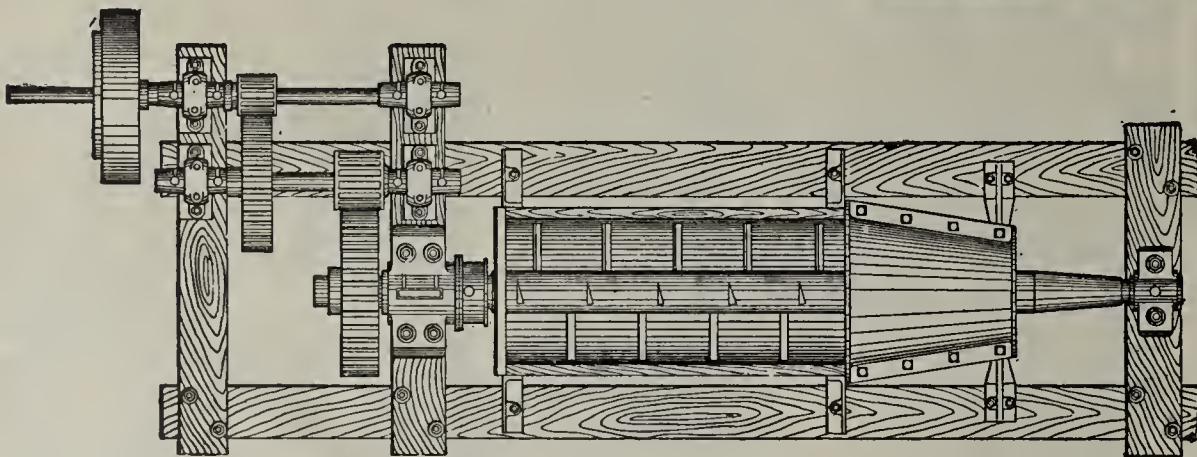
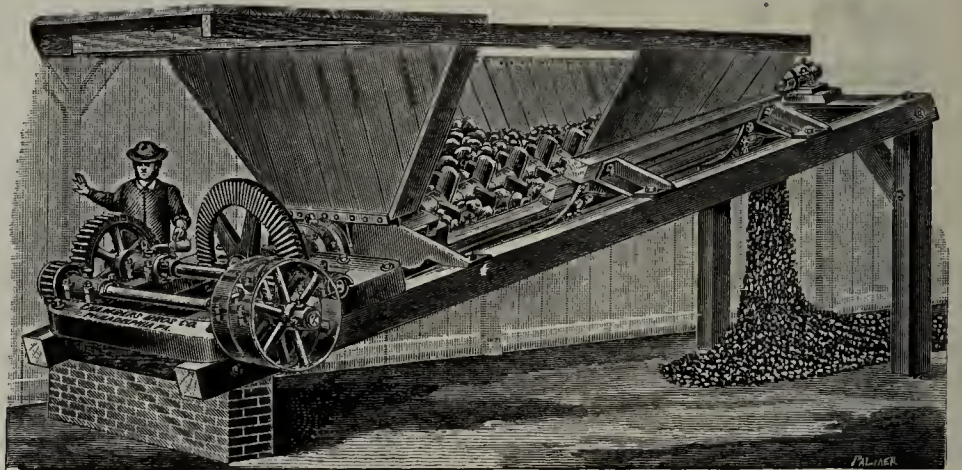
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

— AND —

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL
PUG MILLS

Of Six Sizes and Styles.

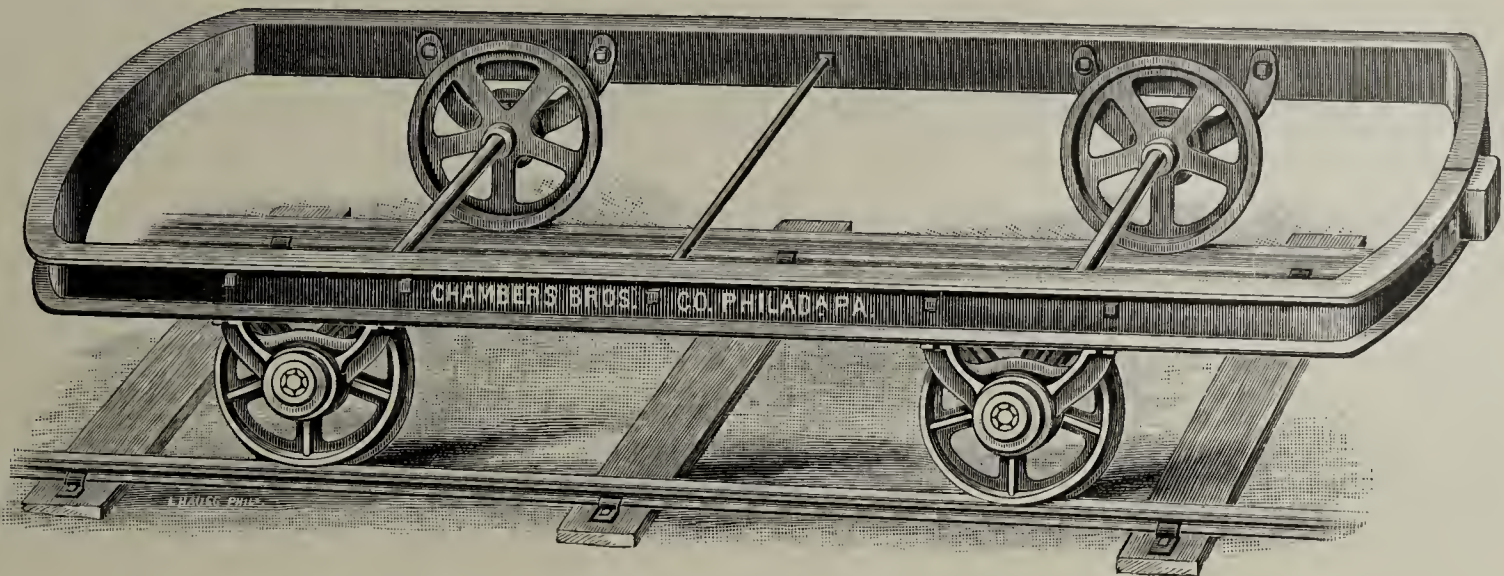
VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]

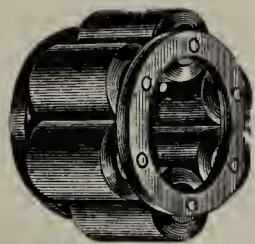
❖ DRYER CARS. ❖



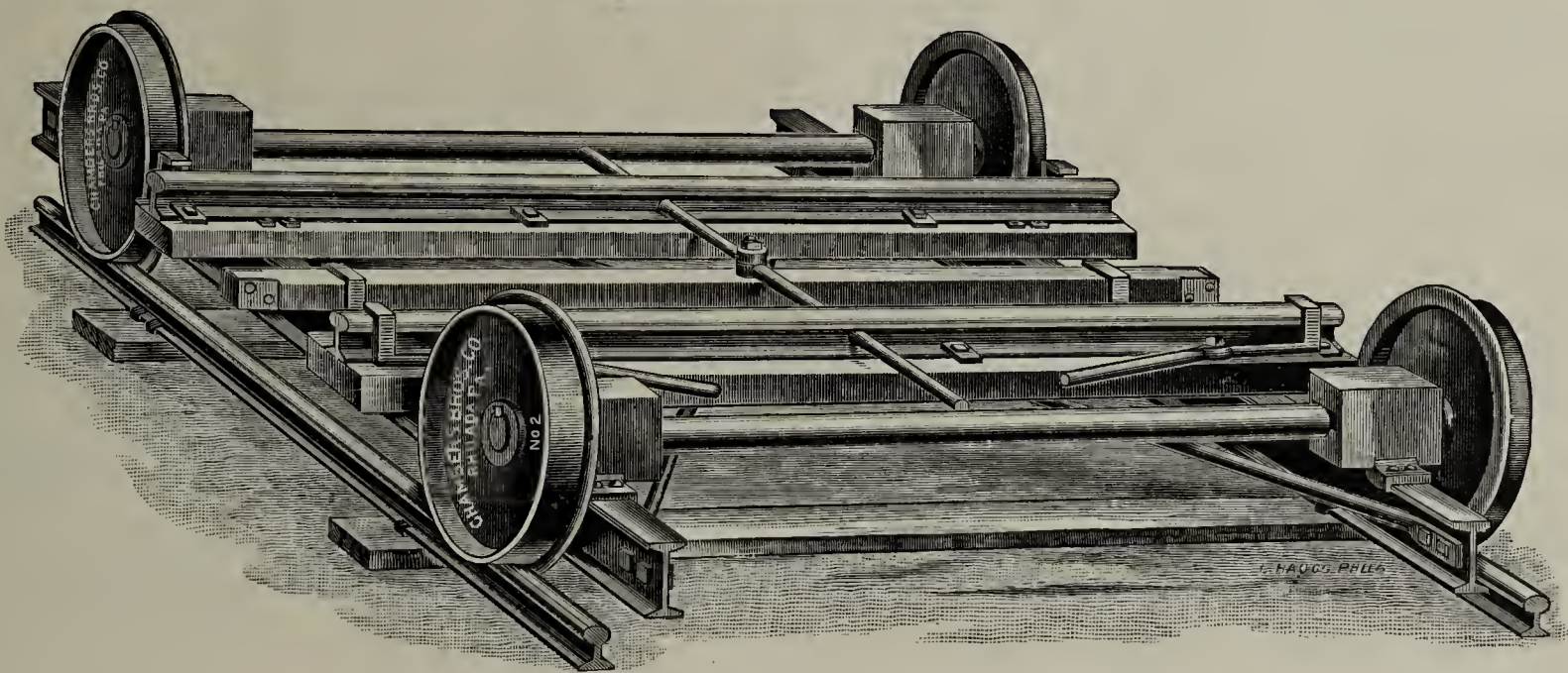
This STEEL CHANNEL FRAME CAR is Without an Equal.

We are prepared to make it of different dimensions, and of gauge to suit customers requirements. The channel section is much stiffer than angle, and being in one piece there are no weakening joints as where cross rails and bumpers are bolted to side frames.

The Anti-friction Cage Roller



Bearing used on our Cars.



WROUGHT IRON BEAM TRANSFER CARS.

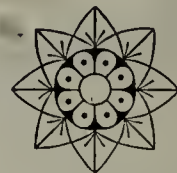
We guarantee these to give satisfaction.

CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

❖ PHILADELPHIA, PENN. ❖

Eminently Successful and
Popular Wherever Introduced,
The Future Outlook For Our
Machinery is Excellent.



Read this Excerpt from a Letter just received:

* * * * * "Am pleased to hear that
 you are having a good trade. In respect to the Machine, I would not
 exchange it for any soft mud machine in the market. The longer we have it,
 the better we like it. * * * We are now working clay far stiffer
 than we ever did with the ———.

"We shall be pleased to have you refer any prospective customers in this
 part of the country to us.

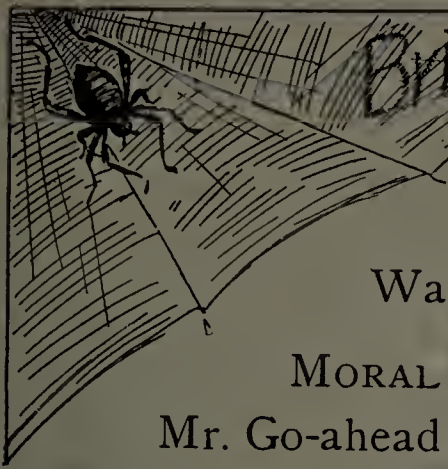
"We simply cannot say too much for the 'New Haven'."

*Above is from a man who bought a "New Haven"
 over a year ago.*

*Did you see this page in the last CLAY-WORKER?
 We stated facts then too.*

The McLagon Foundry Co.,

 **NEW HAVEN, CONN.**



Brickyard Spider:—"What's this! Cousin gone, and not a fly in his house. Well, that's queer. Ah, here's a note. 'To whom it may concern: This is no place for spiders. Mr. Go-ahead has put in a full line of machinery from the Wallace M'f'g Co., and there are no flies on the 'Wonder.'"

MORAL:—If you want to make brick and dollars, follow the example of Mr. Go-ahead as did the author of the following letter.

—OFFICE OF—

•❖ W. G. WHEATCROFT, ❖•

PROPRIETOR

Grayville Steam Brick and Tile Works.

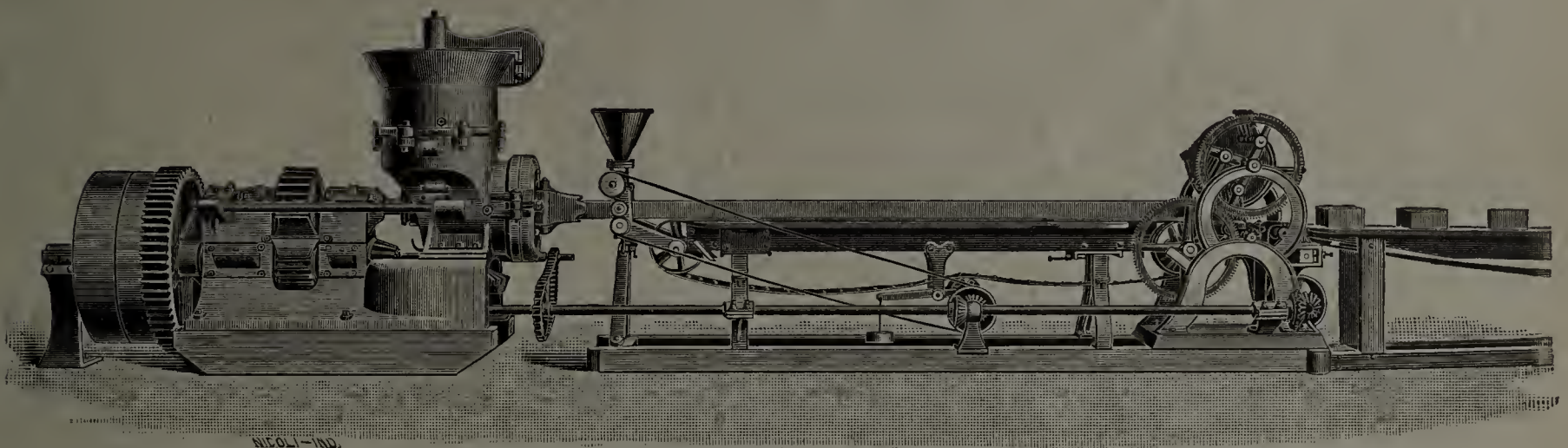
GRAYVILLE, ILLINOIS, April 27, 1894.

THE WALLACE MANUFACTURING Co., Frankfort, Ind.,

GENTLEMEN:—Regarding the Little Wonder I purchased of you in August 1890, will say that I have been very successful with it, being in debt at the time of purchasing it, and am glad to report that I am now out of debt and a good balance on the right side of the page. I can make 13,000 side cut brick per day with a 15-horse power engine. In 1892 I made 1,000,000 brick and enough tile to supply the market. In 1893 I made 500,000 brick and twice as many tile as I had ever made, and am glad to report that my yard is entirely clean of both. Therefore I have no grounds of complaint and can highly recommend the Little Wonder. Wishing you success, we are

Yours truly,

W. G. WHEATCROFT.



Little Wonder Brick Machine with Cunningham's Automatic Cutting Table and Sander.

Guaranteed Capacity 25,000 brick per day.

"We manufacture a full line of Pug Mills, Clay Crushers and Stone Separators, Hoisting Drums, Friction Clutch Pulleys, Wheel Barrows and other brick and tile yard appliances.

The Wallace Manufacturing Co.,

Send for our No. 14 Illustrated Catalogue.

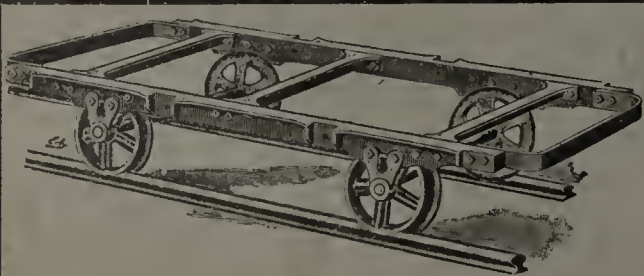
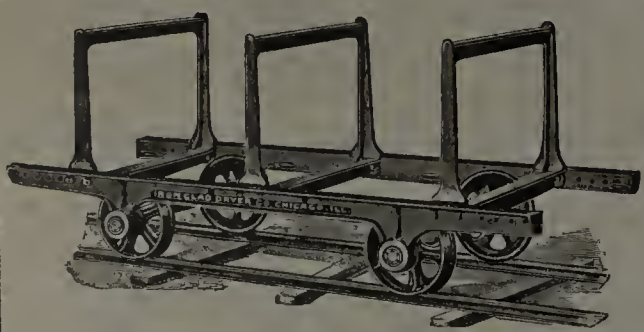
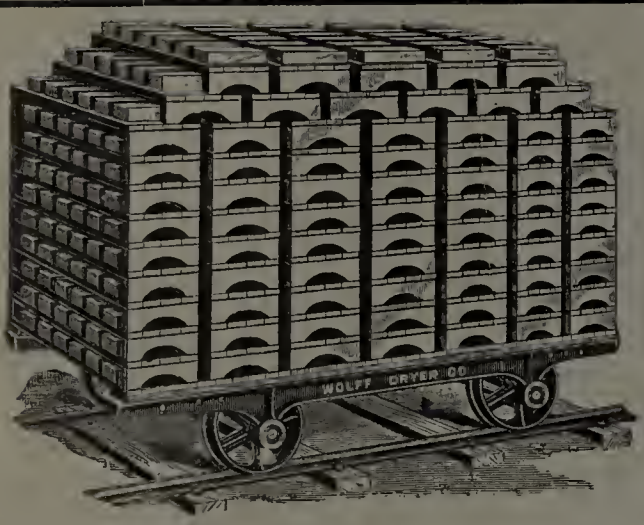
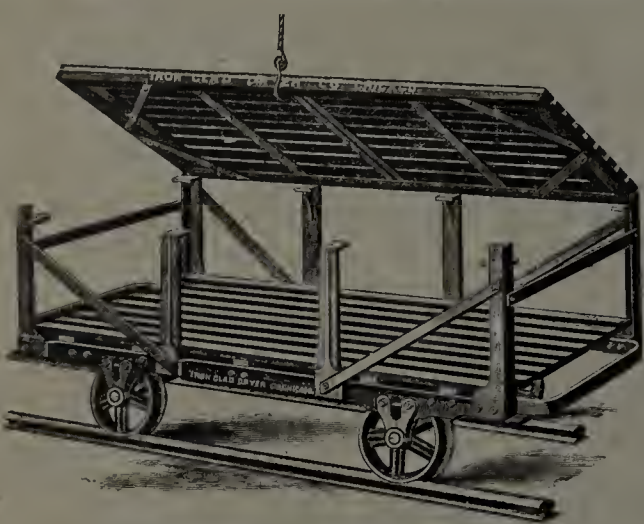
FRANKFORT, IND.

THE LATEST IMPROVED



Brick Dryer.

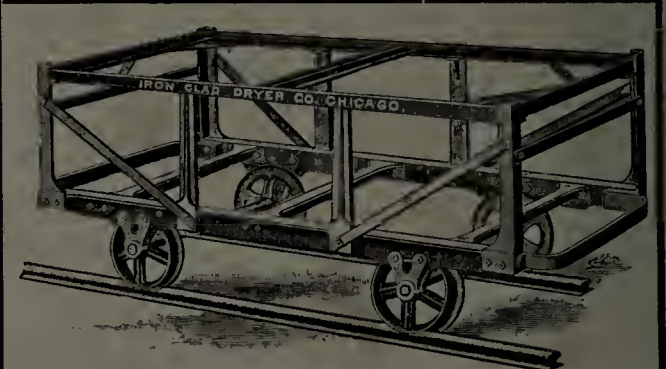
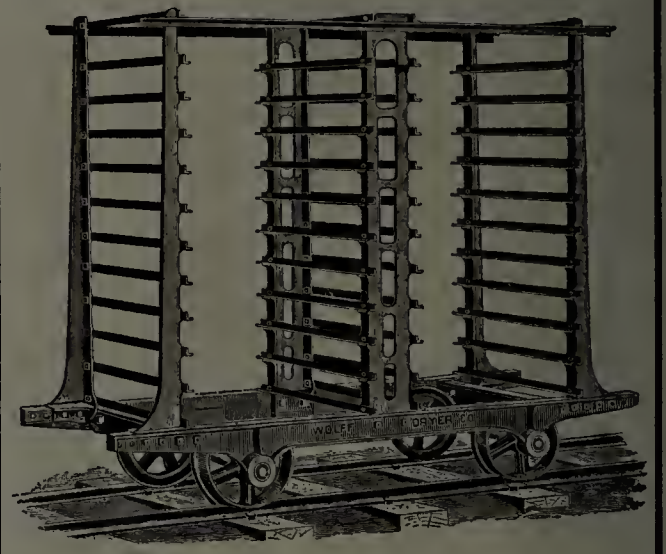
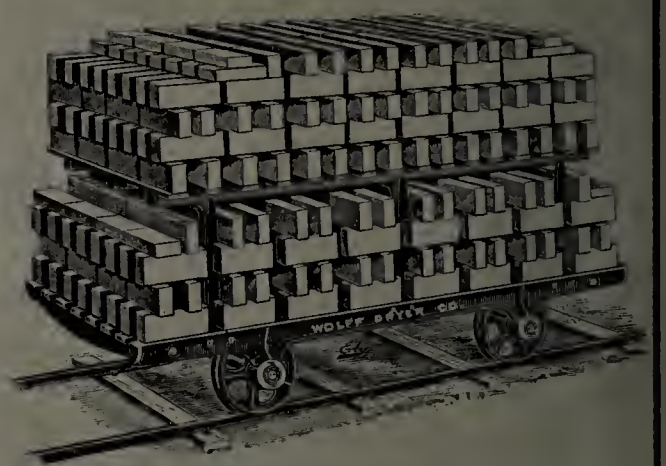
CHICAGO IRON-CLAD



Tell your Neighbors,
Tell your Friends,
Tell Everybody,
To Buy
The Best Dryer—
The CHICAGO
.. IRON-CLAD..



When you
Buy our cars
you can run
day and night.



Before placing your order, write us for Illustrated Catalogue and any other information required.

WOLFF DRYER CO., 358 Dearborn St. Room 304, **Chicago, Ill.**



THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXII, No. 1.

INDIANAPOLIS, IND., JULY, 1894.

\$2.00 a Year in Advance.

Brick Making Machinery,

A. K. FRANCIS.

J. B. RAUCH.

FRANCIS & RAUCH,

Manufacturers of

High • Grade • Building • Brick,

Sewer, Butment and Pave Bricks.

Vitrified Street Pavers a Specialty.

PINE GROVE, PA., May 9, 1894.

MESSRS. CHAMBERS BROTHERS COMPANY.

GENTLEMEN:—Please find enclosed our check for \$1,000 on account C-CD Brick Machine. We have made 200,000 street pavers on it and are glad to say that it works splendidly. We would not think of purchasing any but a Chambers, and when we increase our capacity will use another C-CD. It is precisely what we want in our shale clay.

Very truly yours,

FRANCIS & RAUCH.

T.

Chambers Brothers Company,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,

J. E. EASTES, Chicago Agent,

203 South Canal Street.

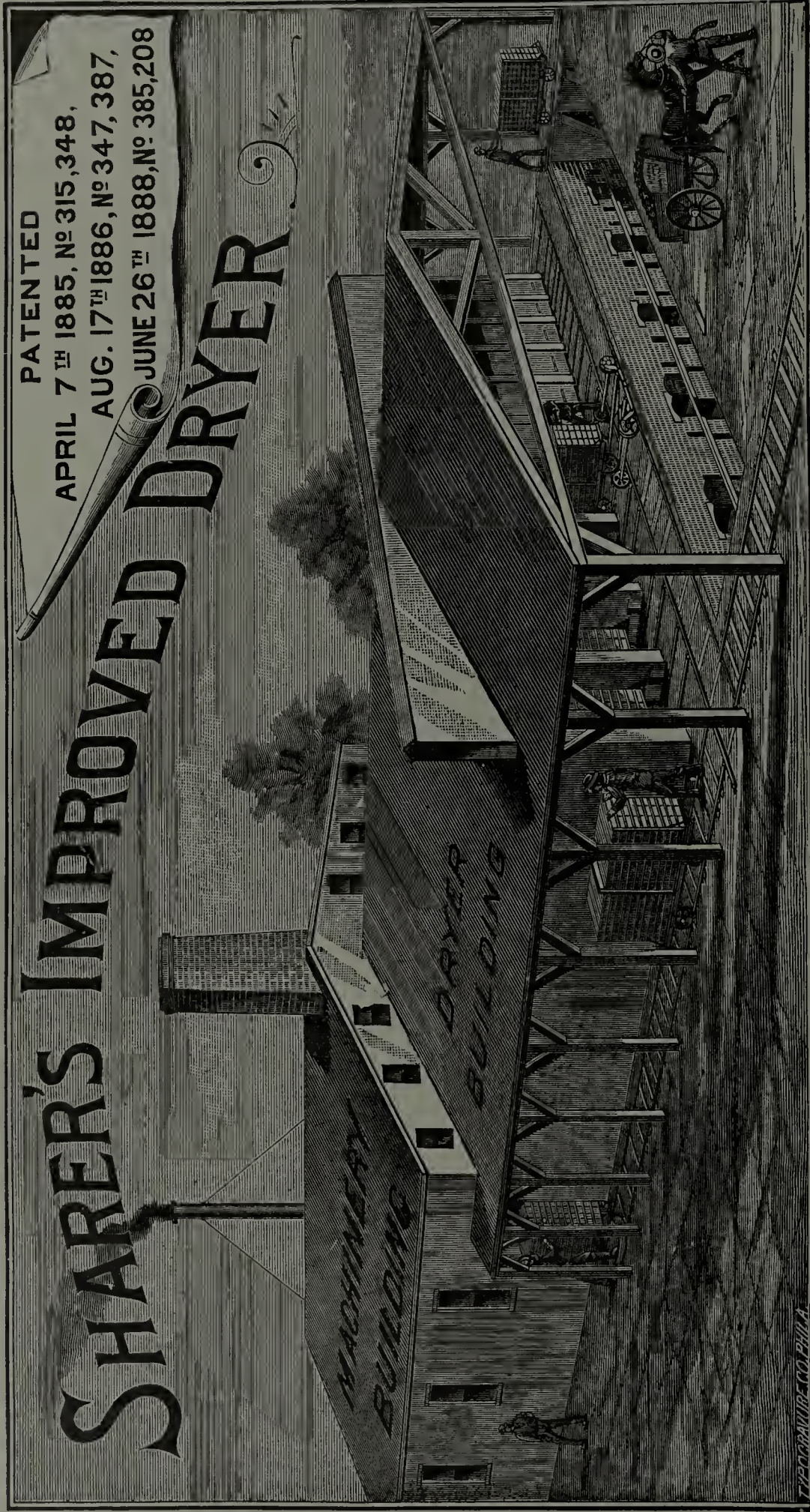
PHILADELPHIA, PA.

See ads. on pages 98 and 99.

THE SHARER DRYER AND CONSTRUCTION CO.,

BRICK MANUFACTURING EXPERTS.
CONSTRUCTING ENGINEERS. ∴ CONTRACTORS AND BUILDERS.
COMPLETE PLANTS A SPECIALTY.

Builders of All Kinds of Dryers and Kilns for Dry tag and
Burning any and all Kinds of Clay Products.



Owners of SHARER'S IMPROVED DRYER;
SHARER'S IMPROVED CALORIFIC KILN.

Manufacturers of Cars, Transfer Cars, Turn Tables, Furnace Castings and Complete Dryer and Kiln Equipments.

.....Dealers in All Kinds of Clayworking Machinery, Engines, Boilers, Shafting, Pulleys, Etc.
New plants built and equipped complete in every particular. Old plants remodeled and modernized. Clays tested and analyzed. Plans and estimates furnished.
Information costs you nothing. Send for Catalogue "C."

SHARER DRYER & CONSTRUCTION CO.,

TORONTO OFFICE: 71 Adelaide, East, Toronto, Ont., Canada,
HUGH CAMERON, Manager.

Rooms 506 and 507, The Mutual Life Building,
N. W. Cor. 10th and Chestnut Streets, PHILADELPHIA, PA.

For Clay Screens

..USED...

In Making Brick,
Tile, Terra Cotta,
etc., etc.

Also for Dry Pan,
Pulverizer, Chute,
Shaking and Re-
volving Screens.



Heavy Iron and Steel Plates

Punched for sizing
Coal, Coke and
Ores; Macadam,
Concrete, Railroad
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS

—USED FOR—

CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

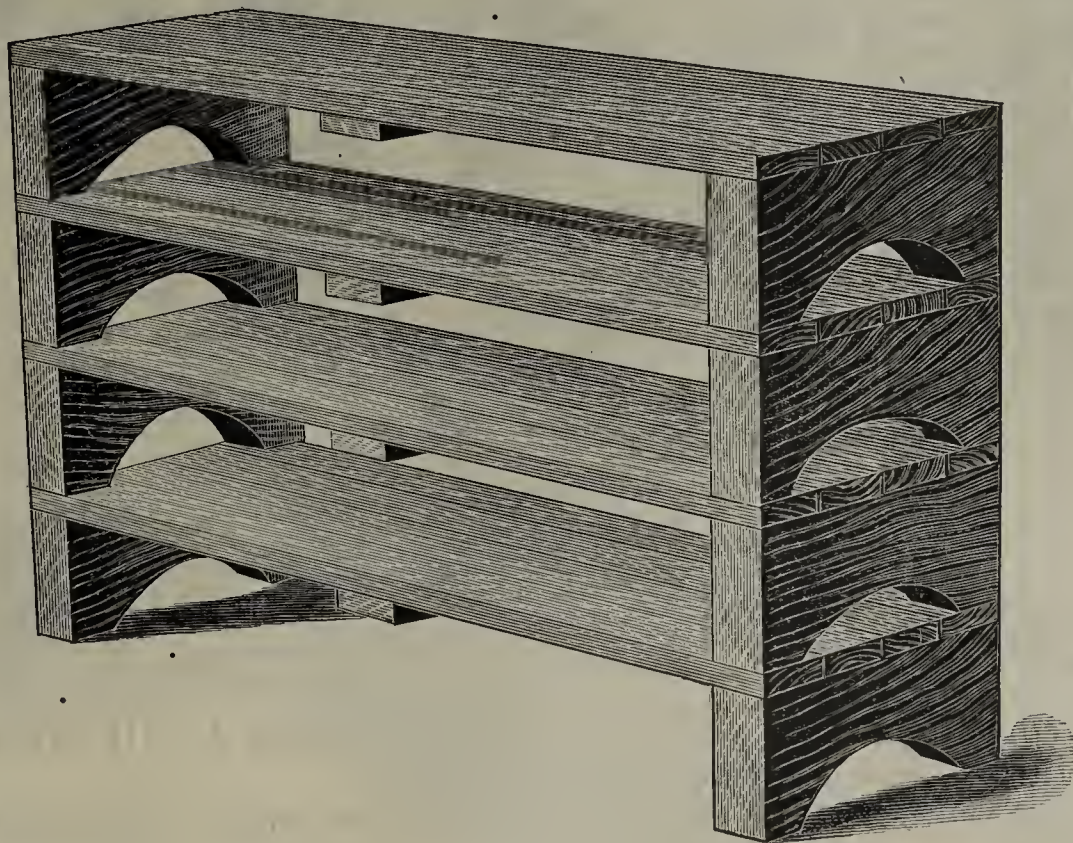
THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,
CHICAGO, ILL.

WOODEN BRICK PALLETS

WOODEN
BRICK
PALLETS



STYLE C.

WOODEN
BRICK
PALLETS

We manufacture all styles and sizes. Write to us direct for descriptive circulars and prices.

WM. B. MERSHON & CO., = Saginaw, East Side, Mich.

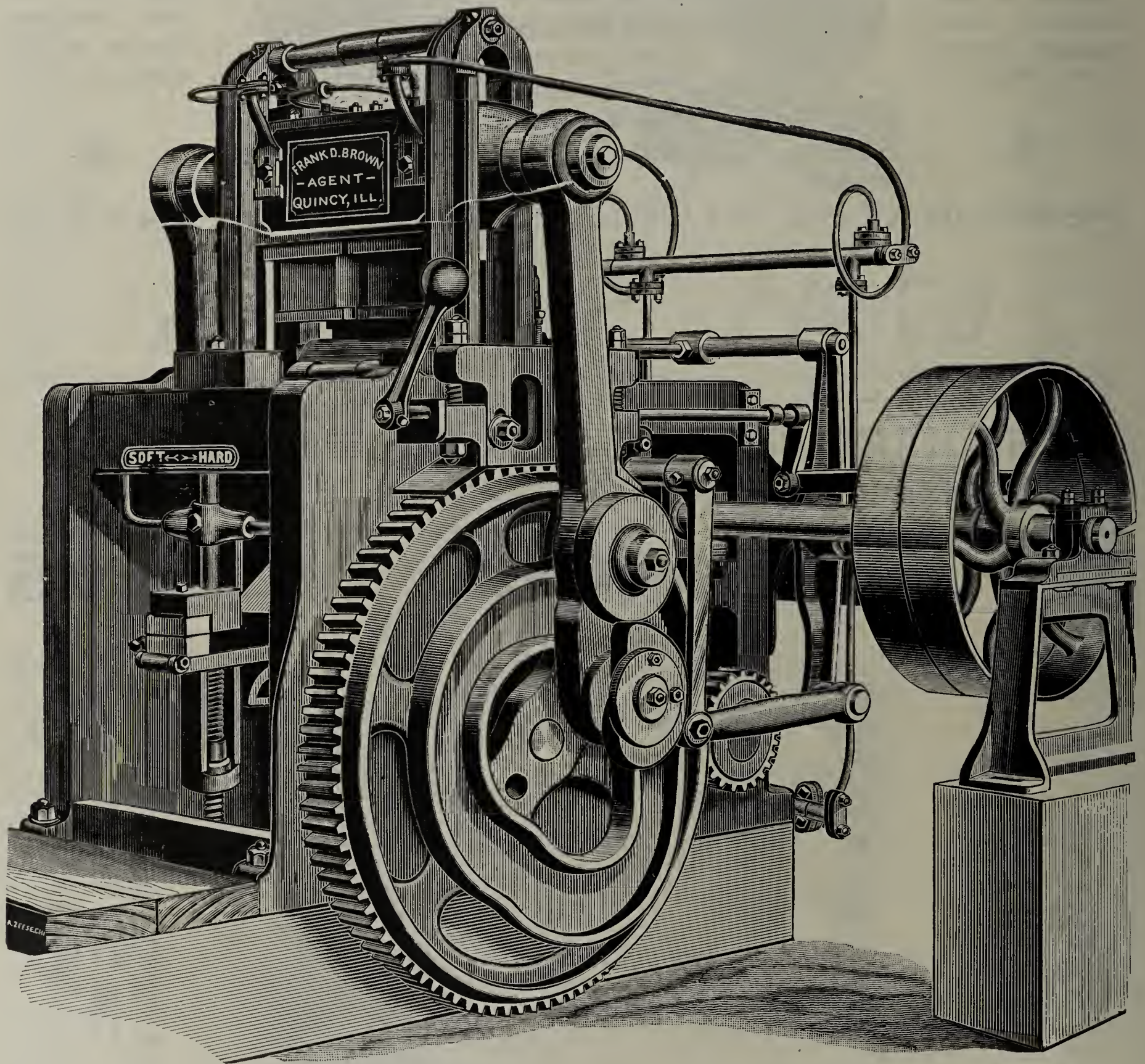
WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

• HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. •

Best, Cheapest and Most Durable Press in the World.

* ————— One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

FRANK D. BROWN, Room 817 Continental Bank Bldg.
Cor. La Salle & Adams Sts. **Chicago.**

The Ross-Keller Brick Machine.

(Triple Pressure)

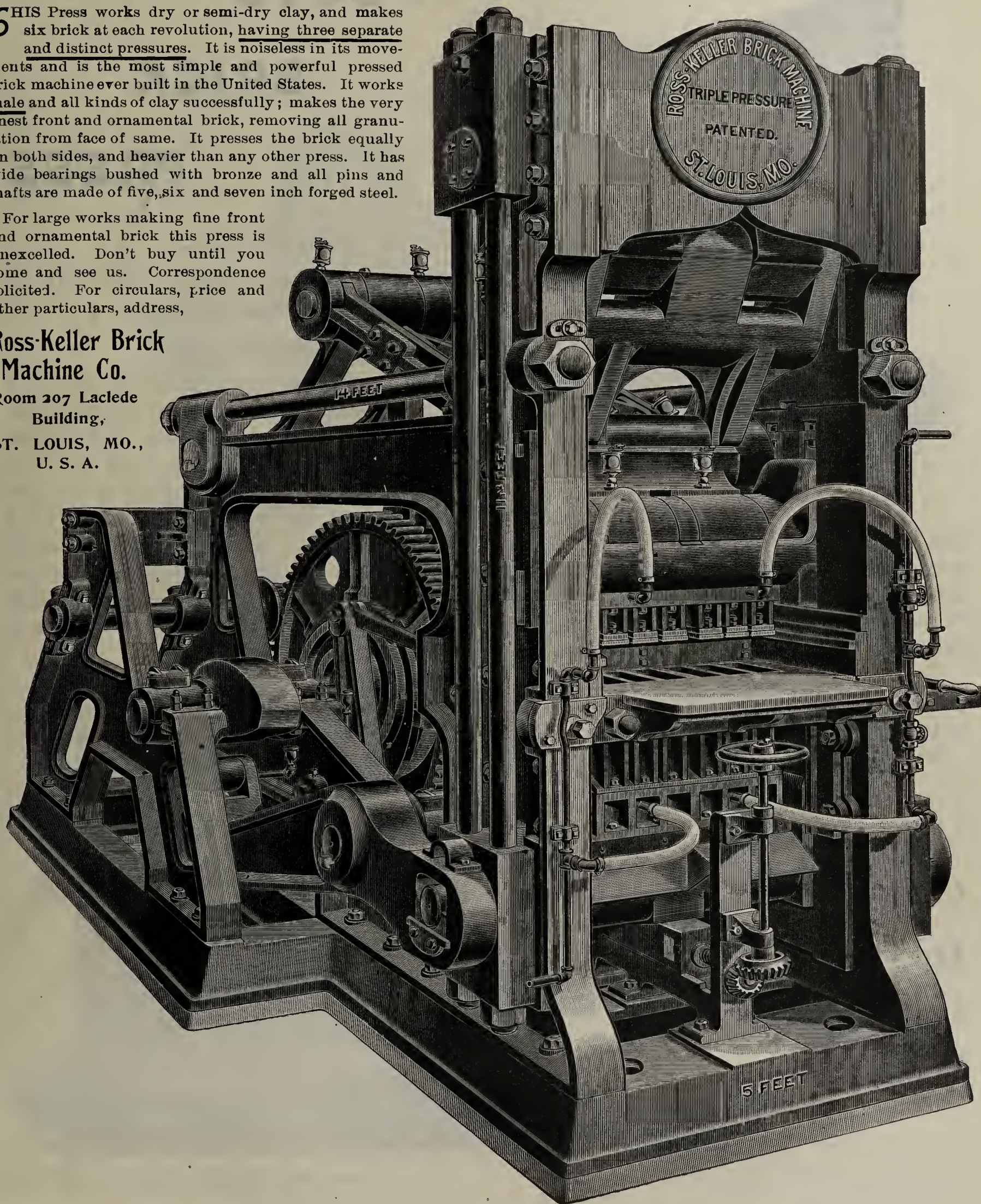
Weight 75,000 Pounds, Capacity 35,000 to 40,000 Brick Per Day.

THIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five, six and seven inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address,

**Ross-Keller Brick
Machine Co.**

Room 207 Laclede
Building,
ST. LOUIS, MO.,
U. S. A.



Fifty Thousand Dollars

For the **BOYD**

BRICK

PRESS

A TRUE TALE.

The largest brick plant in the world is
The Jarden Brick Co.,

—OF—

Philadelphia.

Not long ago they decided to put in a Dry Clay Plant. They traveled all over the country and inspected the various dry press machines at work. Then they put in a six-mold Boyd Press. They worked it for over seven months, and were so pleased with it

that they bought **five more** six-mold and **one** two-mold, Boyd Presses. They paid for all these presses. They knew what the Boyd Brick Press could do. They knew that no other press could compete with it. So in order to get the sole right to use the Boyd Brick Press in Philadelphia and for 50 miles around, besides the price of the seven presses, they paid us **Fifty Thousand Dollars** (\$50,000).

Their brick is acknowledged by builders to be "without competition" in their part of the country.

Need we say more?

Catalogue on application. Circular giving *fac simile* of medal awarded at the World's Fair to the Boyd Brick Press, free.

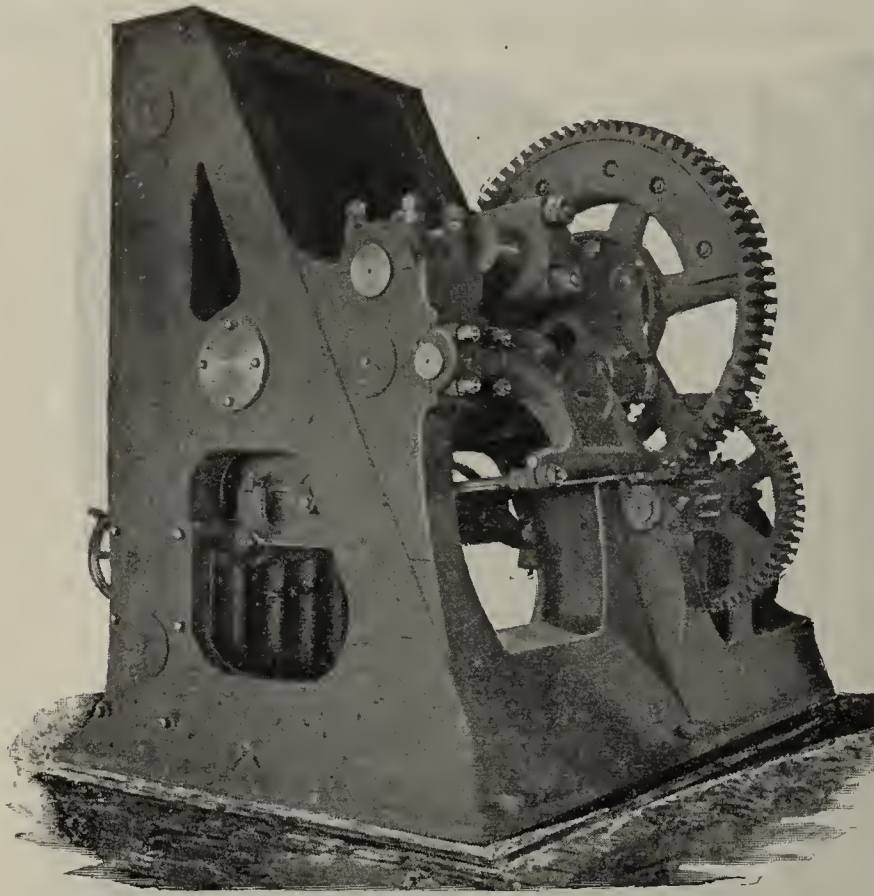
Chisholm,

Boyd

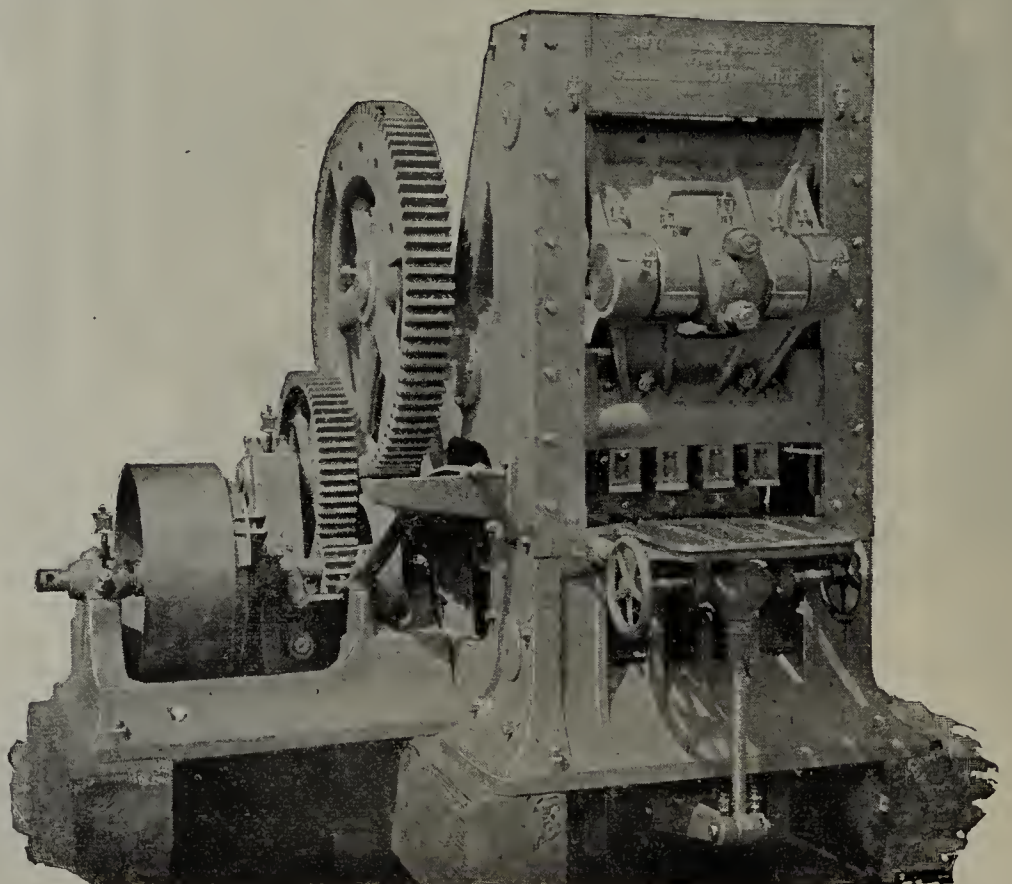
and

White,

324 Dearborn Street,
CHICAGO.



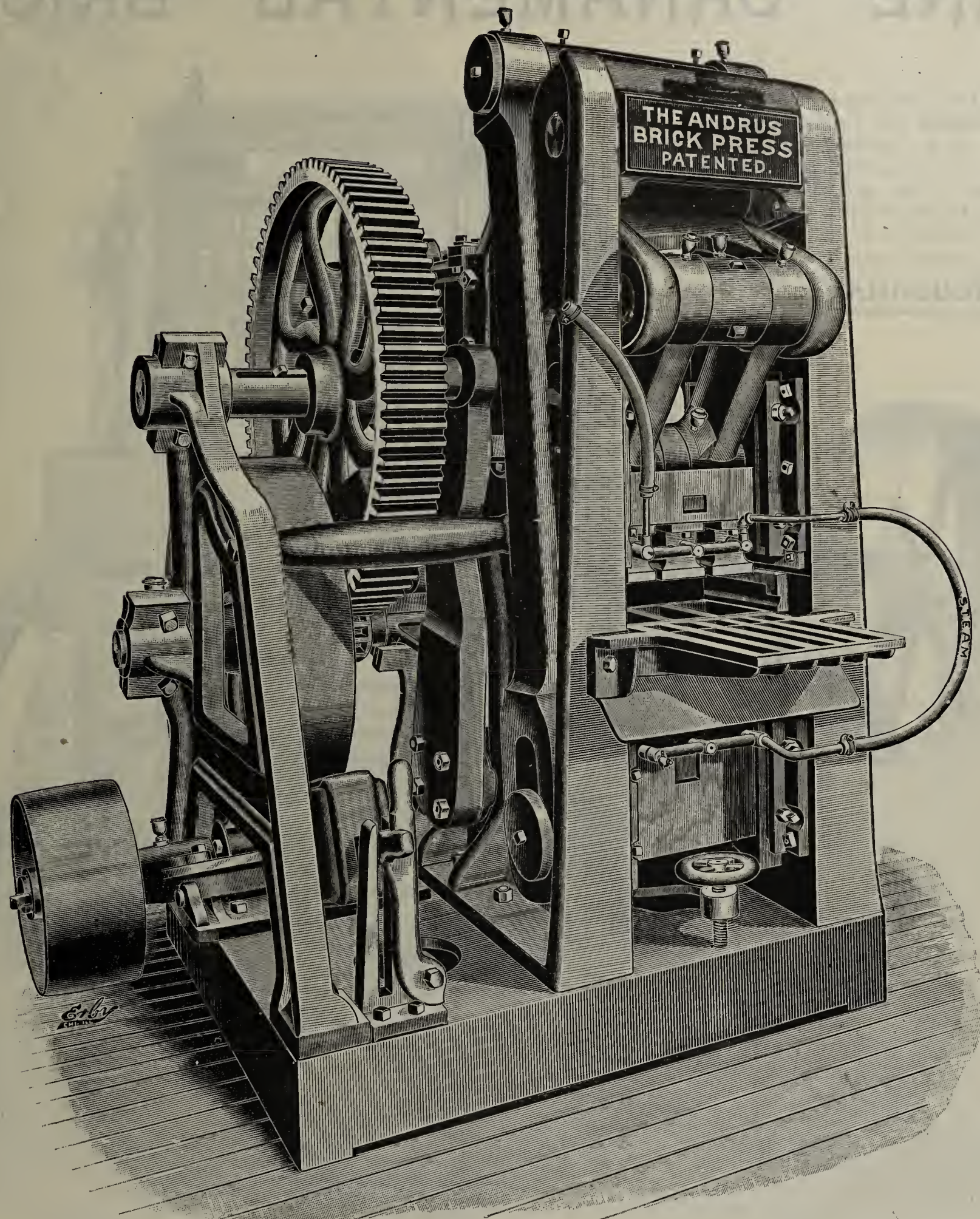
FOUR-MOLD MACHINE.
(REAR VIEW.)



FOUR-MOLD MACHINE.
(FRONT VIEW.)

The NEW ANDRUS DOUBLE PRESSURE 3-MOLD BRICK PRESS

Within the Reach of Any Responsible Brick Manufacturer.

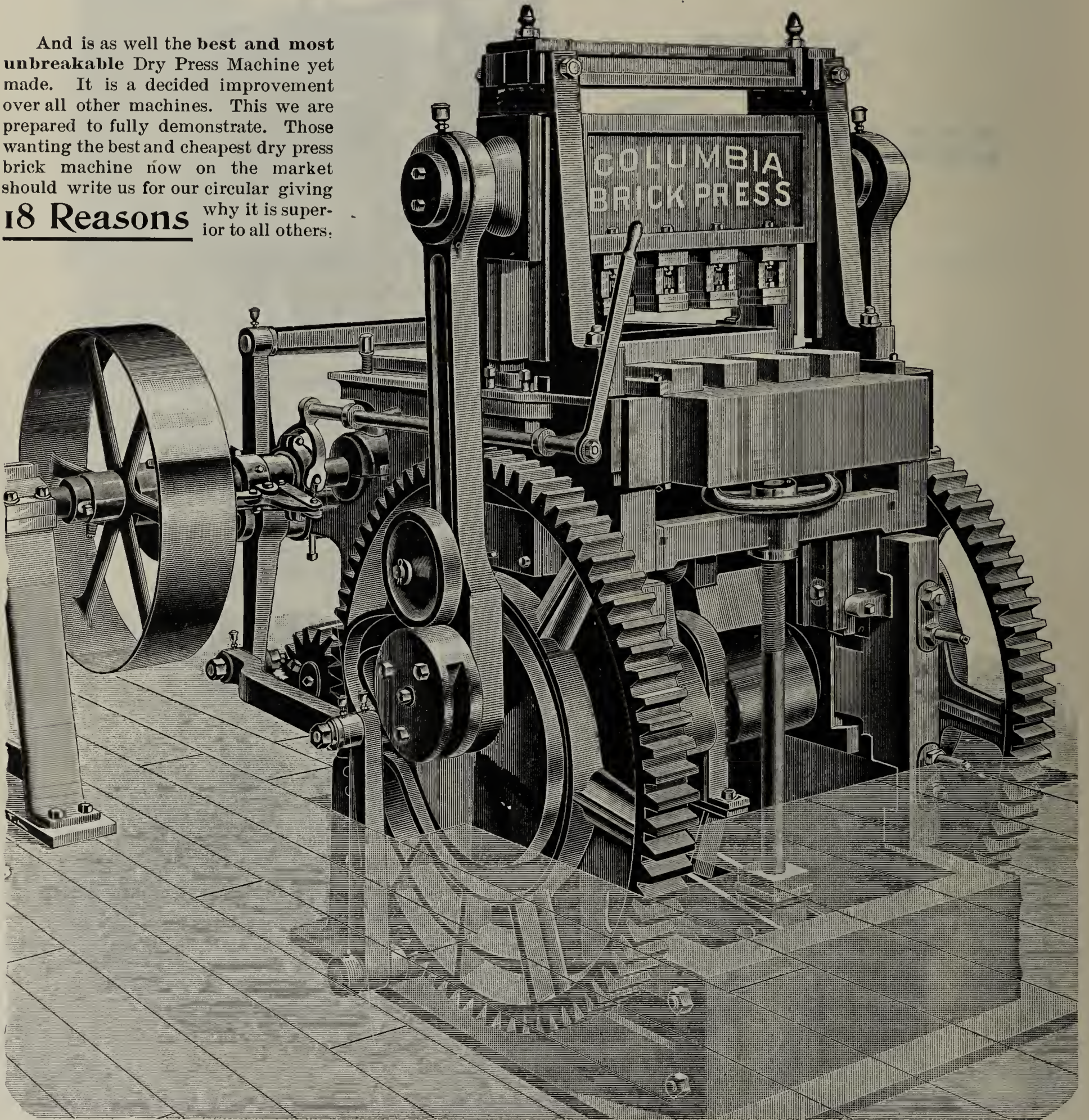


Write for new Catalogue of our 3 and 4 mold Presses and new terms to suit the times. Address

H. O. WHITNEY, General Agent,
General Office and Factory, KEOKUK, IOWA. **KEOKUK, IOWA.**

❖ THIS ❖ PRESS ❖
 IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF
 FINE ORNAMENTAL BRICK

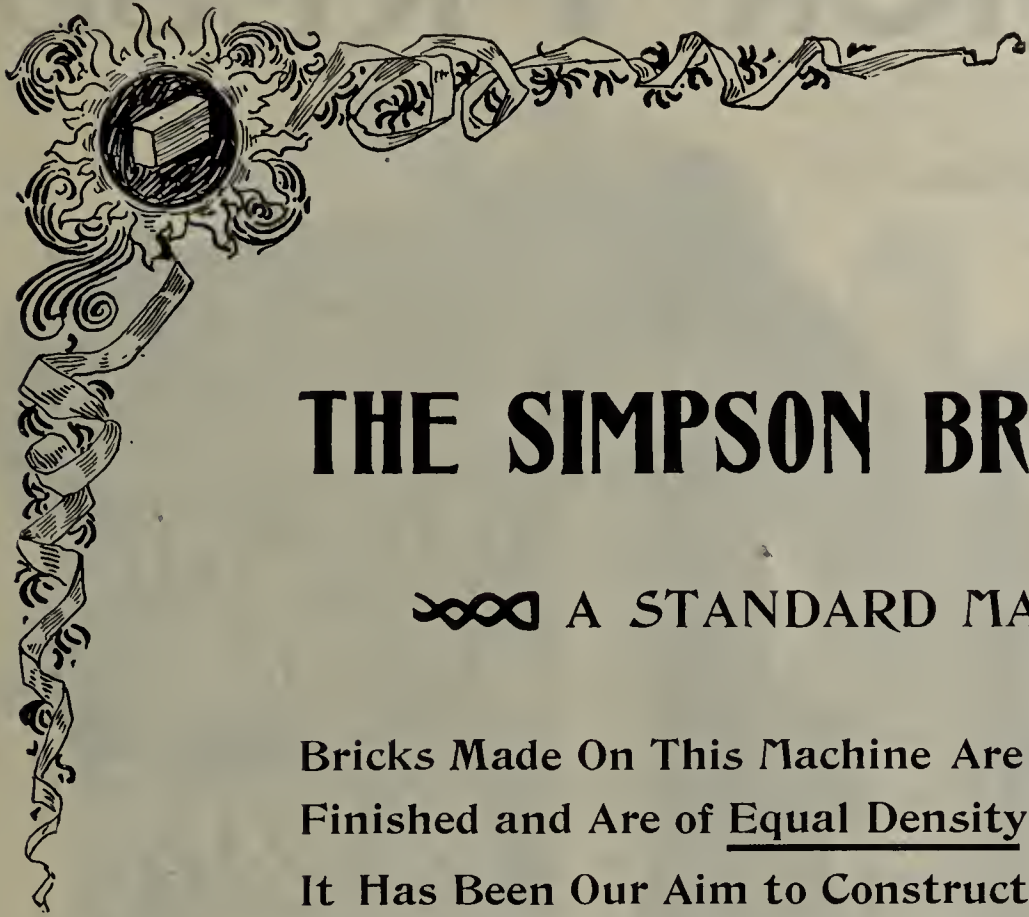
And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,
COLUMBIA MANUFACTURING CO.,

Send your clay and we will test it and send you the results....

2119 N. Ninth St., ST. LOUIS, MO.



THE SIMPSON BRICK PRESS

∞ A STANDARD MACHINE ∞

Bricks Made On This Machine Are Beautifully Finished and Are of Equal Density Throughout.

It Has Been Our Aim to Construct a Press That Would Be of the Highest Practical Value to Brickmakers, and The Numerous Duplicate and Triplicate Orders We Are Always Receiving, Assures Us That We Have Been Successful in This Particular.

Carried Off the Highest Honors at the WORLD'S COLUMBIAN EXPOSITION.

We will Construct Complete Plants of Any Capacity, And Send Machines For Trial to Responsible Parties. The Majority of Successful Press Brickyards in the United States and Canada are Using Simpson Machines.

The Simpson Brick Press Co.,

Chamber of Commerce,

Agents For Canada:
Waterous Engine Works Co.
Brantford, Ont.

CHICAGO.



U. S. BRICK PRESS

Perfect in Mechanical Construction.

Least Cost For Repairs.

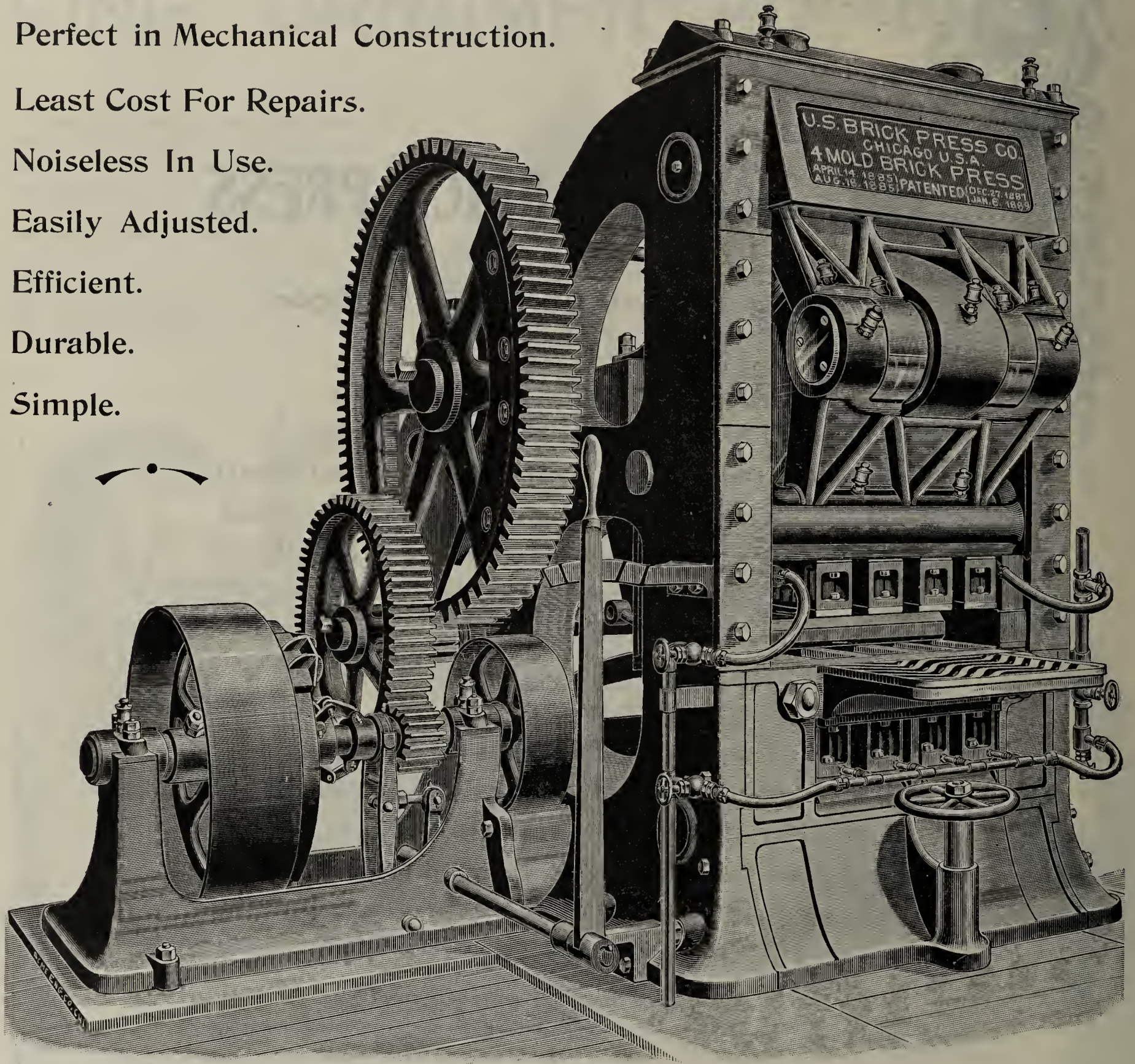
Noiseless In Use.

Easily Adjusted.

Efficient.

Durable.

Simple.



The U. S. Brick Press embodies all the requirements demanded by Pressed Brick Manufacturers, and its record is proof conclusive of its perfection as a Pressed Brick-maker. Write for new descriptive sheets.

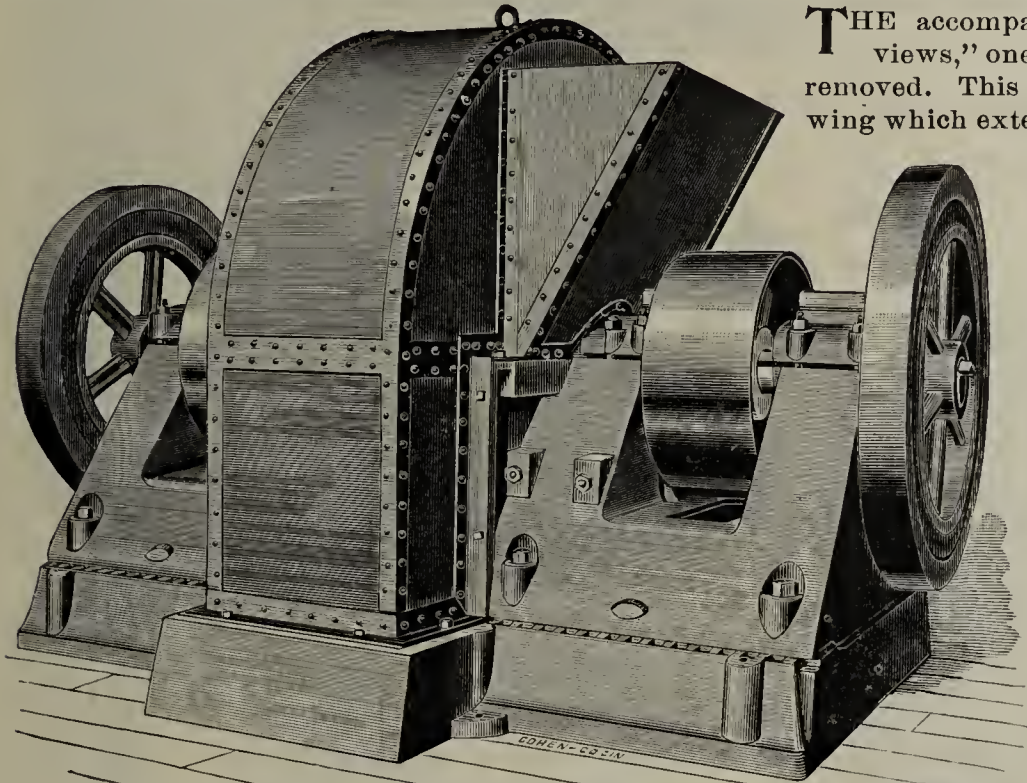
UNITED STATES BRICK PRESS WORKS,

OSWALD KUTSCHE, Proprietor,

OFFICE AND TESTING ROOMS:
72 West Washington Street.

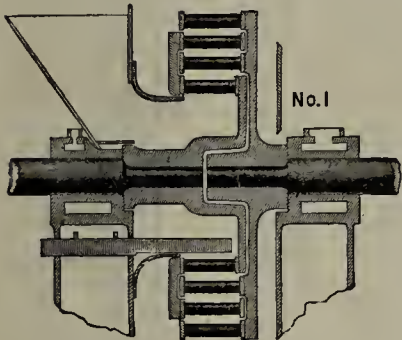
CHICAGO, ILL.

Stedman's Improved Clay Disintegrators



PATENTED APRIL 10, 1894. Nos. 518,010; 518,011.

Figure 1. This is the old plan of cage construction. While these cages do good work, there are certain mechanical faults in their construction that require excessive power to operate them, and the capacity is diminished. The four rings of cage pins are the same length, and this construction necessitates a recess in the castings to receive the ring of the opposite cage. The friction of the ground product between this ring and cage casting requires surplus power. The pins, or bars, all being the same length, there is no chance for the material to spread and clear itself, as it works



outwardly in the cages, and if the feeding is irregular, it constantly chokes the cages and checks the speed, so that as good grinding is not accomplished.

Figure 2. The construction of these cages is such that the best possible grinding can be accomplished, with little power and little wear and tear. We have what is called an increased clearance of the cages. (That is, they approach a conical construction from the center of the shaft to the circumference of the outside cage.) The inside row of pins is shorter than the second row, and the third and fourth rows increase in length over the second. By this construction there is no recess between the ring of one cage and the casting of the other, any material that works behind the rings being immediately thrown outwardly into the cage beyond, for it has a free discharge, and the centrifugal force it receives will not permit it to lodge between the ring and casting. This increased clearance allows the material, as it is fed to the cages, to spread and free itself, for it gives an increased grinding surface as the material works outwardly. You can feed the material as irregular or fast as you desire and it will not choke or clog the mill.

Parties who are familiar with the mechanical construction of Cage Disintegrators will understand and appreciate the merits of this valuable improvement. This cut also shows the construction of our journal bearings. The arrangement for oiling is the best and the journals are constructed dust tight, so that there will never be any danger of heated bearings.

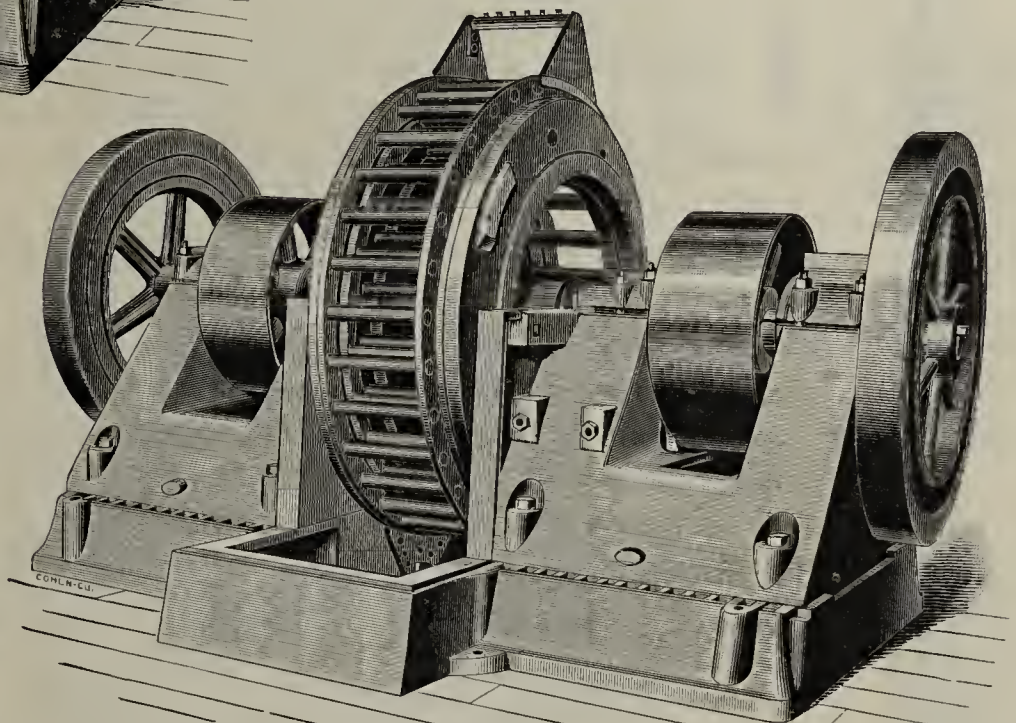
We can design these Improved Clearance Cages to fit the framework of any other make of Disintegrators, and will be pleased to correspond with any one who appreciates the value of this improvement, with a view of placing it on his Disintegrators.

Remember, with our Improved Clearance Cages you can do much more work with much less power, and greatly reduce the wear and tear.

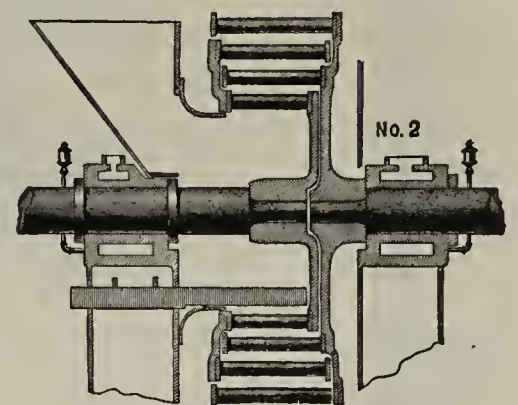
For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

THE accompanying cuts show our Improved Disintegrator, "two views," one with the casing over the cages, the other with the casing removed. This casing, which fits around the cages, has an extension wing which extends clear down to the base plate, so when you remove it from over the cages, they are presented in full view, and it is an easy matter, when slid apart, to reach the interior parts. Fastened to the outside revolving cage are two scrapers; the cross-bars of these scrapers extend some six or eight inches beyond the revolving cages, and revolve close to the iron casing that fits around the cages. This always insures a space of 6" to 8" between the cages and casing for a free discharge, and the action of these scrapers makes it impossible to clog in grinding damp clay. This is the most simple and practical method to overcome clogging in grinding damp clay, and brickmakers who have had experience with this class of Cage Clay Disintegrators will appreciate the value of this patented improvement. See cut below.

Improved Scraper.



PATENT APPLIED FOR.



STEDMAN'S FOUNDRY & MACHINE WORKS, Aurora, Ind.

— AN EXPLANATION OF — COLD FACTS!

Draw Your Own Conclusions.

IN the discussion of kilns in the N. B. M. A. Convention at Chicago, for special purposes, it was noticeable when an up-draft kiln was referred to, some one would remark that an up-draft kiln would not answer the purpose for the reason that the cold air coming in contact with the bricks in the arches would damage the ware." We wish to call attention of brickmakers to this point,

The bricks in the arches or bottom of our up-draft kilns are as thoroughly protected from cold air, as are the top brick in a down-draft kiln.

So much for this; now we maintain that we can obtain a more uniform degree of heat from top to bottom with an upward draft which is natural, than can be obtained with a downward draft, which is forced and unnatural, and with an arch over an up-draft kiln a larger per cent. of hard building brick can be produced; without an arch two courses only on top are salmon.

Now as to comparative cost of putting in the down and the up-draft kilns.

| | |
|---|----------|
| The average cost of a first class up-draft kiln to hold 200,000 brick, is | \$ 1,500 |
| The average cost of a first class down-draft kiln to hold 200,000 brick, is..... | 5,000 |
| Saving to the brickmaker in first cost on one kiln..... | 3,500 |
| Saving to the brickmaker on three kilns this size, (which are necessary for a small plant)..... | 10,500 |

We are ready to verify these estimates.

For the best and cheapest kiln in use to-day for burning building bricks, the "Morrison Up-draft Kiln" with late improvements is unrivaled.

If you have any doubts about it, address

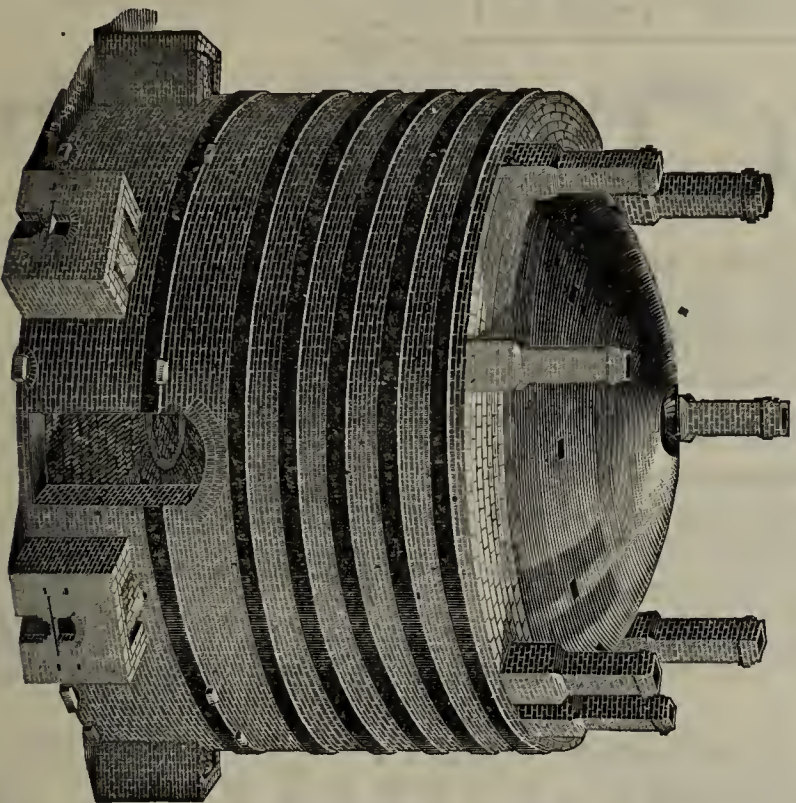
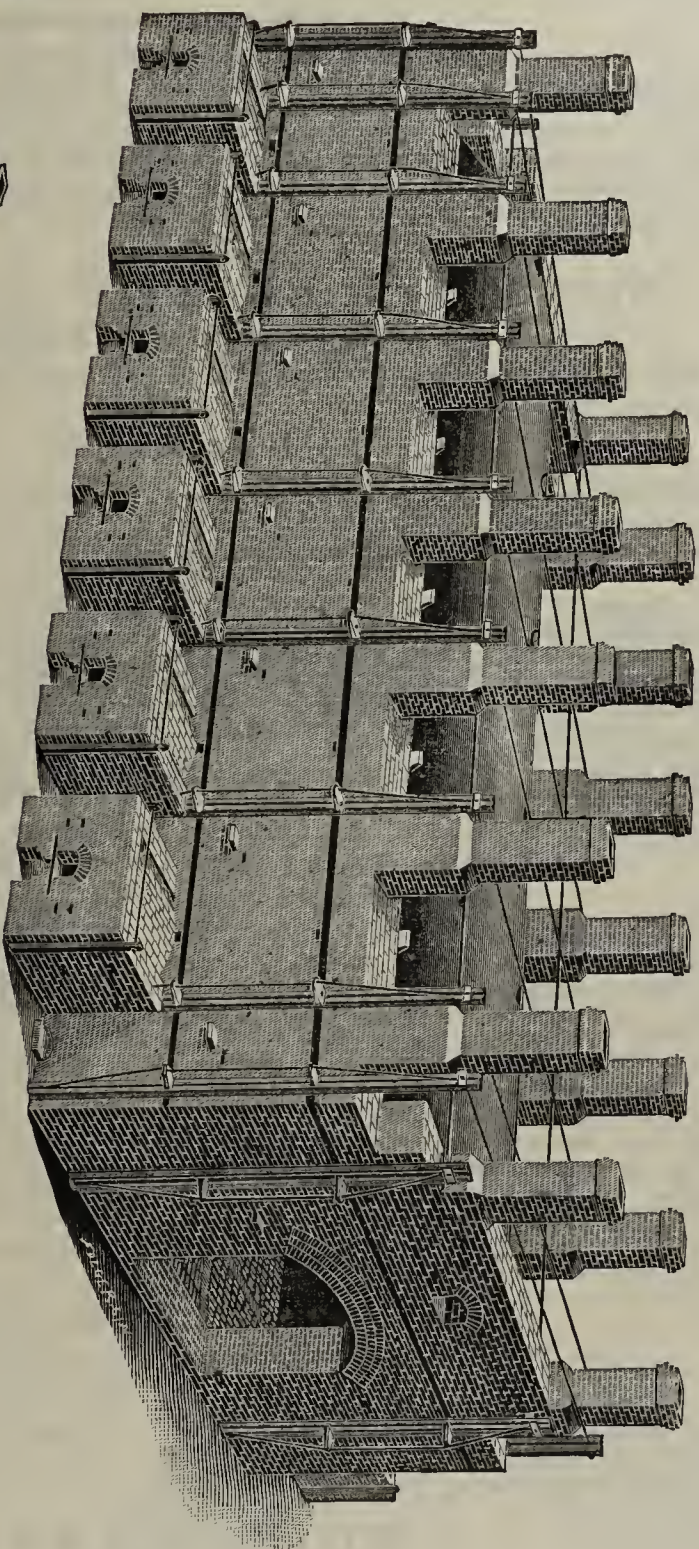
R. B. MORRISON & CO.,

PROPRIETORS,

ROME, GA., U. S. A.

For further proof. —————

The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

W. A. EUDALY,
64 Johnston Buildings,
Cincinnati, Ohio.

THE · KILN · OF · THE · PERIOD.

THE "PERFECT KILN."

Sercombe's Patent.

Designed on Economic and "Common Sense" Lines, for Burning Brick, &c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.
 Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Three Hoffman's are being converted and a new one erected in Austria (the home of Hoffman's); also five in America.

NOTE WHAT THE USERS SAY.

Sample of English Testimonials.

From Messrs. W. T. WRIGHT & CO., Albion Brick Works, Sileby.

SILEBY, July 14, 1892.

TO MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

GENTLEMEN:—You ask us how our new kiln answers. We are glad to say that since the work was dried out we got on splendidly with it, both as regards speed in burning, economy in fuel, regularity of hardness, and color of goods. We have no hesitation in saying that your Circular is absolutely within bounds, and does not at all go beyond the truth. We enclose you signed agreement for second kiln (larger size), and will be glad to have the drawings for same at your very earliest convenience.

Yours faithfully, WM. T. WRIGHT & CO.

Third kiln now ordered.

From Messrs. WILLIAM THOMAS & COMPANY, Limited, Wellington.

PATENT STEAM BRICK, TILE, POTTERY AND TERRA COTTA WORKS, WELLINGTON, SOMERSET, February 27, 1892.

MESSRS. SERCOMBE, OSMAN & WARREN, Exmouth.

DEAR SIR:—We are about to alter our No. 2 Hoffman Kiln to Sercombe's Patent, and shall shortly alter another. We enclose you cheque for the balance due to you on our No. 1 Kiln and full amount for No. 2.

[Extract from letter dated March 1, 1892:—"We find it answers our expectation, and it is our intention to alter all our other kilns."] Faithfully yours, THOMAS N. SULLY, Managing Director.

N. B.—The balance referred to above was retained in case the system was a failure. Third License bought February 23, 1893.

UNSOLICITED AMERICAN TESTIMONY.

Letter from the American CLAY-WORKER, of Indianapolis, for February, 1893.

GOING TO BUILD A CONTINUOUS KILN.

Editor Clay-Worker:

CINCINNATI, Ohio, Feb. 4, 1893.

J. M. Blair the president of our company, together with the undersigned, recently visited the fire brick works of the Fire Brick Co., near Fords, New Jersey, to inspect the operation of burning fire brick in the "Perfect Kiln" of Sercombe, Osman & Warren. This is a "lulu" on the continuous principle. It is a kiln of 25,000 daily capacity. We were so pleased with working of the kiln and results obtained that we purchased a yard right of one kiln for 50,000 brick daily capacity, and will erect one kiln in the near future. We also state from what we saw that the kiln will burn all hard brick at the minimum of cost for fuel and labor. It is the best and cheapest system of burning brick devised by man. The brick we saw in the kiln were evenly burned and hard from top to bottom and side to side of chambers. We saw them drawing the burned brick in kiln, the brick burned in kiln stacked on

the yard and they were all first-class fire brick and up to the standard. We are pleased with the draft of the kiln and burner's control of same. We were satisfied with the heat generated from drying off in front chamber until it gradually increased in various chambers as we walked back until the white heat reached in last chamber. The setting of brick in chambers suited us, as there were no fire marks on bricks, and the setting such as will allow a large per cent. of face or front brick, a desideration heretofore unknown in a continuous kiln. In short, to sum up all our observations, we can safely say that the kiln was doing all the circulars of Sercombe, Osman & Warren claim for their "Perfect Kiln," and we think is the best continuous kiln in operation. Any other information cheerfully given by addressing the undersigned.

Your respectfully,

B. W. BLAIR,

General Manager J. M. Blair Brick Co.

AN EVIDENCE OF FAITH.

FULTON, Mo., January 25, 1893.

WM. SERCOMBE, Fords, N. J.

DEAR SIR:—I wrote you yesterday to send us plans and Specifications for a No. 2 kiln of the Sercombe Patent or "Perfect Kiln," remitting half the fee \$437.50. After a thorough investigation of your methods of construction and operation, I am satisfied that

your kiln will be a success. I think your kiln now being operated at Fords, N. J., is doing all that could be expected of any kiln. We expect as soon as we get this kiln completed to build another of the same size. Wishing you abundant success, I am,

Very truly yours,

L. U. NICKELL, Sec'y.,

Fulton Fire Brick and Mining Co.

FROM CANADA.

MESSRS. SERCOMBE, OSMAN & WARREN.

DEAR SIR:—We have visited your "Perfect Kiln" at Fords, N. J., which was burning in a most satisfactory manner. The results were most favorable, and the least we can say about the kiln it is fully equal to all that you claim for it in your circular (Extract.) Yours truly,

N. B.—Messrs. Carroll & Co. are erecting one kiln, and contemplating erecting others.

Toronto, February 28th, 1893.

CARROLL, VICK & CO.

References can be given to over Forty first-class firms already. For further particulars please apply to

SERCOMBE, OSMAN & WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER

AGENTS FOR CANADA R. H. PYNE & CO., Yonge St., TORONTO.

W. H. KELSO, President.

PAUL BOEHNCKE, Treas. & Sec'y.

MAX A. TH. BOEHNCKE, Gen'l Mgr

P. O. Address:
Centinela,
Los Angeles County,
California.



THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:
Inglewood, California.
Tel. Address:
Inglewood, California.

Incorporated October 15th, 1892.

.....Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,
No. 474,807, May 17th, 1892.

BOEHNCKE'S

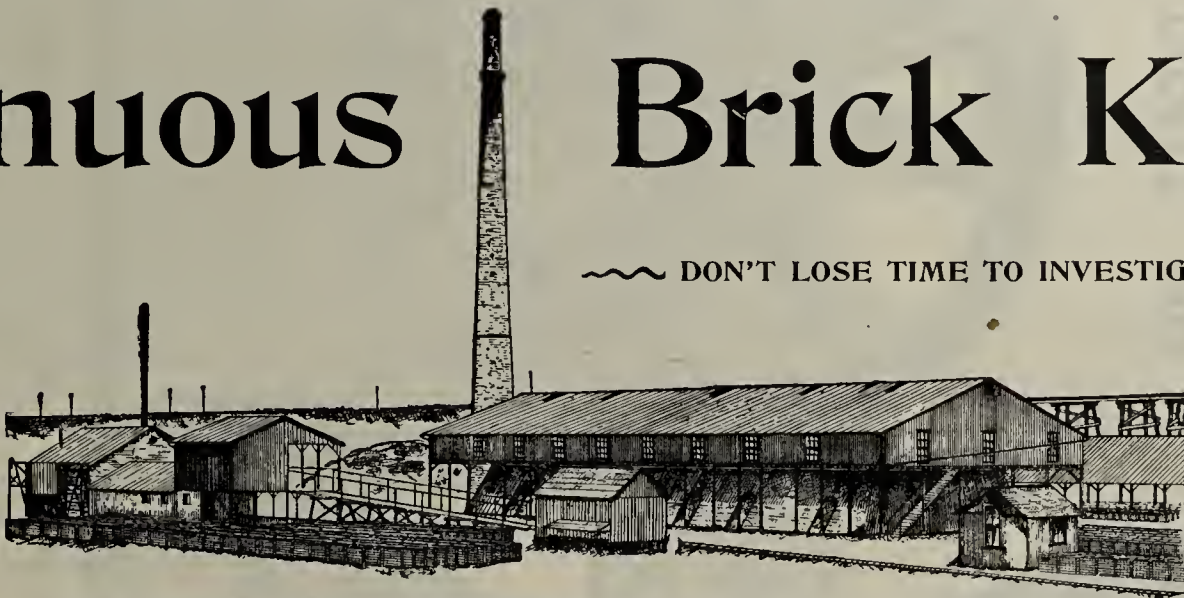
Several other U. S. Pat-
ents applied for.

UP AND DOWN DRAFT

Continuous Brick Kiln.

12 Kilns in Operation
...in the...
United States.

5 Kilns in course of
construction
East and West.



DON'T LOSE TIME TO INVESTIGATE.

Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

Beware
of
Infringe-
ments.

ADVANTAGES OF THE KILN.

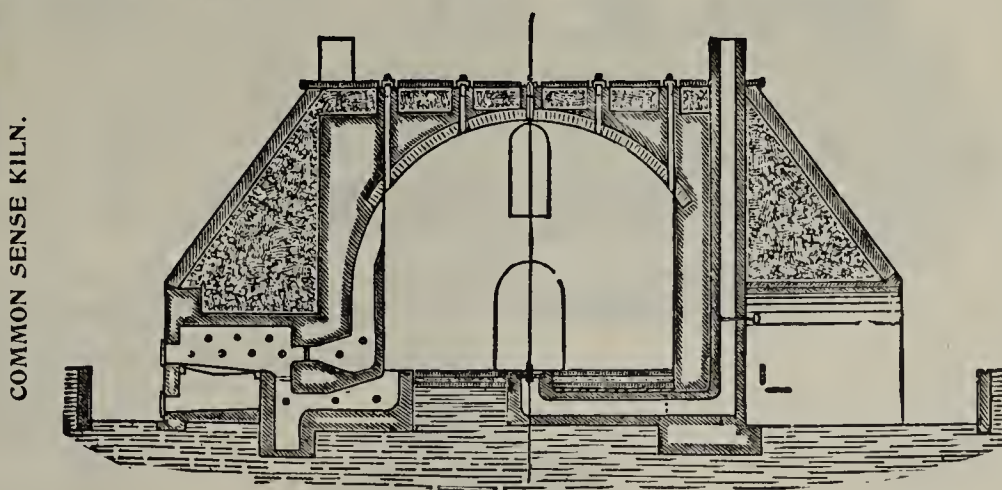
1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of Soft and Stiff Mud Brick, Dry Press Brick, Shape and Face Brick, Sewer and Paving Brick, Fire Brick, Cement and Lime.

Write for Circulars to.

Centinela Brick Kiln & Drier Co.,

Box 35,

Centinela, Cal.



FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

A NEW BRICK DRYER.

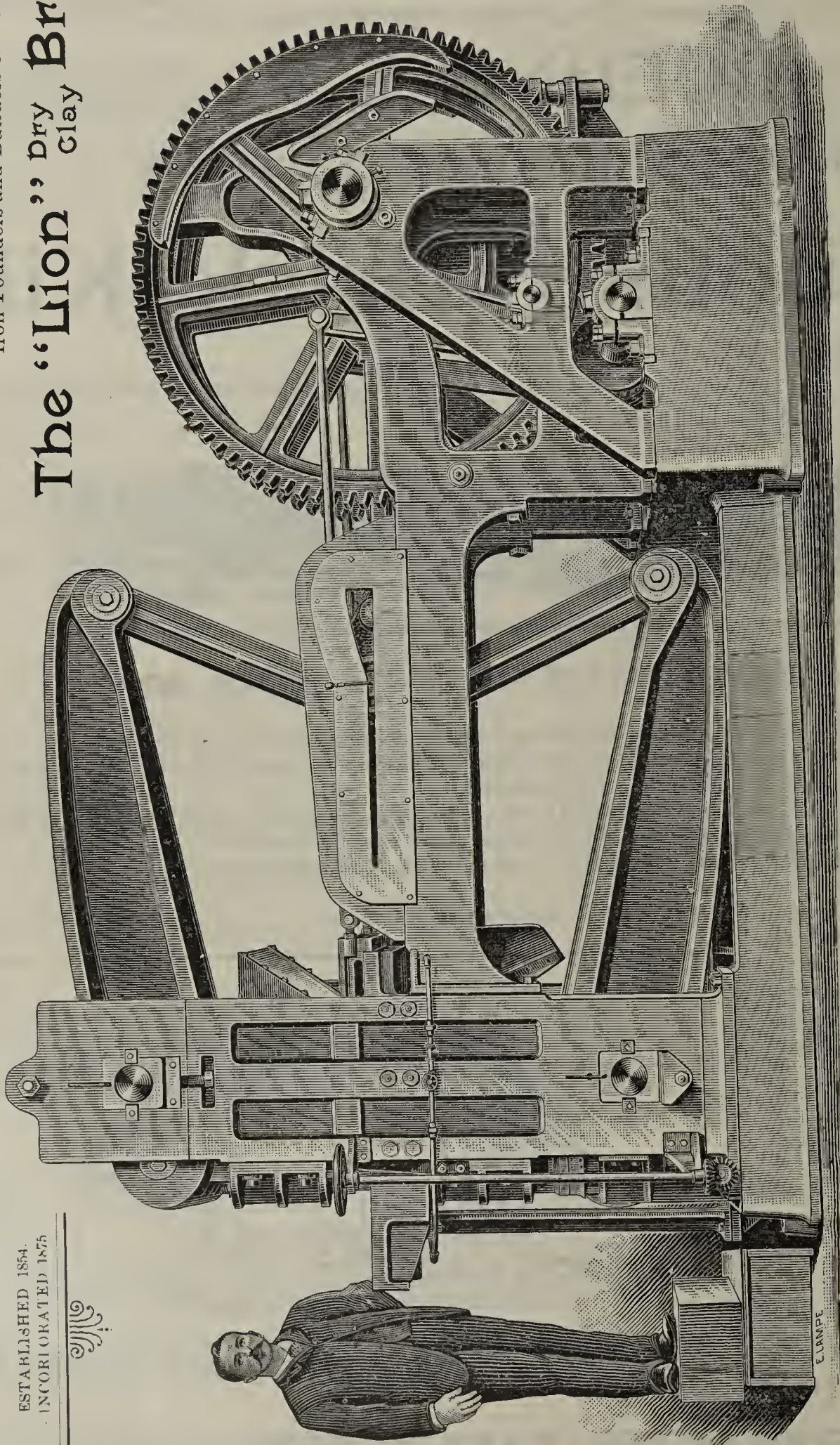
We have also Boehncke's Brick Drier, which is very economical

ST. LOUIS IRON AND MACHINE WORKS.

Iron Founders and Builders of Heavy Machinery.

ESTABLISHED 1854.
INCORPORATED 1875

The "Lion" Dry Clay Brick Press.



Weight, 44,000 pounds.

Capacity, 25,000 to

30,000 pressed

bricks per 10 hours

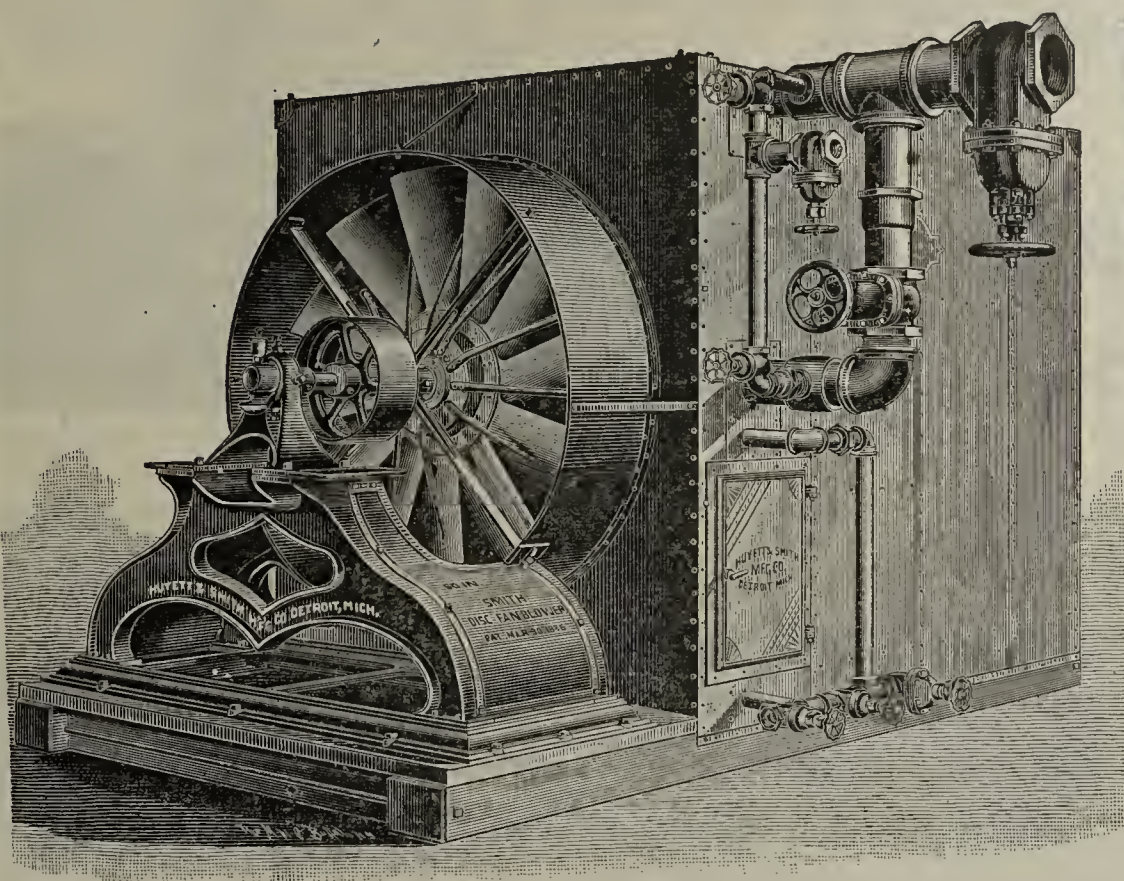
Pressure, 200 Tons on Five
Bricks.



WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain. 2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press, to a minimum. 3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do. 4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time. Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given. If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 good brick, with little or no cost for repairs. We make this press now in two sizes—25,000 to 30,000 capacity and 10,000 to 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepaies the freight charges. For circulars, price and other particulars. Address

ST. LOUIS IRON & MACHINE WORKS, Main Street and Choteau Ave., St. Louis, Mo.



Is Your Dryer

Giving you
trouble?

We can help
you.

Are you de-
pending on the
sun and the

weather?

If so, you are losing
money. Let us tell you
about the

**Smith Hot Blast Brick
Dryer.**

We will cheerfully do so.

The...
**Huyett & Smith
M'f'g Co.,**

—DETROIT, MICH.

We are manufacturers of **BLOWERS**, and can **BLOW** as hard as anyone but prefer to let others do the **BLOWING** in regard to the **MERITS** of our **BRICK DRYER**; the following testimonial letter is but one of a large number we have on file.

PHILADELPHIA, PENN., May 17, 1894.

MESSRS. HUYETT & SMITH M'F'G Co., Detroit, Mich.

Gentlemen:—In reply to your inquiry about our dryer, we take great pleasure in informing you that the dryer that you sold us, with the guarantee of 40,000 stiff mud brick per day, is now drying from 55,000 to 60,000 per day, which amount we find that we can dry without forcing the apparatus. We use only exhaust steam in the day time and live steam at night, carrying about 70 pounds of steam. We shut our dryer down at 12 o'clock Saturday night and start at the same hour on Sunday night.

Having made a study of currents of air and personally examined several styles of dryers we consider that your dryer is the best on the market. We have also proved it to be economical and would cheerfully recommend it to any person needing a dryer.

Truly yours,

THE PHILADELPHIA BRICK CO.,

Per James H. Hamilton.

Plans, printed matter, etc., furnished on application.

The Huyett & Smith M'f'g Co.,

Main Office and Works, 1,400 Russell St.,

= DETROIT, MICH.

NEW YORK, 26 Cortlandt Street.

CHICAGO, 31 South Canal Street.

BOSTON, 48-54 Union Street.

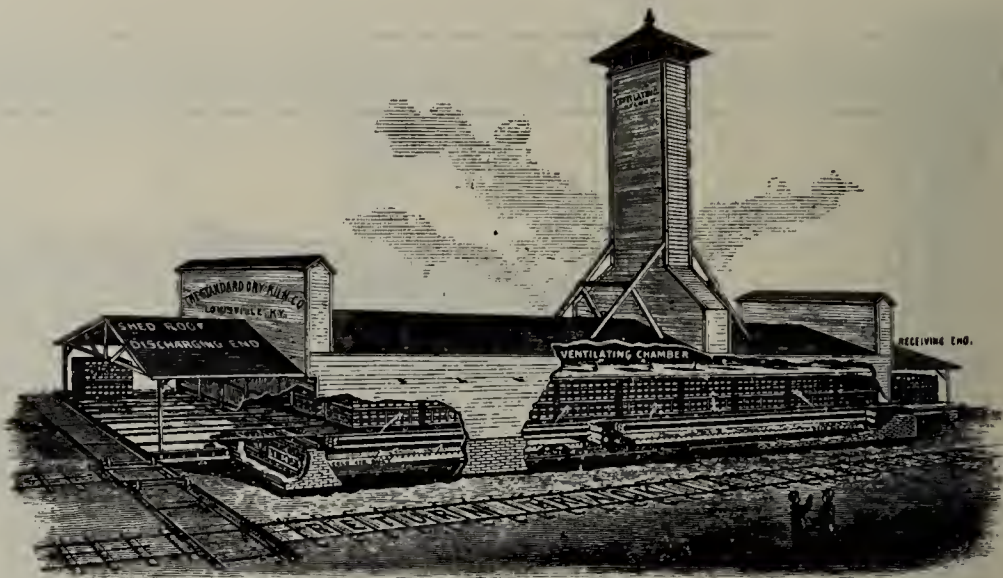
•
BRANCHES.
•

PHILADELPHIA, 118 Custom House Place.

SAN FRANCISCO, 21 Fremont St.

LONDON, ENG., 13 Little Trinity Lane, E. C.

The Standard Patent Forced and Natural Draft Brick Driers



Embody modern thought and ideas ; they are constructed on scientific principles ; they have proved eminently successful in every instance, for the reason that they are adapted to the drying of not only one but all kinds of clay.

They differ radically from other makes, in that conditions are alterable—not fixed—therefore any combination of drying influences necessary, can be brought to bear upon the product drying, to suit its particular nature.

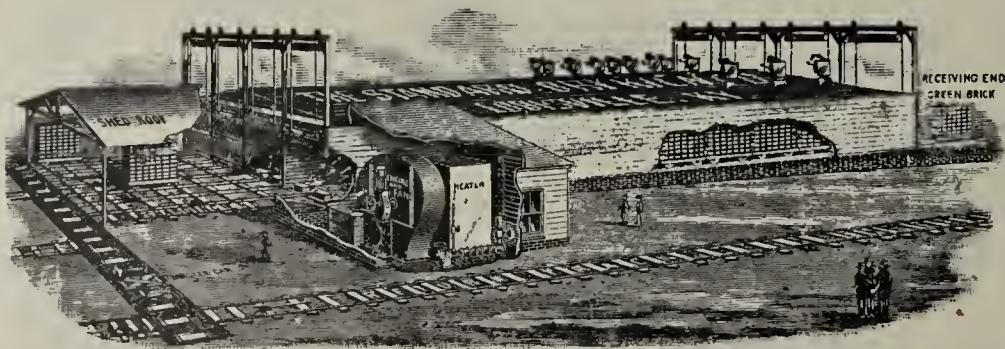
Furthermore, the air currents are under perfect control and each and every brick, regardless of its position on the car, is thereby subjected to air of the same absorbing power ; hence, the drying process must, of a necessity, be absolutely uniform.

The “Standard” Drier

Is undoubtedly the BEST which the market affords, and, consequently, must be the cheapest, as the best is always the cheapest in the end.

Investigate its merits before contracting elsewhere.

Can't we send you copy of our Catalogue and “Opinion of Users ?”



The Standard Dry Kiln Co.,

Builders
of
Up-to-Date
Brick
Driers.

INDIANAPOLIS, IND.
LOUISVILLE, KY.

THE CLAY-WORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXIII.

INDIANAPOLIS, IND., JULY, 1894.

No. 1.

Written for the CLAY-WORKER.

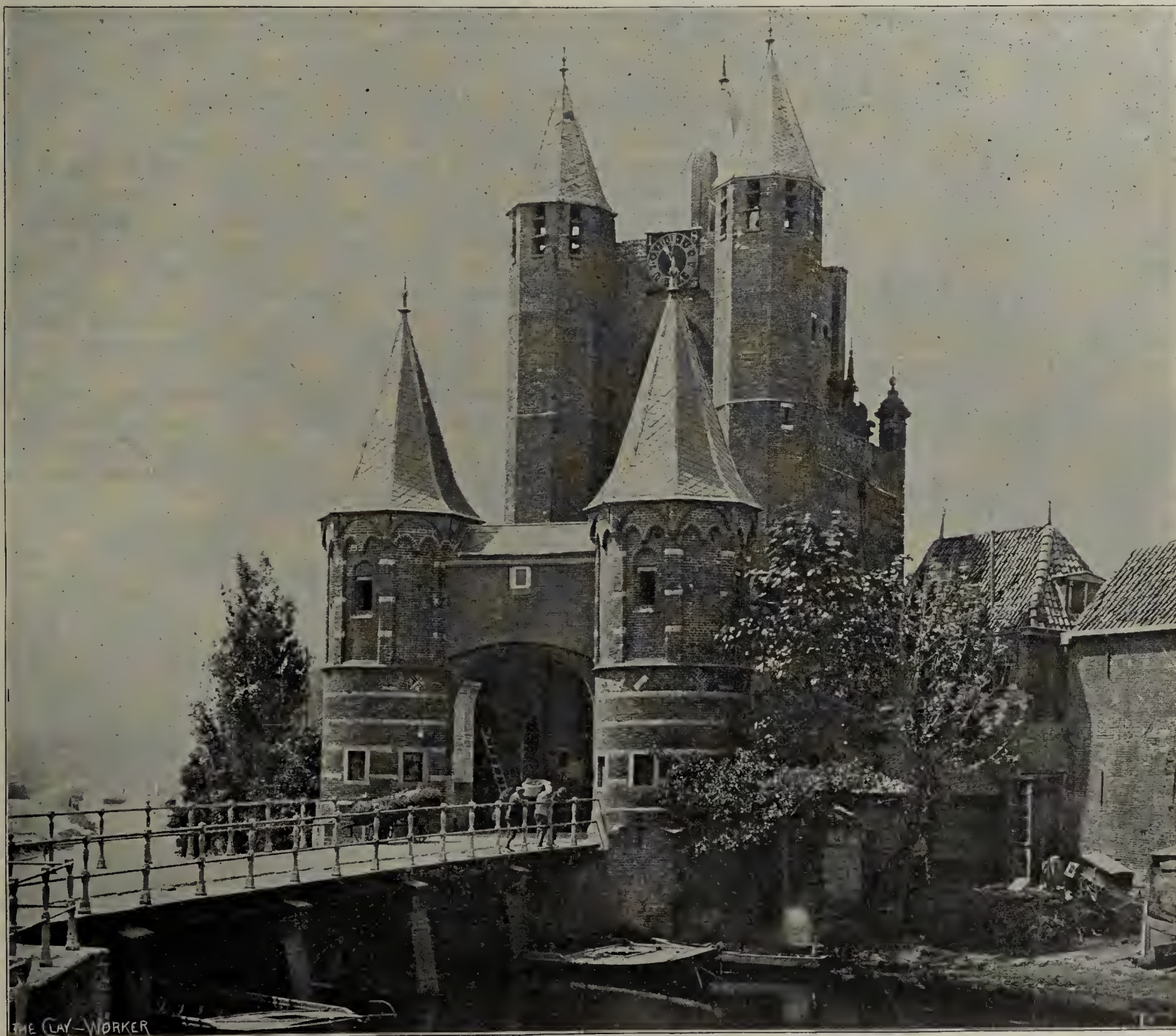
BRICK ARCHITECTURE.

BRICK WORK IN HOLLAND.

It is not the wealth of a nation which produces artistic building. It is not altogether the ambition to produce the artistic which enables a country so to do. Great wealth and the artistic instinct

do not naturally travel hand in hand. A nation struggling against an aggressive enemy and burdened by peculiar physical characteristics, would not appear a fruitful field for the high development of the arts. Yet such was Holland. It produced great paintings and many of them when the nation was suffering from outside oppression and attack. It

did this at a time when it was hardly possible to properly care for its physical wants. In the world's history this has often been true. During times of struggle the arts have taken to themselves fresh life and new vigor. The high seriousness, the emotional and patriotic sentiments which are developed within a nation during a time of war



A CITY GATE AT HAARLEM — HOLLAND.

appear to be just the thing necessary to develop a new and strong artistic impulse. Thus it is that we may look back into the history of Holland and see the great buildings and the splendid paintings which were produced in a time of struggle and oppression. One would not expect to find the dutch given to expression in picturesque architecture. They are a plain, stolid, honest, reasoning people. They are not the people whom we would expect to indulge in fanciful expression of any kind. Their clothes are always simple with few suggestions of color, yet, we find their architecture bouyant spirited, picturesque, fanciful and often refined in detail. The influence of the architecture of Holland is never sombre. They build very largely with a dark red brick. They do not use large quantities of stone in decoration, yet it is effectively employed. Altogether the architecture of Holland is quite as picturesque as that of any other country in Europe. Certainly it is much more startling in its outlines, much more picturesque than was common to the architecture of France of the same period. The general tendency of Dutch architecture has always been towards the picturesque.

The accompanying picture shows the Amsterdam gate in Haarlem. This is one of the gates, or doors as they are more literally called, leading from the city. As will be noticed, it is in brick slightly decorated with stone, though the forms are for the most part brought out in the brick itself. In this structure there is a splendid relation between the composition of the whole and the general details. The massing, the relation of parts are handled in a very ingenuous manner. It is a composition which, for ingenuity of arrangement, beauty of sky-line, is hardly to be excelled. Along with all this goes a consistency of detail which one does not always meet in picturesqueness. The two front towers from which springs the great archway of the door are not left to the simple outlines and plain surfaces of what comes behind. These two front towers are good in outline independent of the detail which is a part of them. However, had they been left to their outlines alone and without the little enrichment which is worked out in the simple, economical manner which we see, there would be lost to this structure that vital spark which places it among the great buildings. We have in front

as stated before, the two outlines of towers with their refinement and division and decoration of detail which renders the simple mass behind it yet more picturesque and more suited to its general position than otherwise would be found possible. It takes an artist of great training and splendid courage to make certain parts exceedingly simple and plain in outline and detail. It takes more courage than belongs to most men. To the ordinary mortal there would be a temptation almost too strong to be withstood to decorate and disturb the surfaces of the two towers which occupy the prominent position in the middle ground.

We see in this building none of the efforts at using different colored mortars, of disturbing and decorating all surfaces. We see what can be done by a properly trained artist, with simple material, and at a relatively small expense. When we look at a structure of this character, we realize that very few designers of our own time are acquainted with the possibilities of a rugged outline, simple detail combined with the knowledge of the proper relation of parts. The tendency in the builders of our own time is to do too much. It is only a short time since we found brick buildings wherein very startling effects were secured by the use of red and white mortar in the same wall. Often the body of the wall was in red mortar and the arches and string courses in white mortar. Now, one seldom or never saw such a combination as this worked out successfully. Yet this was not the only means adopted to obliterate all effort at repose and quiet in our buildings. Most of our buildings are ugly because too much is done to them. The people have an idea that our architecture is not generally artistic because the means to be expended in our structures is not abundant. This is far from the truth. What we need more than money is the proper education leading to the artistic disposition of the material and means which are now at hand. With the money which has been expended during recent years we could, had it been properly directed by educated artists, have placed ourselves at the head of the world's higher artistic development.

In this design is shown what may well encourage those interested in good brick architecture of our own time. It shows what may be done by simple means intelligently applied.

LOUIS H. GIBSON.

Written for the CLAY-WORKER.

EARLY POTTERY MOULDS IN AMERICA.

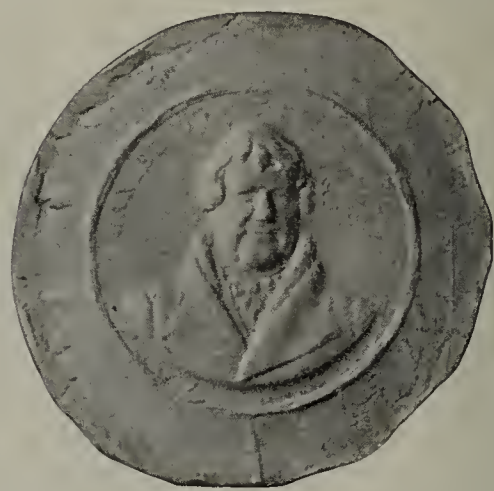
BY EDWIN AT LEE BARBER.



Head design for Jewelry—Probably by Flaxman.

POTTERY is either hand-modeled, "thrown" or moulded. Primitive races, such as the ancient Peruvians and Mexicans, and the Mound Builders of the Mississippi Valley,

fashioned their vessels by hand, without the aid of the rotary disc. The "throwing" process, employed by civilized peoples since the time of the ancient Egyptians, consists in shaping pieces by hand on the revolving potter's wheel. By far the larger proportion of pottery, however, is made in moulds, which method insures uniformity in size and shape. Only the most simple forms can be fashioned by throwing, but intricate designs can be reproduced by means of moulds, though sometimes a single design must be made in a number of separate sections which are afterwards joined together. In order to make a mould it is first necessary to model the design in clay, from which a plaster cast is taken. From this, in turn, an impression is made in clay, which is a reproduction of the original model, and after this is burned hard, it is preserved as a block from which any number of working moulds can be



Medallion Portrait of Daniel O'Connell—Jersey City Pottery.

obtained. Thus it will be seen that in order to secure the mould which is to be used in forming pieces for the kiln, four distinct operations are necessary,—first, the designing of the model, or relief *positive*, in unbaked clay; second, the making of a depressed *negative*, in

plaster; third, the forming of a duplicate positive in clay, which is to be burned, and fourth, the securing of a working mould in intagli. These successive operations are necessary to secure the block form, from which any number of moulds may be made. The original model might be made of fire

brought many moulds with them, which had previously done service in English potteries. At first very little original designing was attempted on this side of the Atlantic, the old moulds being sufficient to supply the needs of the American market. Toby jugs, cow creamers, rustic pitchers and other designs made

of O'Connell was used as a decorative detail on certain pieces of pottery made there. This medallion, the mould of which is still in existence, is here shown. Greatbach, however, did not depend entirely on the moulds which he brought from England, some of which may have been of his own designing, but commenced the modeling of new designs. His work is distinguished by fine execution and conscientious attention to detail, and he was unquestionably one of the ablest of our early modelers. When he attached himself to the Bennington (Vt.) Pottery, at a later date, he continued to produce new patterns both in shapes and in ornaments for applying to the outside of vessels.

The Jersey City hunting pitcher with hound handle, is perhaps one of his earliest and best known designs. On one side was a representation of a stag hunt, and on the opposite a combat of boar and dogs. This was designed as a solid piece with relief ornamentation, and pitcher moulds are still extant; but we also find among the minor plaster casts, which have survived from the stock of the old pottery, some separate moulds of these hunting scenes, which



BOAR HUNT—Modeled by Greatbach for a Water Pitcher.

clay and burned in the kiln, instead of reproducing the form, but if any accident should happen to it in the process of firing, the entire work of modeling would have to be repeated. Hence the precaution of preserving the model. Some designs are reproduced in such large numbers, that many moulds are worn out by constant use, and new ones must be substituted to insure sharpness in detail. The baked block form will furnish an indefinite number of perfect moulds, but should any accident befall it, the original block mould can be brought forth again, from which another block can be made.

The casting process differs from ordinary moulding in the use of liquid "slip" instead of plastic clay. The same moulds may be used, into which the diluted clay is poured. After the hollow mould has been filled and allowed to stand for a few moments, the plaster will absorb a portion of the moisture and convert the slip which is directly in contact, into a paste which adheres to the plaster, and when the superfluous slip has been emptied out, a layer of clay, of uniform thickness, will remain. This may be delivered from the mould after being allowed to stand for a short time and then laid aside to dry before burning.

Early in the present century, when English potters came to this country to pursue their calling in new fields, they

here will be readily recognized as reproductions of earlier English forms. Other pieces, with relief design of sporting subjects, Bacchanalian heads, knights in armor and other exotic devices, were made from imported moulds. I have in my possession a small plaster mould of an exquisitely executed female head, evidently one of Flaxman's cameo designs, which was in use years ago at one of the Perth Amboy potteries. We do not know how this work of art was utilized in the New Jersey pottery, but it is probable that it served as a mould for making ornamental details for some common pottery utensil. We know that similar moulds, taken from engraved gems executed in England by the best artists at great expense, have been brought to this country and degraded to the use of manufacturing cheap glass buckles and brooches.

Daniel Greatbach, an English modeler, who settled at Jersey City about 1830, brought with him from Staffordshire a large number of English moulds which he utilized to a considerable extent and which he, at a later date, modified and altered to suit the requirements of the Jersey City Pottery. In 1849 we find that a Philadelphia potter (R. B. Beach) was using a pitcher mould representing the head of the Irish patriot, Daniel O'Connell, which was obtained from the Doulton works of London, England, and at Jersey City a relief medallion portrait



Small Mould showing Floral design—By Greatbach.

were doubtless applied to the smooth surface of a pitcher design which, when finished, would present practically the same effect. These ornaments on coming from the mould are soft and pliable and can readily be bent and attached to a curved surface. The moulds of his hunting scenes have survived the de-

struction of the old pottery and its hundreds of plaster casts and we are able to reproduce here the boar-hunt design, taken from the original mould. The details are so accurately brought out that the hairs on the dogs are distinctly visible.

Greatbach also modeled a great variety of floral details for attachment to pitchers, mugs, and various other utensils. One of these moulds may be seen in the accompanying illustration.

This hunting pitcher was so popular that Greatbach reproduced it for the Bennington works, with certain modifications, and the addition of a relief band of grapes and vines.

Josiah Jones was also a skillful modeler at the works of Charles Cartlidge & Co., Greenpoint, N. Y., previous to 1850. He modeled a number of medallion portraits of prominent Americans, including George Washington, Daniel Webster, Henry Clay and Zachary Taylor, which were produced in fine porcelain. I have seen some exquisite little jewelry relief portraits of members of Mr. Cartlidge's family in biscuit porcelain, the work of Mr. Jones, but unfortunately the original moulds have been lost or destroyed.

Among the unused and forgotten moulds which still repose on the dusty shelves of some of the old Philadelphia potteries are many which were in extensive use over half a century ago, some of which were brought from England when the pottery industry was in its infancy in this country. Grotesque heads, fancy pitchers, and other shapes may be found among these but they have been worn out or discarded for the more utilitarian forms which are in demand at the present day.

Written for the CLAY-WORKER.

FIRE CLAY AND ITS PROPER APPLICATION.

LIME AND MAGNESIA.



IN a chemical analysis of fire clay the quantities of calcium and magnesium present are always reported in percentages by weight as lime (cao) and magnesia (mgo).

It does not matter whether these elements exist in the clay combined with other elements in the form of a carbonate or a sulphate, the chemist always

reports the calcium and magnesium as above stated.

This being so, it is quite consistent to confine ourselves to these terms, magnesia and lime in speaking of these impurities.

It is not necessary that I should review much which has already been said in previous articles, explaining the chemical properties of these two elements and describing the different compounds they form.

Fire clays may contain the sulphate, carbonate phosphate or silicates of magnesia or lime and the effect of intense heat is always to produce fusion to a greater or less degree. The temperature at which a complete fusion takes place, varies directly with the quantity of lime and magnesia present, other impurities remaining constant.

The tendency of a refractory material to melt when subjected to an intense heat and the sundry difficulties experienced in burning fire clays, without checking or cracking are too often attributed to the presence of one or both of these elements. Clays invariably carry in their composition other substances, such as the alkalies, which in combination with silica fuse more readily and at a lower temperature than either magnesia or lime, when subjected to the same treatment. If you take chemically pure calcium-oxide, and mix with it silica which has been carefully prepared, washed and ignited, you will discover that an exceedingly high temperature is necessary to fuse the mass. On the other hand, if you triturate this mixture of calcium-oxide and silica with a little alkali (either sodium or potassium carbonate), you will note that the fusion takes place at a much lower temperature.

Again, if two mixtures are made, one of pure silica and chemically pure calcium-oxide and another of clay, (which is practically free from impurities) and calcium-oxide, the proportions by weight of silica and calcium-oxide in the first being the same as the clay and calcium-oxide in second, you will find that the clay mixture shows a more thorough fusion than the silica mixture. The mixtures are to be sifted through the same size mesh and subjected to heat of the same intensity. This would seem to indicate that, within certain limits, the alumina will act as a base, in assisting the re-action between the lime and silica. To be sure, lime and magnesia form fusible silicates which

effect a complete vitrification, practically speaking, but they need the help of the alkalies to bring about fusion at a reasonable degree of heat.

So little is said in practice about the vitrifying power of the alkalies and so much about that of lime and magnesia in connection with clays.

The subject recalls to my mind an interesting coincidence that happened a few months ago, which serves to illustrate how fearful most people are of clays containing lime. I was asked to analyze a sample of fire-clay especially with respect to its percentage of lime. The person, who brought me the clay, said that he had sold and shipped a cargo of clay, of which this was a fair sample, to a man who had expressed himself as being very much dissatisfied with it. The purchaser claimed that the entire cargo was very badly contaminated with lime.

The only proof he had to substantiate his theory, which seemed quite conclusive in his own mind, was that on the surface, where the clay had become dry a white powder appeared in large quantities.

The fire clay was of a "red spotted" variety, so the contrast of colors made the dry white powder quite conspicuous. Without waiting to let the dispute proceed to an unhappy end, I settled the controversy by subjecting the samples to a careful analysis. I felt quite convinced in my own mind that there was no great amount of lime present; however I had been worked up to such a high pitch of excitement, I held my breath while administering the ammonium-oxalate to precipitate the lime in my solution. The analysis showed conclusively that the purchaser was mistaken in his judgement, for the results, magnesia Mgo .20; Lime Cao .43; left no room for doubt in relation to the matter. The mysterious "white powder" proved to be dry white clay.

CHARLES FERRY.

[To be Continued.]

CONSTANCY IS IMMENSE.

The constant drop of water
Wears away the hardest stone;
The constant gnaw of Towser
Masticates the toughest bone.
The constant cooling lover
Carries off the blushing maid;
And the constant advertiser
Is the one who gets the trade.

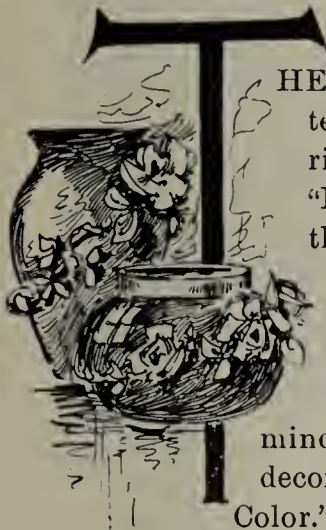
—From the Wahoo Wasp.

Written for the CLAY-WORKER.

THE WORLD OF KERAMICS.

Origin of Present Styles—Imitation a Bane to Real Art Work—Ancient and Modern Types.

Fourth Paper.



HERE are two periods of pottery in America, "Prehistoric American," and the "Moorish," brought over by the Spaniards.

From the arrival of the first Spanish Caravels these two forces have been and are conflicting in the minds of every designer and decorator combining "Clay and Color." It existed markably in all original productions of purely American origin in the World's Fair in 1893.

We must strictly bar out of course all this affliction of modern Anglomania, these germanized anglicized, boulevardized American students from the Quartier Latin, who speak no language correctly, and whose brains are equally Polyglot and Perverse.

To think we must be real. To be original—of the soil!

Now, before touching "Dates and details." You all know the story of the Bedouin from the Midway? When asked by the American to indulge therein, remarked: "Thank you, I drank yesterday."

Look carefully at the illustration of this article, among that which the hand maiden describes as "Masters Rubbish," you may see Spanish, Moorish and Mexican, modern and antique pottery and tiles. Do you see the family resemblance? Among them is no machine decoration, all free drawing, and brush work, and one thing which the illustration does not show is that among them no piece of ware is translucent, but all are like the Italian Faience I spoke of in a previous article, or in other words, the body is of that which was used by the "Ancients," or common brick clay, with a white glaze.

One tile has been in the wall of a church in Mexico for over a hundred years. But in that country of evolution, where churches are turned into libraries and government schools, and church steeples into the more practical use of serving as light-houses on the sea coast, instead of hanging bells in to annoy the neighborhood, I saw no reason to prevent doing a little despoiling also on my own account.

The very word "Ancient" suggests the Pyramids and Egypt, and from the famous old countries, at the eastern end of the Mediterranean, Europe has gathered its earliest specimens of pottery, as it has gathered its earliest specimens of almost every other branch of art or industry—from Egypt, Phœnicia, Assyria, Cypress and Asia Minor.

The best collection in Europe of Hispano Mauresque faïences is at Sevres, namely, the Davilliers collection. They were bequeathed, and their correct origin was the subject of a work by Mr. Davilliers. *The specialty of the ware being its metallic lustre, causing them wrongly to be taken for Italian products.*

During the dark ages, that succeeded the subdivision of the Western Empire, the manufacture of decorative pottery was entirely lost in Europe. It first reappeared in Spain, carried thither by Mohammedan invaders.

When the Arabs invaded Europe and spread themselves along various parts of the Mediterranean, and occupied Spain and the neighboring Islands, they brought with them their knowledge and skill in many Oriental Arts, and among them was the manufacture of tiles of enameled ware of the same kind as those which the Mosques of Persia and Arabia were adorned. These beautiful



tiles called by the Spaniards "Azulejos," (literally a varnished tile) are of a pale clay, like that exactly of which Milwaukee brick is made, the surface is coated over with a white opaque enamel, upon which the elaborate designs were executed in colors *and are not underglaze, as is generally understood.* The tints employed in the early tiles are usually blue or brown, the latter, when placed in the proper light, being iridescent. The whole of the courts of the Alhambra were probably paved with these tiles, but a portion of one pavement only now remains. A bordering of green enameled tiles is round the fountain of lions in the Alhambra. The most beautiful example of Moorish Pottery is the celebrated "La Jara" of the Alhambra. The ground is white, the ornaments either blue or of a gold and admixture of copper lustre. The most famous manufacturers of this pottery were Malaga, Valencia and Majorca, the latter island being celebrated *in the fourteenth century for its enameled pottery.*

SEVILLE POTTERY AND SAINTS.

Since the most ancient times, Seville has been noted for both. Here on this continent we have only one American Saint on the Calendar—St. Rose of Lima. Seville alone has two, both were pretty, and potters' daughters from the suburb of Triana.

There are even now various depots in that city of so-called Triana ware, but the suburb itself is undoubtedly the best place to study the old industry. The potters are nearly all in the same dear old street, and their premises, as ever, dirty, inconvenient and close; as in Mexico, South and Central America, the decorator sits cross legged on the floor and spins the wheel with the end of the brush. In one place it is possible to witness all stages of the pottery manufacture right in the kiln room. All the appliances are of extreme simplicity, in fact, no change of any importance has been introduced since the days the good catholics made the potters daughters, St. Julia and her sister, the patron saints of Seville.

The ware itself is of a coarse quality, yet there are specimens of remarkable beauty among them. The present inhabitants of Seville use the same shapes pitchers and bottles, you all know in the pictures of Murillo and Velasquez, not catering for the American shopper's—"What you got new this morning?" The result of the advent of the linen draper in Ceramics.

The method of decoration employed is decidedly original, consisting of geometrical designs, or of subjects to suit Spanish taste and customs, (Mata-dor's serenaders, etc.,) but all in a rough, strong style of treatment.

Now near these potteries in beautiful sunny, vineclad Spain, there are what are called "Gitanerios," for the Cave dweller is not peculiar to this continent. This race of potters is not of that soil however, they emigrated there, their language and their origin are their own; they have a verse:

No Camelo ser eray, es Calo mi nacimiento,
No Camelo ser eray, con ser Calo me contento.
I do not wish to be a Lord, I am by birth a Gypsy
I do not wish to be a gentleman,
I am content with being—a Calo!

This is the feeling I would instill into everyone, whose hands are in native clays. Be yourselves! Be something! Anything but a poor copy of something else from somewhere!

Now in beautiful Guadalajara, not the one named for it by the potters who came from there to Mexico, the old one in Spain, you will find these people, and there also you will find people (just as it is in America,) who run after them what are called "Aficionados," (the affected ones). They are laughed at by both sides, those who see their folly, and those who profit by it, laughed at by Lord and Calo, by Gypsy and by gentile.

Now where did this race, at home round brickyard and pottery come from, like the whilom masters of Spain, the Arabs? From Egypt? Yes and no, perhaps. Through Egypt? Certainly. But if you will look at your map you will see Kabul, Afghanistan. Follow a line to Persia, Rhages, Ispahan and the cities where tiles with metallic lustre were made 2,000 years ago. From there to Damascus or the Caucasus, the great sandy desert, or down the Nile, as Conquerors or in flight, the strange race came. To Spain, to Moscow, and where else? The most massive building on this continent erected to date, one in Salt Lake City has strong traces, they will tell you of this same people, one built to remain and designed by an Angel, a London architect of this name with, it is said strong traces of the blood of this people in him.

Now we all know that Persia was the country from which the Arabs derived the arts, afterwards developed by them in Spain and elsewhere. The successors and followers of Mahomed were, after

all, but rude Bedouins, and those from Damascus gradually acquired culture from contact with the more refined countries which they overran.

The powerful Abbaside Khalifs of Bagdad, no doubt summoned to their court men of science and learning from all the countries under their sway; Persia furnishing them with architects and other artists. Skilled Persian workmen were no doubt employed in large numbers in decorating the Mosques and palaces in the Arab Capital, situated as it was on the very frontier of their own country. Thence arose the so-called "Arabian" or Arabesque style of ornament, afterwards so widely spread and now so well known. The peculiar pendant ornamentation of vaults and niches of which the Alhambra is so typical an example, used throughout Persia to-day, and of which perhaps on this continent the best examples are the great bath house near Helena, Montana, and the laying in Hospital at Pueblo de los Angeles in Mexico.

Specimens have been found in the ruins of Rhages, a city finally destroyed 600 years ago.

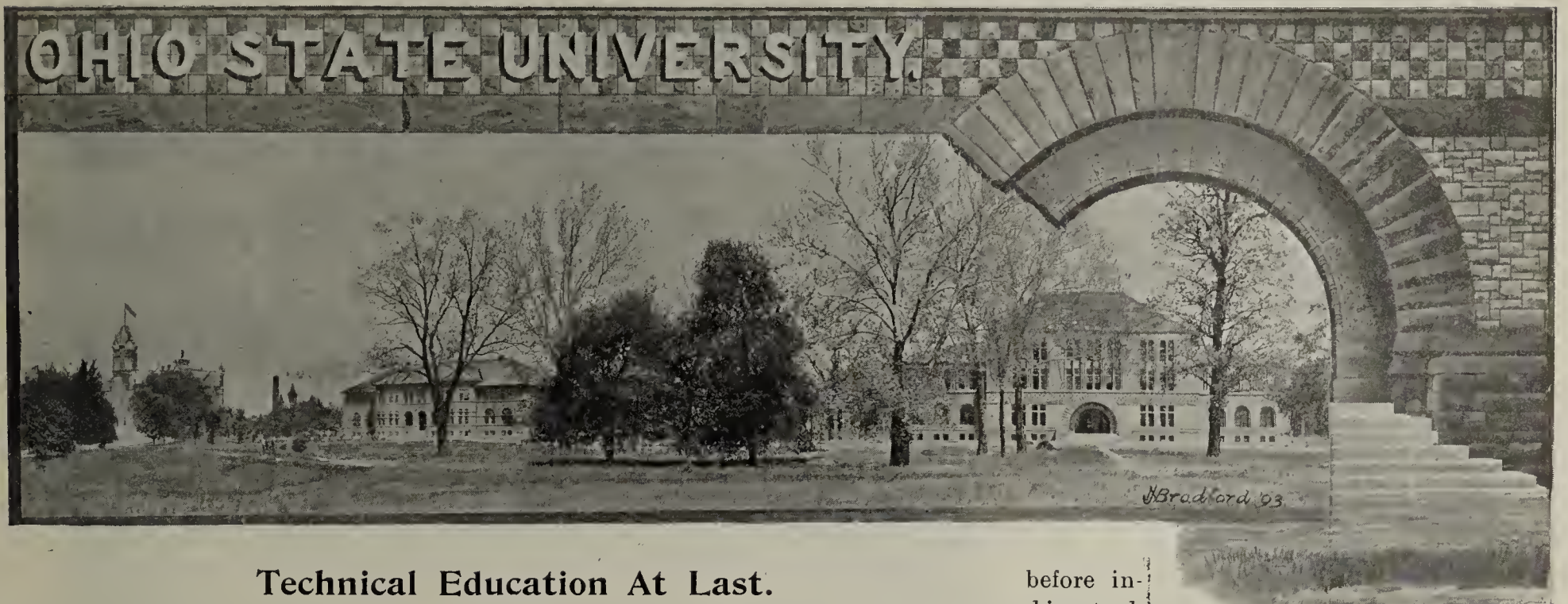
The presence of a considerable colony of "Persian" in Spain, in the time of the Moors, is attested by a document assigning the town of Rioja to the "Persians" as their place of residence, when at home. This fact was lately brought to light by a Spanish traveller in Persia—Senor Rivademeyra.

Before the discovery of the passage to the East, round the Cape of Good Hope, the trade from India and China passed either *overland*, through Central Asia, or by way of the Persian Gulf to Europe, Persia being a central point in the transit. Up to A. D. 1,600 this trade route was frequented.

But long before the Europeans these Persians made such beautiful *earthen-ware* that they might well be mistaken for Chinese porcelain, either as regards design, color, or form. Chardin who wrote in French, at the time the Armada did not capture the Elizabethan period, notes one bowl 500 years old.

Much of the work in Museums of this period bears the mark of China, but those who made it were "Persians," and *the body was earthenware, and not translucent Chinese porcelain.* Such things cannot be done to-day with the existence of all these learned and amateur ceramic associations, of course, and yet we know that Chinese Artizans and Engineers came to Persia with Hulaki Khan in A. D. 1256. RICHARD G. FRACKELTON.

[To be continued.]



Technical Education At Last.

THE brickmakers who attended the Chicago meeting of the N. B. M. A. last January, and in fact those who have read the issues of the CLAY-WORKER since that time as carefully as they ought, have probably kept track to some extent of the educational movement which began at that meeting and which the Ohio clayworkers have been vigorously pushing ever since.

It affords me the greatest pleasure to call the attention of all to the official announcement of the new clayworkers' school which appears elsewhere in this issue. At last the much discussed

question has been settled, and the misty clayworkers' schools which have from time to time issued from the imagination of some of our worthy contributors are now to be replaced by something tangible.

And now that the prospect has been auspiciously launched and is soon to make its trial trip through the sea of popular criticism, it occurs to me that the readers of the CLAY-WORKER may wish to know a little more definitely about "its lines and its motive power."

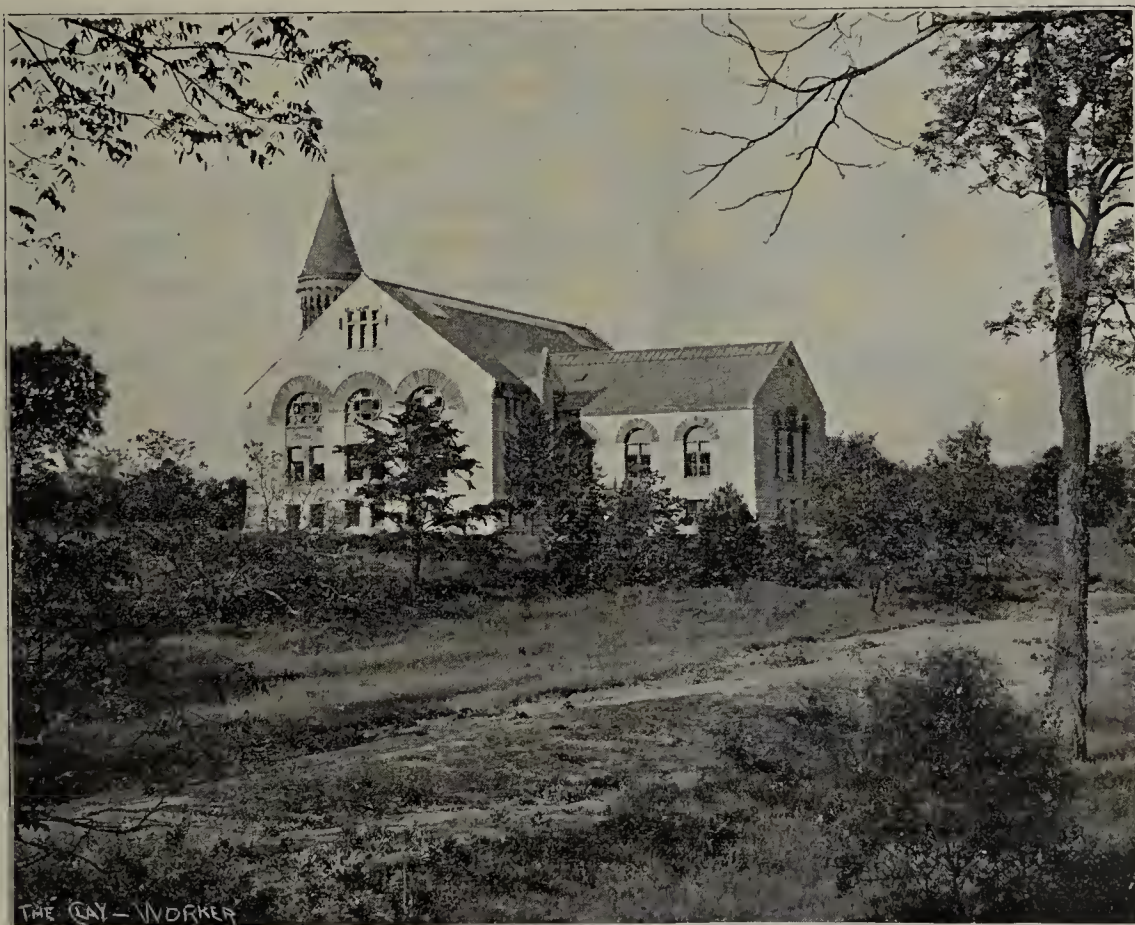
As the history of the movement is familiar or at least accessible to all, as

before indicated, nothing

need be added as to that subject, except this, that due credit must be assigned to those who have spoken in the past on this subject and who have said their say and done their share to quicken the interest and destroy the apathy which has so long pervaded the clayworking classes. The instant recognition and unanimous support which has been accorded to this movement since its first inception could not have been obtained a few years ago, and for this the thanks of the community are due mainly to the clay trade journals and those who have written in their columns.

The last official step completing the organization of the school was taken on the 26th of May 1894, only four months from the passage of the resolutions by the N. B. M. A.

Now, a few words as to the location of the school. Some few clay manufacturers have said or written that such a school should be located in a clayworking district where the pupils could have the advantages of seeing the practice of outside establishments, and making the acquaintance of those who are eminent each in his own line. These reasons would be entitled to more weight if the location were elsewhere than in Columbus, for though clayworking in the immediate vicinity is confined to a paving brick plant, a sewer pipe plant and a pressed brick plant with the usual fringe of outside brick yards around the town, still hardly a point could be chosen in this state, affording easy access to so large a number of clayworking districts and such a variety of clayworking industries. Within easy reach of Colum-

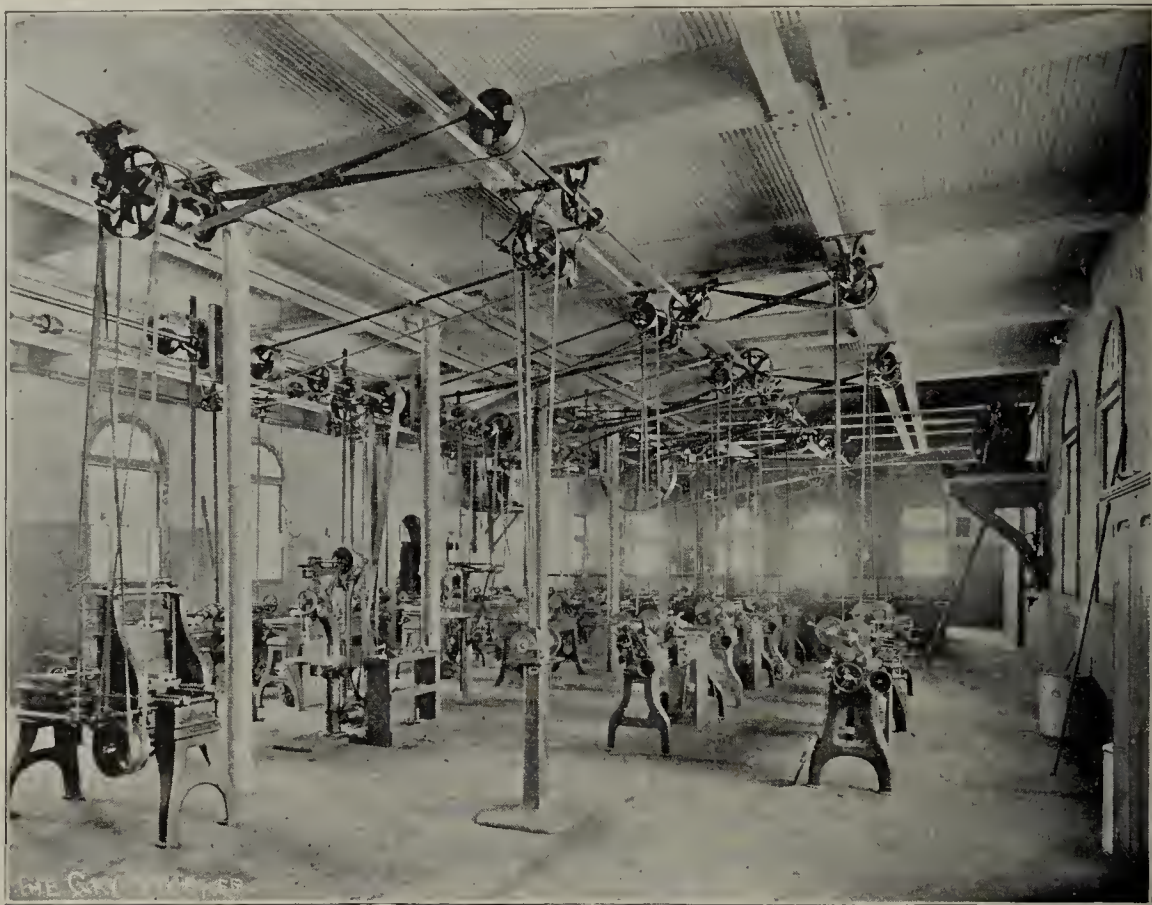


MORTON HALL.

bus by cheap excursions can be seen the manufacture of every grade of pottery, from the stoneware maker laboriously producing his wares on the old fashioned "kick wheel" to the beautiful china ware creations of the E. Liverpool potteries; the manufacture of refractory materials from the common fire brick to the glass pot weighing 4,000 pounds; the manufacture of sewer pipe from the fire clay of the Ohio river hills or from the Akron shales. The manufacture of bricks of all shapes, sizes and qualities from the humble hand molded article, to the finest architectural and decorative grades. In fact we can show almost everything here in Ohio, except a brickyard like Brother Craft's where he burns his brick with 250 pounds of coal to the thousand, and a modern Chicago brickyard where they make about half a million a day and get through before dinner time.

But seriously, the location of such a school could hardly have been more favorably chosen as far as the advantages of sight seeing are concerned. Still, this point is not the most important in deciding the location.

As a rule, those who come to study will have had practical experience, more or less, at home, and the things they will need will be rather the mental drill and discipline of the well ordered university than frequent resort to the practical work of the outside world. In other words, the young men will come to learn what they cannot find out in the brickyards and potteries and though



THE MACHINE ROOM—MANUAL TRAINING SCHOOL.

it is hoped to educate them to some extent by trips illustrating the great industrial achievements of the present, this will not be the main or even a very important part of the training.

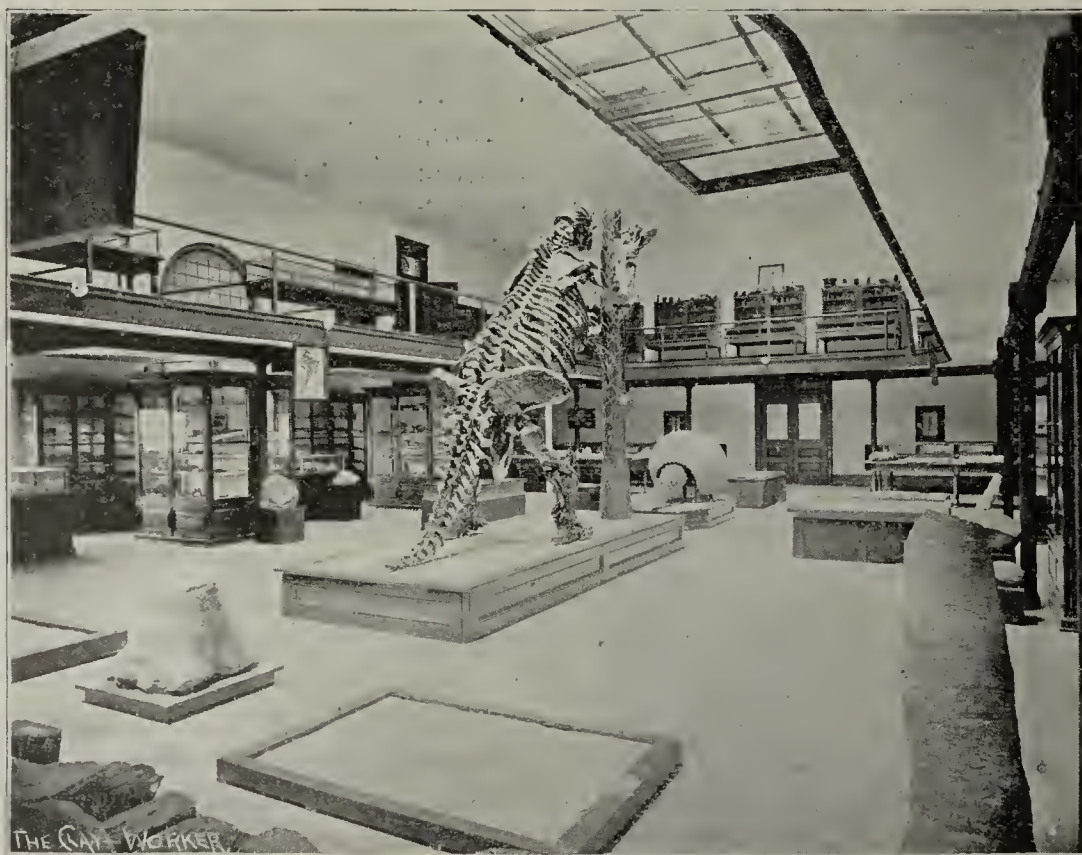
Whatever the opinion of the clay working fraternity may be as to the advantages of Columbus, there will be only congratulations that the Ohio State University was the first to step forward and open its doors to them. To all who have seen its beautiful campus, dotted with handsome buildings, its

busy laboratories and its bustling, workshops, its farm, its dairy and its shady groves, the whole surrounded by the conveniences and security of a well ordered city, this announcement will convey nothing but pleasure.

Though the quarters to be occupied by the new department have not yet been officially decided by the University authorities, it is probable that they will be in "Orton Hall" of which a view is here given. This building is named after Dr. Edward Orton, the veteran State Geologist, and is itself no small tribute to the clayworking industries of Ohio, for its roof, its fire proof floors, and its tiled vestibules are all their work as the stone of its walls and its carved arches are the product of Ohio quarries.

The question, though, which all will be most interested in discussing will be the course of instruction. Many a man will say, "How can so variable a thing as clay be made the basis of an educational course. Why, I have spent the best part of my money and many years of hard work in trying to learn the nature of my own clay bed, and yet I know perfectly well that no body else's is just the same."

This irregularity of composition, the lack of uniformity in behavior of clays externally so similar is the very key note of the school. If it were not for this, such an enterprise would hardly be necessary. But as it is, though the sum total of our knowledge of clays is great, still it needs above all, classifica-



A GLIMPSE OF THE GEOLOGICAL MUSEUM.

tion, instead of a mass of chaotic facts, we want principles. There is just as much order and beautiful scientific harmony and accuracy underlying the behavior of our clays as in any other branch of technology. The only difference is that we have not yet gotten to the bottom of the study. We have been going along for generations content with doing as our fathers did or content with mechanical improvements, while other industries have applied the modern scientific methods and have steadily forged past in the race for superiority. However it is hardly needed now to defend the need of technical education—preceding writers have done that. But the vital question now is how to educate what to teach, etc., etc.

This subject was discussed more fully in a previous paper than the present space allows. Suffice it to say that the educational course found below does not represent our ideas of all that is there to learn, or all that would be directly useful, or even all that is almost essential to the clayworker. It simply represents as much work as any average man can accomplish in two years, on lines which seem to offer the most immediate gain. What we offer is as follows: "The elements of physics, that is the principal facts about matter, its solid liquid and gaseous forms, about heat, light and electricity. The elements of mathematics, valuable as a mental drill if for no other purpose. The elements of geology, beginning with physical geography, which is the geology of the present day, then taking up the geology of the past, and lastly, economic geology or the application of geology to such questions as clayworkers meet in their practical work.

The study of chemistry is the backbone of the course—it begins at the beginning and extends to the end and though by no means complete even in this narrow specialty, still it is as thorough as the time allows. Beside these branches of science, a little training is given in mechanical drawing, useful to every one who knows it, and in mechanical work or manual training. Many a clayworker would have saved himself hundreds of dollars loss if he even had as much facility in the use of tools as can be had in one term in our magnificent-

ly equipped work shops. What clayworker is there for instance who would not find it convenient to be able to weld iron and fit pipe.

Lastly, the study of clayworking itself occupies a large share of the time throughout the second year. No effort will be spared to bring to the study and the illustration of this subject every aid which science now furnishes. The first study will be directed to clays, what they are, how they have been formed, what their ingredients are and how to classify them, chemically, mechanically and pyrometrically. An entire term will be spent on this work, during which



EDWARD ORTON, JR., E. M., DIRECTOR DEPT OF CERAMICS AND CLAYWORKING, OHIO STATE UNIVERSITY, COLUMBUS, O.

time the actual work of clay testing in all its branches will form a regular part of the student's duties.

After mastering the facts about clays and the raw materials used in clay manufacture, the students will proceed to the use of clays in making brick, sewer pipe and all of the simpler, cruder departments of clayworking. He will study the methods of manufacture, which so far as is practicable will be carried out in the laboratory with actual clayworking machinery, the drying will be illustrated mostly by drawings and models and the kilns as well, though small kilns of three or four varieties

will be used for testing and burning samples.

Lastly, during the closing term of the course the subject of pottery will be considered including the manufacture of glazes and enamels. This subject will also be carried out practically with appropriate machinery for the various operations, including a washing plant for preparing and mixing pottery bodies filter press, potters wheels, jollies and molds and glaze mills.

The following is the course of instruction as now mapped out:

FIRST YEAR.

First Term:—1. Physics. 2. Chemistry; general principles. 3. Algebra. 4. Drill.

Second Term:—1. Physics. 2. Chemistry; general principles. 3. Geometry. 4. Drill.

Third Term:—1. Physical Geography. 2. Chemistry; simple mineral analysis. 3. Shopwork; rudiments of carpenter, smith and machine work. 4. Drill.

SECOND YEAR.

First Term:—1. Chemistry; analysis of clays. 2. Clayworking; general principles. 3. General Geology. 4. Drill.

Second Term:—1. Chemistry; analysis of pottery and glass. 2. Clayworking; manufacture of brick, etc. 3. Economic Geology. 4. Drill.

Third Term:—1. Chemistry; analysis of glazes and enamels. 2. Clayworking; manufacture of pottery. 3. Mechanical Drawing. 4. Drill.

The question will probably be asked, What is the use of a brick-maker bothering his head about pottery manufacture and vice versa, why should a potter waste his time on brickmaking? That is the main trouble with the clayworkers of the present. They are too narrow and one sided. We all of us need to be forced to consider broader fields of action than our own, else we soon lose the power to advance even in our little specialty. If our brick-makers were potters as well, an amazing improvement in the grade and finish of the brick would soon be manifest.

What may be expected there from this school? What is the scope or character of the education it will give? One thing at least it has done; it has been the entering wedge for many other clayworkers schools. Without derogation, to anything in this school, it is safe to say that there would be no revolution in the clay business if it had to come through it alone. But the most cheering symptoms of interest appear on all sides. Mr. Alex. C. Caine, clerk of the Ohio Senate made the statement a few days ago that there had been more public interest and inquiry in regard to

the Bell Clayworkers' Bill than any piece of legislation enacted this year, and that letters were being received from all parts of the country asking for copies of the bill which were exhausted long ago.

As to the scope of its work, it cannot be called manual training, nor is it ordinary collegiate theoretical work. It has been the aim to make it a place where principles may be studied and laws of action unravelled, but where everything taught theoretically shall be "rubbed in" practically. For instance, the testing of clays will form a large part of the work of one term. But each student will be required not only to know how it should be done, but to do it. And on the other hand, manual dexterity is not the aim—only sufficient manual work will be given to insure that the student is familiar with the means as well as the methods of working clay. Mechanical skill belongs to the work of the brick yard and pottery and not to the training school.

So that the aim will be to produce a new class of clayworkers; men who can test a clay, tell what it is fit for, tell what kind of machinery it needs to make its working a commercial and a technical success, and lastly who can take charge and carry out their prophesies and make them assured facts.

Is there less of a field for the trained clayworker than for the trained miner, the trained farmer or the trained metallurgist? I think not.

In conclusion, a word as to the part which the clayworking public must play in this matter. Success for the school which means so much to our craft, depends mainly on two factors. First, it must have the men to train and next, they must be given a chance, a fair working chance when they come out from school. These two conditions of success both be in the hands of the clayworking community, to give or to withhold. No one can make the school useful lacking the sympathy and support of the public, and armed with this sympathy and support it will surely win its way to speedy importance.

EDWARD ORTON, JR., E. M.

The manufacturer who does not believe in advertising makes the sheriff smile.—*Ex.*

To deprive your business, in dull times, of the advantages of advertising is pretty much like depriving a man, when he is sick, of the doctor's care.—*Art in Advertising.*

Written for the CLAY-WORKER.

CHEMISTRY FOR CLAYWORKERS.

No. 24.

BY WM. WAPLINGTON.



CONTINUING our remarks on radiation, it is an established fact that highly polished metallic surfaces are the worst radiators, and that lamp-black is the best radiator known. Metals, however, gain in their radiating power as they become tarnished, roughened, and blackened. Paper and similar loose surface materials are tolerably good radiators. As a general rule you may put down all good reflectors of heat as poor radiators, and vice versa.

The scrupulously clean housewife polishes up her stoves and pipes and so makes them *look* bright, warm, and cheery, but in making them give out their heat she misses her mark. This treatment is admirably adapted for the Summer months, but bad policy in the Winter, when heat is needed in the rooms. It requires no thermometer to show that an unpolished, rough stove emits more heat than a highly polished one; this can be ascertained by the senses. Again, bright nickel plating radiates heat very imperfectly, it adds to the appearance of the stove, but diminishes its power of throwing heat into the room; such a stove *retains* its heat better than a rough one, and to the touch will feel hotter.

Do not compare the radiating power of stoves or anything else, by placing your thermometer *above* them, for in that case *convected* heat would interfere and spoil your test.

Conduction. We shall occasionally refer to radiation again in these papers, but conduction and convection are so closely allied with it that some knowledge of all is necessary to comprehend clearly the scope of any one of them. These three words express the methods by which heat is transferred from one body to another. Conduction of heat means that it is transferred from one particle to another, or, to express it scientifically, from molecule to molecule. It is necessary to give more than a passing glance at this definition of conduction. I remember the time when the difference between conduction and convection of heat was by no means clear to me; therefore, if I am a little

verbose on this subject, it is for the benefit of those, who like myself—do not comprehend things thoroughly at a glance.

When we come to convection of heat I will try to present the two in such a way as will at least put the reader on the right path for each. As a general rule it may be stated that bodies increase in their conducting power according to their densities; hence most of the metals are good conductors, while porous substances, liquids and gases are poor conductors, in fact, they are nearly non-conductors.

There are various ways by which the conductivity of bodies may be compared, one of the first that I remember forced itself upon me when quite young and working in a rolling mill. I did not then know anything about conduction, etc., but I did know that I could get a white heat on the end of a fire brick and carry that brick round bare handed, whereas a piece of iron, same length, heated in a similar manner, necessitated the use of tongs.

A piece of dry wood gives us a result corresponding to the brick, and there are hundreds of other familiar instances where the difference in conductivity is quite evident to the sense of touch; in fact, the conducting power of substances may be approximately estimated by touch. Iron heated to 120° F. will burn the hand. Copper heated to the same temperature, would feel hotter than the iron, and silver at 120° would feel hotter still, while bismuth—which is a poor conductor—could be handled comfortably. Steam boilers made of copper, or at least that portion devoted to heating surface, would save an immense quantity of fuel were there not obstacles in the way of another kind; one of these is the low, tensile strength of copper, combined with iron, or rather steel, nowadays.

I remember small copper boilers, and much younger men will remember copper tubes in tubular boilers. This is only one of the many instances, where a knowledge of the laws and phenomena of heat receive practical application. Our every day life abounds in just such applications realized—apparently—with as much indifference to law as if none existed. Ask the laundress why she uses a cloth on the metallic handle of her smoothing iron; or, why have some of her irons wooden handles? Her reply would be: "Both the cloths and the wooden handles prevent the heat burn-

ing my hands." A reply practical enough for all, except scientific enquirers; their reply to such a question would be: "The cloths and wooden handles are both very poor conductors of heat, and conduct the heat *so slowly to the hand* that no inconvenience is felt." For this self same reason we cover our steam pipes with asbestos or some other covering. Magnesia sectional covering is popular just now, and we put a course of bricks over the exposed part of our boiler, all to prevent the dissipation of heat. The free use of a cheap non-conductor for these purposes is an unquestionable saver of fuel backed up by practical experience and scientific testimony.

Conductors and non-conductors may be said—in common parlance—"to cut both ways." If we encase our bodies in a good conductor and expose ourselves to a freezing temperature, we should soon be chilled to death by having our animal heat conducted away from us by our casing, and similarly encased a moderate temperature would soon burn us to death; whereas clothed in non-conducting material and subjected to a freezing temperature, as above, we suffer no inconvenience for our non-conducting clothing retains our heat and now when we are subjected to the higher temperature we can comfortably sustain it, for our clothing prevents its entrance to our bodies. I have read of girls clad in woolen garments entering ovens heated to 300° F. without inconvenience, and I think for short periods, this temperature may be sustained. I can testify to 165° F. being borne for a few minutes, with no other inconveniences than a profuse perspiration.

Now, while we may continue to speak of our warm clothing, etc., let us try to remember the fact that our clothing is just as cold as its surroundings until we put it on and warm it up. The water pitcher and the pants, although evidently different in temperature, to the touch, are precisely the same to the thermometer; the pants take the heat away slowly from the hand and the water pitcher takes it away quicker; hence the apparent difference in temperature. The straw and litter we put over our plants at the beginning of winter is said to be for the purpose of shielding them from the frost and cold, when really it is to prevent the escape of their heat; it amounts to the same thing in the end, but we are now dealing with *the why it is so*.

We all know *how* to prevent a lump of ice from melting, but it seems strange that we should wrap it up in what we are accustomed to call the *warmest* kind of fabric, viz., a woolen shawl or blanket. On a large scale, as in an ice house, the protector is sawdust. Thus it will be seen that loosely woven fabrics and porous bodies are poor conductors of heat and may be used both for the retention and the exclusion of heat, as in covering up plants and ice.

Liquids are but poor conductors of heat, a very simple experiment will illustrate this. Take a long test tube and fill it with ice cold water, then sink a piece of ice—small enough to go into the tube—by means of a small iron or brass nut, so that the ice may lie at the bottom of the tube; now place the tube in a standing position over a spirit lamp, the flame of which impinges on the tube near the top, as shown in cut.



In a short time you will have boiling water at the top of the tube and ice at the bottom of it, showing how poor a conductor water is.

Confined gases and air are nearly non-conductors; hence the efficiency of double doors and sashes in retaining the heat from our houses in winter by the pad of air confined between them.

Fibrous and porous substances, such as woolen goods, furs, fire brick, etc., derive their non-conducting properties in a great measure from the confined air in the meshes and pores of the material.

There are numerous pretty experiments to be made with bars of the different metals which would show their relative conductivity of heat.

In my next paper, convection of heat will be considered, and the points of difference between conduction and convection will be shown, also the part they will play in the brick kiln and the dryer.

Written for the CLAY-WORKER.

A SERMON ON THE PAVEMENT.

Asphaltum, Fire and Brimstone.

BY D. W. STOOKEY.



WHEN I was a boy I heard a story of a young man who had been studying anatomy. He had become very much interested in the study of man—and woman.

When out riding with a young lady, who he was also studying, they chanced to pass the skeleton of a Jackass by the roadside. The young man meditated on the subject for a while and then remarked: "We are fearfully and wonderfully made."

Doubtless that was true, but times have evidently changed. Men seem to be not fearfully but fearlessly made now. I am told that in some of the wicked "cities of the plain," they are paving their streets with asphaltum. Are we to have a modern rendering of the scenes of Sodom and Gomorrah? Those cities, we read, were built of asphaltum. Can it be that men of this enlightened age have become so bold, so audacious that they will tempt, yea, defy nature by paving their streets with this ill fated stuff? Do they not know the fate of those cities? Have they never heard of the punishments visited upon those impudent fellows who tried to build a high tower in defiance of providence?

Surely these reckless men do not know their danger. Surely they have never heard of the terrible history of the awful thing! The Greek fire was made of it, mixed with sulphur. This horrible fire was poured from fiery caldrons, projected as fire balls, and shot on fiery arrows that brought destruction to the fleets, forts and forces of their foes. It was vomited through long tubes from the mouths of hideous monsters which sat in the prows of fire ships; it came through the air like fiery-winged, long-tailed dragons, as large as hogsheads, with the velocity of lightning, and roaring like thunder.

Asphaltum comes from the earth near volcanoes when they belch forth fire and destruction. It is found in abundance in and around the Dead Sea, that scene of destruction and emblem of death.

On the island of Trinidad from whence it is obtained a lake of boiling asphaltum

and brimstone gives off sulphurous fumes that can be smelled for ten miles.

What more fitting emblem of punishment death, destruction and hell, could be found than asphaltum?

Possibly these thoughtless men do not know that alcohol will dissolve out a part of asphaltum and destroy its solidity. What folly to lay asphaltum pavements in such cities as Chicago, where alcohol flows so freely! In a very short time they would be ruined in some streets on the south side, even if they escaped the fire.

Such chastenings by fire as Chicago and Boston had within the last quarter of a century ought to be sufficient, but they heed them not.

Will there arise an Abraham to plead for them ere it is too late? Can there be found within these cities fifty, forty-five, forty, thirty, twenty, even ten upright men who will advocate the use of brick pavements and thus save the cities from destruction?

EXPERT WORK.

WE have taken occasion before this to criticise one-sided expert testimony in mechanical matters, especially when it related to patent suits, our ground being that an expert retained *ex parte* would twist facts to favor his client. It seems to be just the same in all other matters. As, for example, some time last year, during the excitement of a political campaign, it was claimed that an official was a defaulter to the county in quite a large sum. An expert accountant was set in the regular way to examine the official's accounts, and he pronounced them quite correct. Not satisfied with this, one of the political parties put an accountant at the job, and he found them all wrong. Then the two parties selected each an expert to make the examination, the result being that one found the accounts wrong and the other found them right. At length the matter having come before a judge, he put the accounts into the hands of a firm of unprejudiced accountants, and everything was found to be as it should be. Now, it has always been our contention that in patent cases the court should put an expert at work on the case instead of leaving it to be misrepresented

in every possible way by opposing experts, and the case just cited seems to fortify our position.—*American Machinist*.

IMPERIAL SHALE BRICK COMPANY, CANTON, OHIO.

THE geological formation of the country around Canton, Stark County, Ohio, is decidedly carboniferous, with the shale of that period from which the celebrated Canton paving brick are made in great abundance.

All the hills around this active city are composed of this valuable material.



E. D. KEPLINGER, SEC'Y & TREAS. IMPERIAL SHALE BRICK CO., CANTON, OHIO.

Veins of coal are found both above and below the shale deposits. A new plant just starting has a vein of coal about three feet in thickness on top of the shale deposit with only a thin layer of clay above it. The surface clay is of a good quality from which building brick have been made for several years. While in the shale banks of other plants the shale is evenly stratified, in this bank a peculiar condition is shown, viz: At one side, reaching nearly to the surface, a shale of an earlier period in the world's formation has been pushed up through the later deposit, a portion of which carries strong traces of being

nearly allied to coal. Under the hill and below the ferruginous shale from which the Royal and Imperial plants draw their material, a vein of No. 2 fire clay is also found.

Here the pioneers in the development of the paving brick business might be said to have their homes. Capt. Williams, who runs a plant on the north side, early knew the possibilities which were in the Canton shale beds, also in the future paving brick enterprise,

Untiring and with unusual foresight, he experimented in this branch until it was demonstrated that Canton shale would make paving brick unexcelled anywhere. Soon capital saw what he claimed for it, and the largest paving brick plants went up around him.

After him the Canton Brick Company started in, then the two Malvern plants were put in operation, next the plants at North Industry, then the Royal Brick Co., and last, the subject of this sketch, the Imperial Shale Brick Co. erected their extensive works.

The Company was incorporated in 1891, the officers being Isaac Harter, President; Josiah Correll, Vice-President, and E. D. Keplinger, Secretary and Treasurer. The plant is located along the main line of the C. C. & S. Railway, at the southern limit of the city.

The site is one of great natural advantages; the supply of the shale is of the very best quality and practically inexhaustible, while the surrounding country is of inviting character. These, together with the excellence of the plant which is in operation, makes it well worth a visit.

The annual capacity of the Imperial plant is 15,000,000. As specialties, the company makes the "Metropolitan Block," "Imperial" re-pressed, and the "Pride of the Imperial." A visit to the plant gives the ordinary observer an opportunity to investigate new methods in the art of brickmaking. There is no question but that the time has come when special conveniences are necessary for making the best brick at the lowest rate of cost.

The Imperial Shale Brick Co. built their plant from plans furnished them by the Bonnot Co., of their city, which firm supplied the machinery equipment. The plans were made to suit their

special requirements and the original contract included everything to make the plant complete and ready for operation.

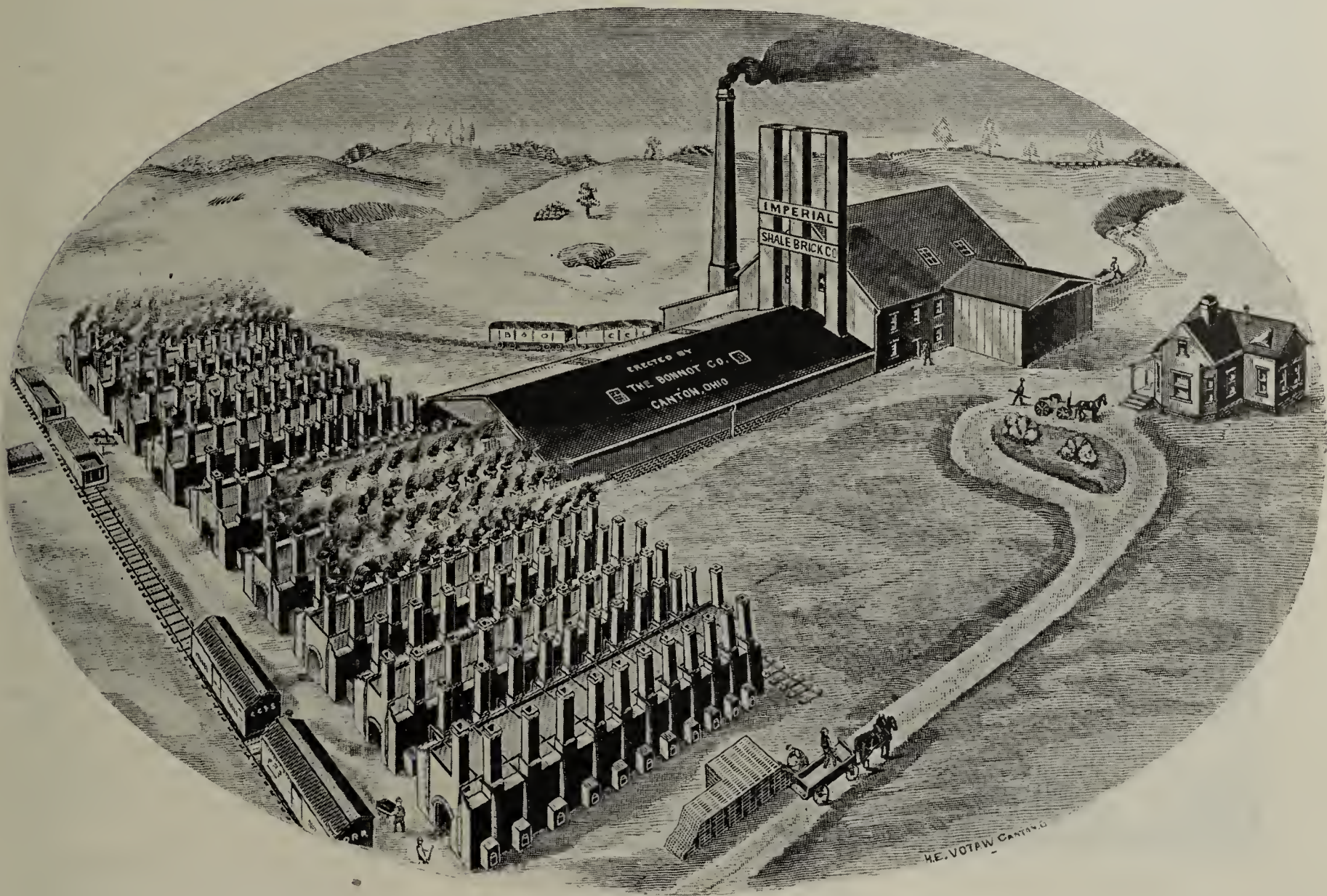
The engine is a 250 h. p. Buckeye, and the steam power is supplied by a battery of five boilers. The brick machine, re-presses, pug mill, revolving screen and other appliances are conveniently arranged for securing the best results. The dry pans, particularly, are massive in character. One of the

inclined screen requires frequent attention. At the Imperial plant revolving screens are used, which solves the problem of the best manner of screening clay or shale.

The screens are just above the pug mill, and are conveniently located for receiving the material from the elevator. The experience of the Imperial Co. with revolving screens is entirely satisfactory to them.

The plant, as originally built in 1891,

through the dryer toward the kilns, the heat is gradually changed from stage to stage, and finally when the operation of drying is complete the appearance and condition of the product is entirely satisfactory, much more so than is the case in a great many instances. One of the features of the dryer especially commented upon by the superintendent of the works, is the easy control of the temperature and drafts, by which the process of drying is easily regulated by



IMPERIAL SHALE BRICK COMPANY'S PLANT, CANTON, OHIO, AS BUILT IN 1891.

items of special interest is the manner in which the clay is screened. The impression seems to prevail among a great many clayworkers that there is no mode of screening that is quite equal to the old style inclined screen, and various attempts have been made from time to time to produce satisfactory results in the screening of clay by other means.

One of the chief objections to an inclined screen is the great height necessary, so that the building is oftentimes out of proportion, simply to give the height necessary for the inclined screen. This makes it difficult to heat the machine room in winter, and the in-

was not so large as the present plant. Within the past year, additional drying capacity has been added and the plant enlarged. The dryer at the Imperial plant dries the brick without checking in 24 hours. During favorable weather the drying is done in much less than 24 hours; in fact, the experience in drying at this plant has been very surprising. Indeed, so much so, that the results attained have been much better than was thought possible. Visitors at the plant are always shown the dryer as one of the special features of the plant.

The brick receive the proper amount of heat as they enter, and when passing

simple means, so that the work of drying may be carried on slowly or rapidly, as desired. The Imperial dryer was constructed by the Bonnot Co.

Eight Eudaly kilns are in use, the capacity of each being 150,000.

Brick manufacturers from various parts of the country are visitors at the Imperial plant from time to time, and are always made to feel at home by Mr. Keplinger, the gentlemanly manager, who is always courteous to visitors, and seems to enjoy showing them about the plant, and explaining every detail of the work. He has a fine plant and may well be proud of it.

Written for the CLAY-WORKER.

ENAMELING BRICK.

No. 5.



WE are now supposed to have brick that are slipped and glazed and perfectly dry, in perfect condition. The next thing is to remove the slip and glaze that the dipping operation has put where we do not want it, this can be done by any satisfactory method. A steel scraper or knife, but the best method is to obtain from a woolen mill, some refuse card wire, cut it into pieces about four inches by six inches, and tack it to an inch board a trifle larger, thus forming a good and cheap, stiff wire brush, with which the surplus slip and glaze can easily be removed and the brick straightened if a trifle crooked. I said above that we were supposed to have brick in

that are straight and in good condition are now ready for the kiln.

Now arises the question as to character of kiln and method of setting. Any kiln that will burn evenly will do, if the brick are to be set in saggars, but a down draft or muffled kiln will be necessary if brick are to be set without using saggars. If the object is to make glazed brick only, I would advise the use of saggars. These saggars should be about one-fourth to one-half inch deeper than the length of the brick, and the brick should be set on end. I advise this for two reasons, first a deep sagger will last much longer than a shallow one; second, the faces of brick are not so apt to have dirt drop on them. Kiln for saggars should not be higher than fourteen feet to spring of crown, else the bottom sagger will be apt to fail.

If other fire clay products are to be produced with the glazed brick, the

and the whole covered with a tile, in this case you cover every course. Many ingenious methods of setting will be discovered, the only fact to be borne in mind is that the smoke and flame must not have access to the glazed face. Kilns for open placing should not be more than seven to eight feet to shoulder. Not less than five days should be taken in which to burn, the heat raised very slowly and carefully until the kiln is red throughout, after that the quicker the finish the better. After kiln is finished leave every thing open for from four to six hours so as to set glaze rapidly; after that close everything tight with clay and cool as slowly as possible.

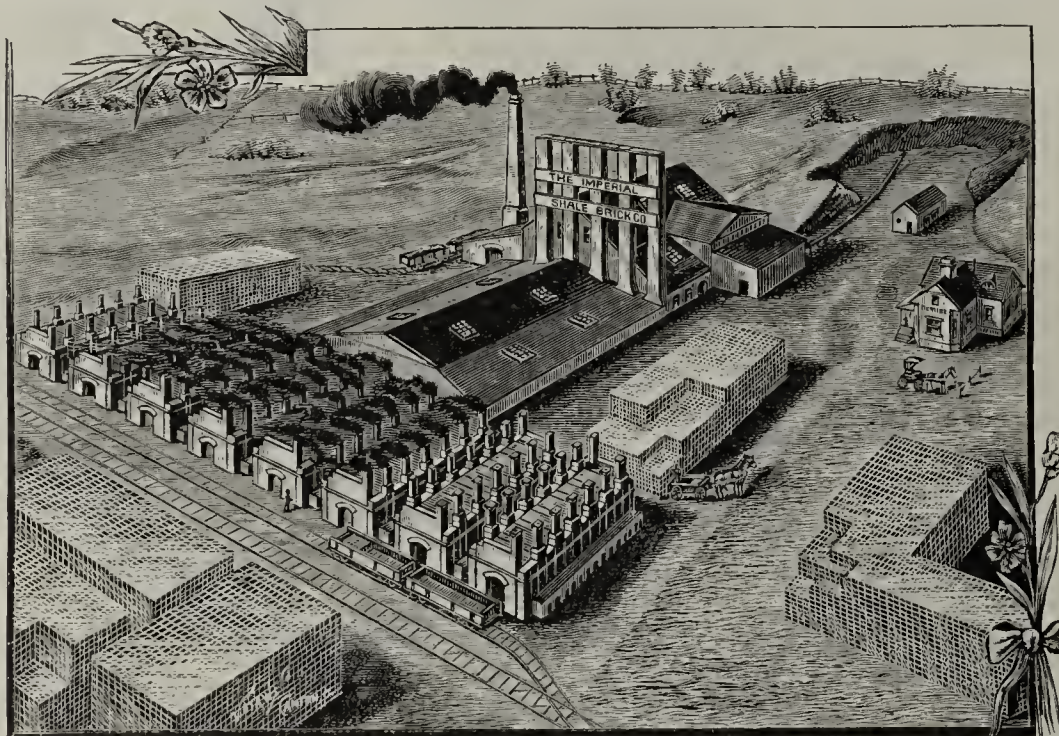
Our kiln is now cool and ready to draw. If everything has been all right, we will get eighty-five to ninety per cent. of No. 1 brick, the ten to fifteen per cent. of No. 2's and 3's being almost unavoidable, but if everything is not all right what may we expect to find. Here I can only enter into the region of suppositions. The things that may be wrong are almost legion, and it is difficult to find a starting point, but I presume a rational method would be to start with the body, then take up the slip, and then the glaze.

Body troubles are largely those incident to any brick manufacture, viz., warping, cracking, etc., besides this there is an irregularity in shrinkage, possibly due to improper pugging, or the brick being uneven in temper when pressed, which gives a wavy, irregular face—this face might not be objectionable in an ordinary pressed brick, but the glaze brings out each inequality in surface. Too coarse grit will give wavy face.

We may find the slip has peeled off of many bricks, this may be due to too little clay in slip, or too little grit in body, slip may be on too thick, brick may have been too soft when dipped, or the brick body may be a difficult one to make slip stick to.

Brick may be uneven in color, looking as though the body was partially showing through. This is probably due to one of the four following causes, slip may be too silicious or too felspathic, glaze may be too fusible or slip may have been put on too thin.

If face of bricks are full of pin holes, it is probably because bricks were too stiff when slip was put on or were improperly dipped, slip may have been full of air bubbles, or may not have been old enough, or the grit in body may be too coarse.



IMPERIAL SHALE BRICK COMPANY'S PRESENT PLANT—See Page 30.

perfect condition, but if they have been glazed by the wet method, you may find the glaze will shell off as soon as you commence to handle the brick; in this event begin all over again, put a trifle more clay in your glaze and burn at a higher heat, or use a little more flux to neutralize the hardening effect of the clay. If both slip and glaze shell off when brushing the surplus off the brick, notice whether they shell independently or whether it is simply the slip shelling and carrying the glaze with it. If the former, clay in both slip and glaze is indicated. If the latter more clay in slip only, or more grit in body of brick. Those brick which have escaped all the troubles, accidents, etc., referred to, and

brick can be placed without saggars to advantage, using the other clay products, in the hot portions of the kiln. The method I have used to advantage in open placing, is to set in concentric double rings, bricks on end, glaze face to glaze face three high, glazed faces about one inch apart, then the two courses covered with tile, again three high on end and covered, so on up to top of kiln. The distance between double rings should be about two to two and one-half inches, this is of course draft space. For setting quoins, or corners—the glazed faces of stretchers should be set about four inches apart and rolls of clay put on top, the quoins put between the two rows of stretchers

If pin holes seem to be only in the glaze and do not extend through the slip, they may come from the glaze not being aged sufficiently or being full of air bubbles, the bricks, if glazed by wet method, may have been too dry when glaze was put on, the glaze dipping may have been improperly done or the trouble may be from over firing.

If glaze crazes, it may be from a defect in its composition or because the body is over fired, or contains too much of either alumina or the alkalies.

I have known crazing to occur at a high heat, when with the same body and lower heat glaze, burned at a lower heat, crazing would not occur. If glaze runs it is over fired or is too soft, does not contain the proper chemical elements. If glaze shivers, or rather brick shivers, body is too silicious or is over fired. If glaze is blistered, probably over fired or too aluminous.

If after you have sold your bricks, the contractor or architects report that they are peeling, and wishes you to replace with a better grade of brick, you can make up your mind that your body is probably too porous.

I think I have now given the general points in regard to the slip and glaze method in as comprehensive a manner as possible. I have possibly overlooked some points, because they are such every day matters, that they do not appear to me as important. If there are any points that the readers of the CLAY-WORKER would like brought out more fully I will be glad to do so through the columns of that paper. Recipes I do not propose to give away, but any other information which my experience may enable me to give, I will give gladly.

To those who contemplate experimenting with glazed brick, I will state that they must not allow themselves to be easily discouraged. In fact unless they are a long time learning their business they will not know it well. I mean by this that a lucky hit made early might be very dangerous, but a knowledge of the business acquired by much experimenting would be perfectly safe.

Very slight changes in conditions lead to enormous differences in results, and sometimes a slight change in one little thing will lead to results not to be predicted, unless one is thoroughly conversant with the principles governing the business.

In my experimental days, or rather in my early experimental days I was sometimes nearest the proper thing,

when results would indicate that I was farthest from it, but some little detail would be wrong and spoil the whole operation; again fair results can be obtained on lines that can never be made to produce fine results.

There has been much said about the practical enameled running around with a sample brick in his pocket and sometimes taking some one in. Never trust a sample brick. Before building a plant or investing any large amount of money in the business, make your man or yourself, if you are the practical man, produce bricks by the hundred and in a practical way. There is a great difference between producing a few bricks with much labor and expense, and producing them by the thousands at a low cost.

ARTEMUS.

Written for the Clay-Worker.

BRICKLAYING.

Eighth Paper.



IN the plans of walls for this time, I will first show a fourteen-inch wall in Flemish bond, or as the wall is sometimes called, a brick and a half wall. The first course shown in Fig. 1 com-

prises a bat *a*, and header *b*. Two closers come next, a half closer *c*, and quarter closer *d*. Then follow two headers with a stretcher at their ends as *e*, *f* and *g*, then a header *h*, and bat *i*, then the two headers and stretcher again, after which

| | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|--|
| <i>a</i> | <i>c</i> | <i>e</i> | <i>f</i> | <i>h</i> | <i>e</i> | <i>f</i> | |
| <i>b</i> | <i>d</i> | <i>g</i> | <i>i</i> | <i>g</i> | | | |

Fig 1

the rotation is continued. At first sight it seems that this is a very weak construction indeed, but a closer analysis of the following course and its relation to the first will show that the design is a proper one.

The second course shown in Figure 2, comprises three stretchers *a*, *b* and *c*, a header *d*, and two stretchers *e* and *f*. The latter three pieces are repeated throughout the wall. At the back is a stretcher *j*, and bat or half brick *k*. Then

comes half brick or bat *l*, this being repeated throughout the wall.

Figure 3 is an elevation of this same wall, there being several courses, while Figure 4 is an end view. The same let-

| | | | | |
|----------|----------|----------|----------|----------|
| <i>a</i> | <i>j</i> | <i>k</i> | <i>l</i> | <i>j</i> |
| <i>b</i> | <i>d</i> | <i>e</i> | <i>d</i> | <i>e</i> |
| <i>c</i> | | <i>f</i> | | <i>f</i> |

Fig 2.

ters represent the same brick in each of the views, the courses being numbered one and two as they may be.

While in the wall this style of laying brick is a bit complicated, it is without

| | | | | | |
|----------|----------|----------|----------|----------|----------|
| | | | | | |
| | | | | | |
| Course 2 | <i>c</i> | <i>d</i> | <i>f</i> | | |
| Course 1 | <i>b</i> | <i>d</i> | <i>g</i> | <i>i</i> | <i>g</i> |
| | | | | | |

Fig 3

a doubt one of the very best methods. It is easily learned and combines an excellent bond with an ease of fitting where walls of certain lengths are de-

| | | | |
|----------|----------|----------|--|
| <i>a</i> | <i>b</i> | <i>c</i> | |
| <i>a</i> | <i>b</i> | | |
| <i>a</i> | <i>b</i> | <i>c</i> | |
| <i>a</i> | <i>b</i> | | |
| | | | |

Fig 4.

Course 2

Course 1

sired. And this latter is something of an item in the craft, as much time is lost in making difficult terminations of the brickwork.

"NIMBUS."

THE WONDER OF IT.

WE wandered on the sea shore,
We wondered at the sky;
I told her how I loved her,
She said "she wondered why?"
I wondered if she'd have me?
She gently answered "Yes,"
And then we wandered, wondering,
In speechless happiness.

* * *

And now, since we were wedded,
We wonder, as of yore,
We wondered, as we wandered,
Along the ocean shore,
With just the bit of difference,
That our wonder we condense
Into wondering how we happened
To have so little sense.

—E. L. S., in Art in Advertising

Written for the CLAY-WORKER.

ABOUT "WEATHERING" CLAY, WITH
SOME PRACTICAL AND GENERAL
HINTS, INCIDENTAL AND
OTHERWISE.

BY J. W. CRARY, SR.



THE importance of "Weathering" clay has generally been overlooked by clay-workers of all sorts. I will not undertake to give chemical reasons why clay should be "weathered" or thoroughly exposed to the action of the open weather, air, sun, heat, cold and rain.

I will only say that clay has a powerful affinity for ammonia and carbonic acid, and that these properties, aided by the sun, frost and rain for a sufficient length of time, will completely disintegrate clay and destroy or neutralize all matter naturally in it that makes it unfit for clay work.

Bro. Waplington, who writes very excellent "Chemistry for Clayworkers," can tell you all the scientific facts in this matter. I will leave that for Bro. Waplington to do, and only talk clay and brick from a practical standpoint.

It is said by scientists that all clays come from decomposed or disintegrated rock. Some say that the finer grades of clay are ante-diluvian. Others think that all clay is post-deluvian. I have no decided opinion about these theories, but it is very evident that all of our surface clays are not only post-deluvian, but that much of the clay used by brickmakers is of alluvial deposits of different ages. Such are found on the banks of our rivers, and notably the most recent on the banks and in the lowlands, or swamps of the Mississippi River.

MOST OF THE ALLUVIAL CLAYS HAVE BEEN WELL "WEATHERED."

The deposits on the Mississippi River have come from the great Mississippi valley, and no doubt from every kind of disintegrated rock and mineral that can be held in solution, and not decomposed by neutral attraction or the action of the atmosphere.

THE CHARACTER OF THE CLAY SHOWS THE ACTION OF THE FLOOD WATER.

Where the currents have been slow, with turbid water, the clay deposits are

tough and unctious, so that the clay deposits in the low swamp lands are much stronger than the clay found in most places on the banks of the rivers, except in places where the channel has been changed.

Alluvial clay brick, or what is technically called "Batture brick," are made of the deposits of the river just above the city of New Orleans, where the currents of water is comparatively slow around the "point." The clay is taken out from the shore in the winter season and taken to the brickyard or piled up on the bank near by. The places or holes, made by the excavation for clay, are all filled by new deposits in the ensuing spring by flood water.

This "Batture clay," which in French means "shallow shore," or "sand bank," is, of course, very weak in allumina, not over 20 per cent. is found in it, but the "weathering" is so complete and perfect that it only needs a little tempering to make an excellent brick for common building purposes.

I have made brick in many places on the Mississippi River and found no difficulty in making good brick of the clay taken immediately from the clay bed, and I attributed this fact, so far as the clay was to be considered, to the perfect sameness of the clay.

The post-deluvian, or plateau clay beds, such as are found on many of our rivers or mountain valleys, are not homogeneous, but are stratified in different degrees of sand, clay and other minerals, so that to make perfect clay goods of any kind of such clay, it must be "weathered" with skill and care. The clay should be excavated and carried out or else left not over four or five feet deep, at the clay bed, so that the rains and frost, if any, will penetrate to the bottom. The clay should be dug out in the summer or fall season, and not used until the ensuing spring season. This gives time and means for the necessary action of the atmosphere, rains and frost to fully prepare the clay for the machine. The minerals in the clay will become equalized, and properly done, the brick or other products will be as good as possible.

I TESTED THIS FACT WHEN I MADE AND BURNED 2,000,000 BRICK.

I dug clay enough in the autumn to make 1,500,000. There had been enough excavated the year before to make 500,000. I used this clay first when I commenced in the spring time. The brick were of the finest grade, though I

used the same skill and care in making brick of the clay 1,500,000 last dug. The brick were made by the soft mud process, and though all were sold at a good price, as first-class hard brick, in the first 500,000 there was none perfect, and so noted by all concerned. A crop of weeds and a few stalks of corn had grown up on the 500,000 clay first dug out. From my observation and experience I am of the belief that it pays best to have clay dug out and well exposed to the weather one year before it is to be used. It costs ten per cent. more to work fresh dug clay in a machine than if it had been "weathered," then there is a difference of ten per cent. in the real value of the brick; here then there is twenty per cent. lost to the manufacturer for the want of due and timely preparation of his raw material. But suppose the brickmaker charges ten per cent. for his outlay in digging and "weathering" his clay one year before he uses it? Then he has saved ten per cent. besides the gain in quality and character of his brick.

CLAY CANNOT BE TOO MUCH MIXED FOR GOOD WORK AND PROFIT.

If clay is differently worked, just as it comes from the clay bed, brick made of it will be of so many different sorts and sizes as there were kinds of the clay, and it is impossible to assort the brick in size, color and strength, and the work done with them must be inferior and more costly than if the clay had been properly "weathered" and thoroughly incorporated.

IT WILL PAY BRICK MACHINE MEN TO GIVE SPECIAL ATTENTION TO THIS SUBJECT.

A good brick machine may be seriously damaged by working clay of different sorts, immediately from the clay bank. It requires intelligent skill and attentive ease to dry, mix and properly prepare clay for "weathering," and all brick machine men should fully study and understand the importance of this matter before they allow their machines to be put in operation. It is not like selling common machines for house keeping when you sell a brick machine. Anybody that has soap and water can run a washing machine. Any woman that has sense enough to get married and "run" a husband so as to make him a decent man, can run a sewing machine if she has cloth and thread. The raw materials for these machines are "*sui generis*," about the same everywhere, but almost any locality has clay of peculiar characteristics, and the man-

ipulation of it must suit the machine. The machine cannot do its work and also the preparation work needed for the raw material.

GOOD RAW MATERIAL AND ITS PROPER PREPARATION

Is one of the greatest and best texts that we can select in interrogatory thought. It will fitly apply to almost everything mental and material. The proper preparation of the mind for industry, society, mechanics, mechanism, ethics, logic, religion and perhaps above all just now, politics, are subjects suggested by the above text.

I presume that the brickmaker will insist that added to all these things, the question of demand and price for brick and the best and cheapest way to make them is the most pertinent and in order.

Well Brother, I accept your amendment and move its adoption. As to demand for brick, you should insist that brick is the best, and all things considered, the cheapest building material in the world. As to cost of brick, first select the best clay bed you can find and make available. Second, get the very best skilled brickmaker to examine the clay and select a machine to work it, and also to take full charge of your works at a good fair salary, provided that he will guarantee full success, so far as his skill and services are concerned. An expert brickmaker who can and will do things right, will not hesitate to fully assure success in skill and management. If you are not a good brickmaker and practical expert yourself, you must rely on the services of an expert brickmaker and if you cannot get such a man, by all means abandon the idea of becoming a brick manufacturer. There are two kinds of men that are the worst foes to brick-making—viz., the man that botches the business, and the man who wants to make all the brick and whose greed and envy would starve out all competition.

MORE SALT NEEDED.

"Respectfully referred to Capt. Crafts," is it? Well, it isn't received with any respect whatever. A more complete mess of flapdoodle was never offered to the public. Flapdoodle is stuff they feed fools on, (vide Peter Simple). What a journal means by printing such wash I do not understand. The writer thereof must live so far inland as to be quite fresh and I am afraid even salt wont

save his brains. What he don't know would fill an encyclopedia and what he does a very small primer.

Without any respect to his assininity,

Yours truly,

S. P. C.

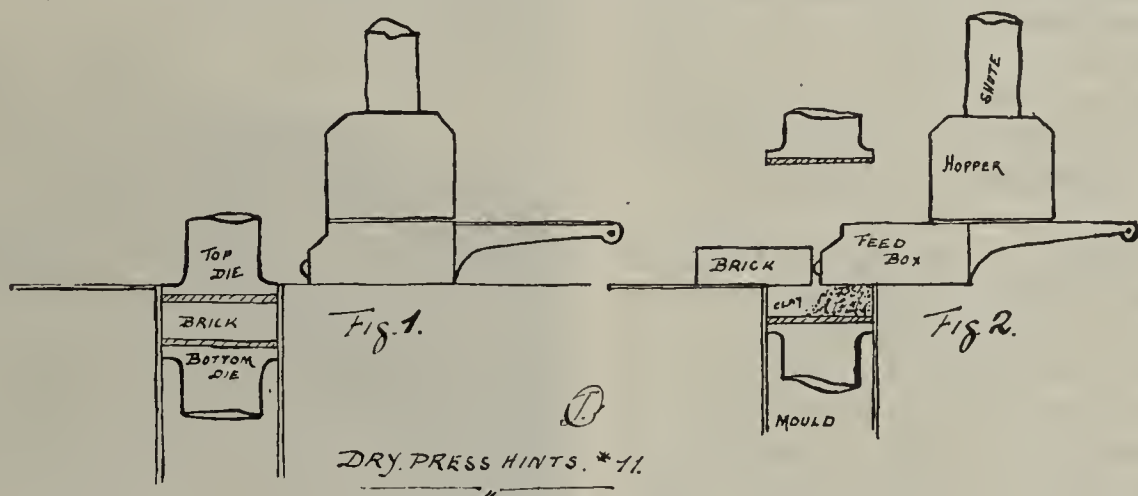
NOTE.—The above is in answer to a paragraph from the *Journal of Building* which we printed in the June CLAY-WORKER under the head "Respectfully Referred to Capt. Crafts." It was a most ridiculous statement to the effect that brick made near the sea coast have a tendency to disintegrate, owing to the use of brackish water.—[Ed.]

Written for the CLAY-WORKER.

DRY PRESS HINTS.

Number 11.

IN an article in the April issue of CLAY-WORKER, Brother Crary seems to think that, in omitting to mention where the first dry or semi-dry pressed brick machines were made or used, and by whom, I have omitted something of importance in this series, but while thanking him for his kindly remarks and appreciation I must differ with him on that point. In all my writings I have endeavored to say only such things as would benefit our craft of to-day and to-morrow; the past is done with, and the future must in a measure



care for itself. It matters not, practically who made the first machine, whether on this or on the other side of the pond. What we are after is, how to handle the machinery, kilns, etc., that we have with us to-day, to the best possible advantage as regards both excellence of product and the cash balance at our bankers, but as a matter of history it may interest your numerous readers to know, that so far as I know or can learn, the first dry—or as it was called, semi-dry machine was made in England, but I can neither give date or name.

I am afraid Bro. Crary's articles in the last two numbers of the CLAY-WORKER may tend to confusion in the

minds of embryo dry press brickmakers and in endeavoring to make the matter plain, I may be obliged to question some of his assertions, but it is not from any love of equivocation, but solely to prevent possible misunderstanding and to help my brethren in the craft.

I have in former articles of this series explained to the best of my ability the right way to set and burn dry pressed bricks in a down draft kiln, but I am sorry, from indications that Mr. Crary has not noticed them. His article is corroborative of his statement that "he has not seen any of the late so-called improved machines," if he had he would not indite any such suppositions as are contained in his paper. He would know that it is possible—nay, easy of accomplishment to make 20,000 dry pressed brick on a four mold machine in 10 hours without a difference in weight of more than one ounce. He would know that there is no difficulty in charging the moulds evenly. The feed box has a double function. While the brick are being pressed it is at rest under the chute leading from mixer box or clay bin (see November issue of CLAY-WORKER) where it is filled with the ground clay. After the brick are pressed and raised from the mould, the top plungers leave them, and are raised high enough to give feed box

space and time enough to complete the next step. When the bottom die plates reach the level of machine table, the feed box moves forward and pushes the now pressed brick off the die plates and onto machine table (or delivery table). When the brick are about half way onto the table, the bottom plungers begin to fall, carrying with them the ground clay from the feed box. By the time the feed box has reached its limit of travel the mould has also attained its full depth, and is filled with clay, which is leveled off by the feed box on its return to its first position. By referring to sketch, you will notice behind feed box a solid level plate, this passes under the

hopper to hold the clay until the return of the feed box, which is again filled and so on continuously.

Figure 1, shows position of feed box when the brick are being pressed. Figure 2, when delivering brick and re-charging moulds. The mould depth, i. e., amount of clay in the bricks, is both easily and quickly regulated by a hand wheel, which serves to raise or lower the plunger seat.

My experience in the dry press process has been considerable and varied, bringing me into intimate contact with all of the leading machines, but I have yet to see the first that has a spring arrangement to govern the pressure. Like Bro. Crary I fail to see how a uniform thickness, or density could be attained or maintained by its use. Most of the machines now in use are, or can be, set to a regular thickness of brick, and no matter if the feed be heavy or light the thickness remains the same, providing, of course, it is not excessive; in that case the machine would simply refuse "to go over." But there are also some that have not this feature depending on even feed, and even density for an uniform thickness of brick. Should the feed be light they are proportionately thin, or heavy, they are proportionately thick, retaining about the same solidity of brick pressure. By the use of a gauge and the feed regulator they are easily kept uniform. These latter machines have the advantage of being less liable to breakage than some others.

KILNS.

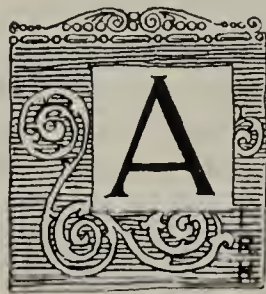
It may interest Brother Crary and maybe others to know that I have been watersmoking my down-draft kilns by the up-draft system for some years and am convinced of its efficacy. I have advocated its adoption and described its principles in former papers of this series. I was very much gratified, when some few weeks ago, I paid a visit to a brick works in a town which I happened to be visiting. On looking into the kilns I saw the very principles embodied that I have been advocating. I asked the owner, "where he had got his ideas for that part of the kiln" and he immediately answered "out of the CLAY-WORKER," in reply to a question as to how they worked he answered "first class, I wouldn't use a down-draft without them." This is not egotism, it is only to show that my advice is based on sound practical principles, and not theory only.

In previous letters of this series I have

given my reason for preferring a down-draft to an up-draft kiln for dry pressed bricks (I have used both). I have explained what my experience teaches me to be the best way to set and burn them. I have also replied to Bro. Crary's "wing attack" and now being somewhat tired of this unprofitable bushwhacking, I shall leave this controversy to any who may have more spare time than I, and shall resume my series of "Dry Press Hints."

PRESS.

PHILADELPHIA BRICK MANUFACTURERS AND THEIR PLANTS.



AT FIFTY-SECOND and Market Streets is the brickyard of John Sullivan; this yard has been in operation for about thirty-five years. It was first operated

by Charles Cloud, who ran it for about fifteen years, after which it stood idle for five years, then it passed into the hands of the late John Sullivan, who ran it successfully until his death about seven years ago. His sons continued

plant consists of a Chambers C Machine with clay rolls and elevator. They burn in three ten-arch Dutch kilns, drying by the old sunshine method. The photo. of kiln was intended to show the ordinary way of setting common brick in West Philadelphia, but insufficient light in the kiln spoiled it. It is, however, known as checkered, while stretchers are set two on two and pressed brick three on three.

These boys—there are four of them—are not wedded to old-time methods, although by force of circumstances obliged to pursue them; they believe in progressive brickmaking, drying and burning, and with a yard with plenty of clay in sight they would gradually equip themselves with the best of appliances all through. They know perfectly well what they need and are quite familiar with nearly every machine, dryer and kiln extant. They are great workers both by head and hands.

It is related of an Irishman, named Teddy Murphy, who was trying to smuggle some liquor from Ireland, to this country, being detected by the Custom House officer and arrested, when



A DUTCH KILN—JOHN SULLIVAN'S YARD, PHILADELPHIA, PA.

the business—like their father—successfully and are known to-day as sound business men and practical brickmakers. The yard is played out and has been for some time, so far as clay is concerned, for they have to buy every pound of clay they use. They make pressed brick, stretchers and common. Their

asked if he knew the barrel contained whiskey, replied, "Well, your Honor, as it's marked 'whiskey' on one end and 'Teddy Murphy' on the other, being on me oath, I couldn't say whether it's whiskey or Teddy Murphy that's in the barrel." The officer thinking to puzzle him asked him which he thought most

likely it contained, he answered, "Please your Honor, I could tell better if ye would just open it and let me sample the contents. Being on me oath, I don't like to risk me own opinion."

Written for the CLAY-WORKER.

A BRICK RED FANTASY.

A Story for Little Children of Eighty-nine Years and Upwards.

AM almost sorry now that I promised the readers of the CLAY-WORKER to confide to them my nocturnal experiences while sojourning in Dustborough. I fear that some who peruse these pages whose incredulous nature renders them non-receptive of truthful narrative will treat this brief

but absolutely horrible recital with inconsidered derision.

However, I am not to be abashed so easily. So listen to my wail:

Just before reclining on the reverse of sumptuous clay bed that the hospitable night watchman had provided for me, I glanced at the clock—which to my surprise, being in such a hum drum place, appeared to be quite an aged and dignified affair—it was nine minutes of twelve (or 11:51 according to A. R. U.

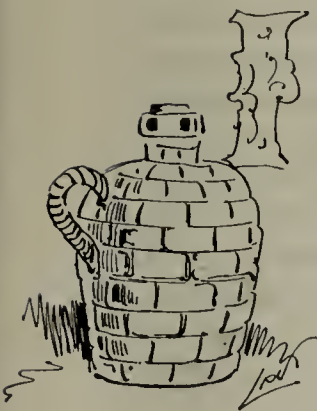
somewhat grieved to find that the clock was in a strange state of exhilaration and frequently hiccuped between ticks. What seemed furthermore very odd was the fact that its works were made of brick.

"Shay ol' (hic) fell' " said the clock stutteringly while its pendulum wab-

peared and said "If you please, here's the time." at the same time holding to view the figures "12:03." The turnip (as well as the fairy herself) was made of pressed brick.

"Then let the dance begin," commanded the fairy—a dainty little creature, I may have forgotten to say, of scarcely twelve summers.

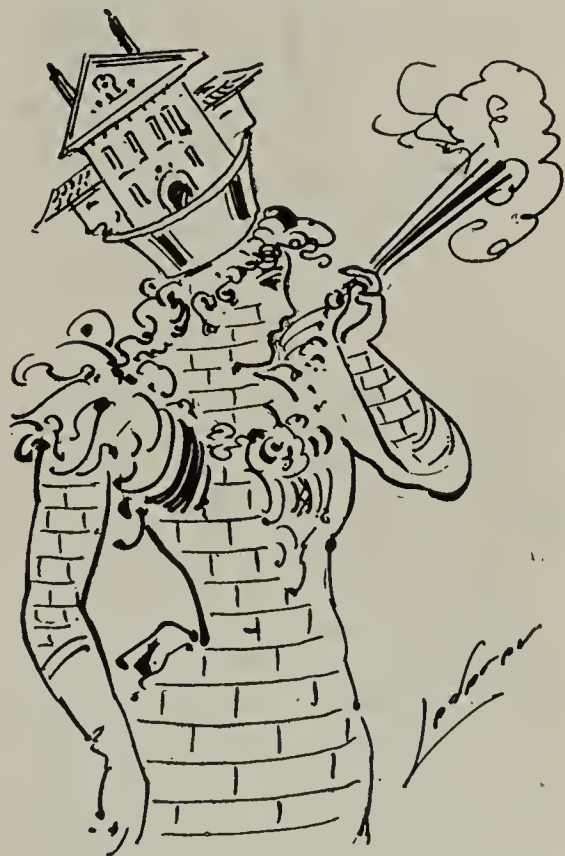
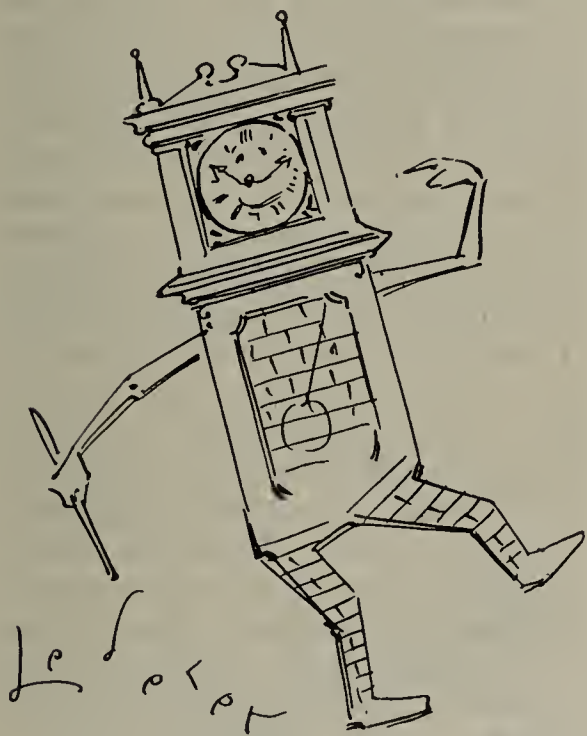
The dancer was a demure faced salvation army young lady who wore a poke



bled in an awkward manner, "Don' give (hic) me (hic) away—Sh—h, hush, the brick fairy is coming." With that the eccentric time piece turned a hand—I mean a main spring and was quite still except for a slight intermittent ticking of the same pattern as that on my bed.

I heard a sweet, gentle voice ask "What time is it?" and I was about to look at the face of the clock when the

bonnet made of brick. She told me in confidence later on that being a woman's reform sort of female she wore that sort of bonnet so that man alone could not



time). Exceeding pneumatic tire made me soon unconscious, but how long I slept I do not know. I was awakened by the striking of the clock, although it appeared to have no grievance beyond that it worked three shifts of eight hours each with no chance for meals. When I became quite awake I was

same voice right over my shoulder said gayly "Oh, I don't go by that! "Here! where's my turnip?" With that the queerest looking chap I ever saw ap-

monopolize the carrying of brick in his head-gear.

"If you don't like her style let me introduce you to the *fin de siecle* young lady," said the petite fairy leaning over

to me until I feared the brick she balanced on her terra cotta head would fall and swat me on my ear.

The *fin de siècle* person was quite graceful and apparently with a great head for business. She did not greet one in a very friendly way. "Have you your Brick Fairies' Union card? Are you a member of the union?" she inquired of me. "Nay, gentle creature, but I am burning to become one of the B. F. U." "Indeed!"

"Yes, I'm fairly burning with brickly heat to become a member of your illustrious order."

The *fin de siècle* girl grew furious. I had unconsciously offended her. "Out with the varlet!" she screamed. "He is using non-union jokes! Boycott him and send him out of here on the night express, at once!"

I was seized by a stalwart gentleman dressed in a nickel steel suit of under-



wear (no perceptable outerwear at all) and who carried a terrible hinged sword

"Shall I slice him up, or do you wish him served *au gratin*?" he inquired with a simper on his thin sheet iron lips!

With that I woke up with a start. I had been dreaming after all. But I heard a real voice—I recognized it was that of my family entrance physician's say: "I think quiet for a month and a diet of milk toast and bichloride of gold, about 18 karat fine, will bring him around all right, but his mind will still be boycotted." CHARLES LEDERER.

Advertisers should sow their advertising with the same care that the intelligent farmer plants his crops. "As ye sow so ye shall reap," applies to advertising as well as everything else.—*Ex.*

Written for the CLAY-WORKER.

HINTS ON BRICKMAKING.

No. 89.

BY R. BRICK.



IRE is our best servant and worst master. This is especially true when applied to the brickmaker; without its friendly aid our wares would be worthless and our engines would refuse to perform the mighty tasks we put upon them. It furnishes the power to make the brick and the means, in many cases, to dry them, and in all cases it is the agency by which we convert soluble clay into imperishable building material. Without its aid we would be unable to make a single brick, and yet when it becomes master it is the most destructive element the brickmaker has to contend with. The aggregate loss of brick manufacturers by fire each year in this country is very great, if we may judge from reports of total or partial destruction of plants throughout the country. One reason for this is the vast amount of heat necessary in the process of manufacture.

It is a serious question. How can we avoid, or at least lessen the losses we sustain by fire? The first protection that suggests itself, is insurance in reliable companies. The rate charged is high and hard to pay but is better than to risk all. Every brickmaker should be at least partially insured against fire losses. In insuring our plants we are inclined to insure the buildings that are most liable to take fire and have none on those least exposed. The plant in which the writer is interested tried this plan, insured dryers, machine and engine building, but carried no insurance on the company barn which was an isolated building with no fire about it or near it. At midnight one night we awoke to find the barn in flames and beyond all effort to save. A good building, two mules, wagons, harness and a large quantity of hay, corn, etc., was consumed, upwards of \$1,000 loss and no insurance. There is no telling which building will burn first, hence better include all of them.

Insurance is the best cure but prevention is of course better than remedy. When we build our plants, do we patronize our own business and construct our plants of brick? Nay, verily, we build them of wood whenever it is pos-

sible to use it, we save the brick to sell and urge our neighbors to use brick, and proceed to explain the economy and many advantages of brick over wood as a building material. We are "sages in our maxims and fools in our conduct." Why do we thus?

There are reasons, at least causes for this state of affairs; brickmaking until within recent years was considered a temporary business. The whole outfit was put up with the idea that it was only for a year or possibly two or three years use, and it is hard to get out of that groove. Even where large sums of money are invested, where the clay mine is practically inexhaustible, the buildings are generally of wood and rest on wooden blocks. As long as we build our plants of combustible or inflammable material, just so long will our fire losses be heavy, and insurance rates high.

The walls of our buildings should be of the best fire proof material known to builders, common building brick. The roofs should be made of clay or metal. Then we could get cheap rates of insurance, or with such buildings and proper fire appliances and precautions insurance would be considered almost superfluous. Every brick plant should if possible have a good water supply; there should be a reservoir, that would supply pumps for several hours in case of fire; there should be a pair of good force pumps, and water pipes through the buildings with hydrants not more than 100 feet apart; at each hydrant there should be 50 to 100 feet of hose to be used only in case of fire; there should also be scattered throughout the plant barrels of water and buckets, with convex bottom hung at convenient points. These buckets cannot well be used for any other purpose as they they will not set up on a level surface. A single bucket of water applied in a moment may prevent a destructive fire when nothing else would. Where force pumps are depended upon entirely, it follows that steam must be kept in the boilers day and night and Sunday too, for without steam all these appliances would be useless.

There are two other methods that can be adopted, either would be effective, but the two combined would be much better. One is to have a tank or reservoir placed at a sufficient altitude to throw water over the highest buildings on the works, the other would be a fire engine and hose, kept ready for use on

a few minutes notice, this with a proper water supply would give ample protection, and in combination with a tank or reservoir would be as near perfection as could be attained.

Where we are entirely dependent on force pumps and hydrants, the weak points are, the fire may drive us away from our hydrants, or it might break out near the boilers so that soon our supply of steam to the pumps would be shut off. With a fire engine and plenty of hose we can shift our position to suit circumstances, and cannot be driven from the field. Some will say, "Well, this is expensive." True, but a fire is not only expensive, it may prove a calamity. If we would be safe we must either carry full insurance at high rates or go to the expense of preventing as far as possible, and also prepare to conquer any fire that may occur.

Again all these precautions and preparations may prove of no avail if we have not a careful watcher to guard our plant against the fire fiend obtaining a foothold. In the day time when men are at work in every part, a fire will soon be discovered, but in the night when it is deserted save the watchman or a few firemen, the mischief is done. It may start from a stroke of lightning, spontaneous combustion, by carelessness or by the hand of an incendiary, only a wide awake, diligent watchman, can insure safety in the night, and an electric, or other good register is necessary to make a diligent, live watchman. After all, the foundation of safety is to make our walls of brick and our roofs of metal or clay, then with necessary appliances and eternal vigilance we can feel comparatively safe from the fire fiend.

Let us encourage others to patronize our business by doing so ourselves, so far as it is practicable to do so.

THE LAST BRICK.

COOGAN (below)—"Say, Murphy?"
MURPHY (above)—"Phwat do yez want?"
COOGAN—"Jist t'row me down a bhrick till Oi fill up me hod.—Judge."



THE VILLAGE BRICKYARD.



LAST year the writer had something to say about Bricklyn College and this year he has his ears open to hear what Clayton, Morrison, Crary, et al are saying, and he notices they don't say much but just keep on making brick and putting the money in their pockets. Every one of them knows down in his inmost brick cellar, the place where other people keep their souls, that neither brickmaking or any other business was ever yet learned in college.

And when they get up and talk about taking five thousand boys averaging from 120 to 200 pounds each and with brains weighing from 30 to 80 ounces per head; running these boys one after the other through a Chamber's machine and repressing them on a Raymond, stamped on the back in large letters "THIS IS AN EDUCATED BRICKMAKER AND KNOWS EVERYTHING;" the Village Brick makers will just turn them over and brand them on the other side between the eyes "A fool." May the good God be kind to the people who made him so and very kind and patient with all those who have to deal with him and his, from now to the end of time: Amen.

Let us ask what made Father "Crory" the foremost brickmaker in the whole United States and the answer is in thunder tones "His clay was mixed by an educated hand and soaked with brains."

Let us ask what made Brother "Morrison" king of brick burners at Rome, the center of the world, to which all roads lead, and in the whirl of the tornado comes the answer; "His clay was fired by an educated hand and his draft was brains."

Let us ask what made neighbor "Clayton" across the Delaware river a Magician to enamel clay and turn it to gold, and the waves of the sea on the Jersey sand respond on every shore "His enamel is fluxed by a life's experience and dipped in brains."

And every other man can answer the same. It is experience, from the bottom up, rarely, if ever from the top down, that makes your successful man; boys cannot begin life where we leave off, they must begin every time where we begin or if we fail in our mistaken love for our own flesh and blood to recognize this fact, we as a rule entail upon them a life long misery.

Teach your boy then to be a brick-maker, through every stage of the work from the ground up; all the rough manuel labor, all the dirt, worry and vexation, stand by, but don't talk too much, let him learn as you learned; don't be in a hurry, it takes time to develop a good brickyard boss; one who can meet every emergency, calm, cool and free from excitement, as a general should be in battle; another thing start early, don't think your boy is too young to run the yard. My baby, five years old, pays the men and his brother aged twelve makes out the pay roll and puts up the money in the envelopes and the men recognizing that these little fellows are getting their education to be brickyard bosses, call them "Boss."

Well the older brother started the same way and when he was fifteen, my friend the carpenter, asked that he might come and learn to boss his men: "No, he cannot do that now, but he can come and learn to be a carpenter just like any other boy and in a couple of years, he must have a winter at business school for bookkeeping and a winter at Drexel's Institute to learn architecture and after that he will know enough to begin the bossing business." Well he took the boy just that way, and he is now doing the architectural part of the business, and if I die to-night those boys are going to run that Village brickyard right away; not because they have been to school or to college but because they know how to work and know that I am ashamed only of those people who don't know how to work and are too old and too much college bred to learn.

Why, two men have come back to my town within a month, seventy years old and over and one of them can only earn six dollars a week and the other ten dollars, and they are smart and bright as buttons; they for years earned a thousand dollars per year teaching school but they never learned how to work for themselves, they were both college bred but that fact, simply handicapped them for life; they had the idea the sun rose and set in colleges and that every man could be run through the machine. As I said before, just like making brick on an auger machine and repressing them by steam power. Now they come here and work for two men who won their way up from the ranks and are captains by right of the fight through which their experience and energy enabled them to push. Teach your boy every-

thing that other people don't want their boys to know about work, and then the other boys educated in the common rut will have to come and work for him, that's the foundation of "Bricklyn College" as well as all success in life.

THE VILLAGE BRICKMAKER.

THE NEW YORK BRICK MARKET.



DRAFT, 'tis said, makes the whole world kin. To judge from the columns of your last number, there are others who need sympathy as well as the poor behind-the-age tide water brickmakers of New York and New Jersey.

If talk would improve the trade, it would be one of the most flourishing in the country, but the ones who talk the loudest are the very ones who have knocked the bottom out, not merely by large shipments to the New York market, but by offering stock to local consumers from \$1 to \$1.50 per M. below what they should receive for delivered brick.

If such a reduction stimulated trade or brought work to them individually, one might excuse them for such a suicidal policy, but it does neither one, as the purchaser will go to the one he has been dealing with, place the figure at which he can buy brick from Mr. So and So, and what can he do but accept those rates against the ones made by another manufacturer.

As Blaine said about the McKinley bill increasing the sale of flour or pork so the low prices act. They have not caused any increase of building in our town or the surrounding villages, but a steady decline. Is there any business man who will say that brick furnished at the job, say two miles from the yard, for \$5.50 per M., if the price was \$7.00 would retard building. For foundation and chimney, for ordinary frame building 25,000 M. is the quantity used or an advance of \$37.50 in cost. Seven dollars seems a large price, but home trade looks for nothing but "gilt edged" brick, no arches or heading course and I have heard men object to any broken, in fact nothing but middle bench brick. There have been purchasers who have come to yard looked at the brick in the kiln and bought what they wanted with the understanding that they were to take the run of the kiln. When the first load was

sent to the job, they would not receive them, claiming that they were not what they bought. They expected the best that was in the kiln for a very small rate. No doubt this same experience has come to many of your readers.

BURNING WITH COAL.

Mr. Walsh has burned his first coal kiln and with fair success. There is room for improvement, but when everything is considered, it is good for one who has had no experience personally in charge of kilns burned with coal. "Live and learn" is an old maxim and the experience gained in this case will probably be the means of a decided benefit in the next. In the two kilns which Mr. Sutton burned for him last fall he used a grade of anthracite coal called Jermyn, rather of a soft nature compared with others of the hard coal family. The fuel used in this kiln was of the best of anthracite, as well as the hardest Lehigh. After he got his fires together it worked all right, but to get them together was no easy matter. They did not smoke out as in the case of a wood fire, but they went out, the coal being so hard that it would not take hold. When he did get it going it worked all right so far as burning was concerned.

Then to complicate matters still more one of the arches next the outside started popping, and kept at it till it filled the arch. That was in the fore part of the night, 24 hours after starting fire. He used all means at hand to remove the bats, but still they came down till the hole reached from jets to top of kiln, it was only an illustration of the saying "troubles never comes singly." When this kiln began to swell, his stationary walls were crowded out of plumb and cracked, he stuck to it and brought out not a pale burn by any means, not but that there were pale in the kiln, but some hard and others a trifle off color.

THE CAUSE.

Was it want of draft? Last fall he set the kilns up on the kiln ground the ash pit four brick high. This winter he dug down so that his grate bars were on a level with the hearth. He then dug out the gangway a space the length of the eight arches and back to the second tier of posts. The question is, was that enough space to give draft? Was it not more in the nature of a pit, would it not have been better to have stopped that space from the eave post, thereby getting a current from the yard

In his judgement the excavation he made was sufficient and he is going to try again but with other coal. If he succeeds in driving out his fires and having a good, hard burn it will be the means of causing those who said, "I told you so," to keep still in the future.

EXPERIENCE

Is a good teacher. Mr. Sutton warned him last fall when he talked of putting up stationary walls and setting his grate bars on a level with the hearth, that he would not have draft enough, as he had seen it tried in a number of cases with like result in all.

"Charlie" will keep at it till he is satisfied, that it is not the coal but the draft, or that he has draft enough and the coal is the fault, he has the perseverance that will accomplish the desired result in time.

THE MEN.

Have accepted the ultimatum of reduced wages along the Hudson, and all is quite along that line. In Hackensack the men made no attempt to strike. The only complaint from them is the wet weather, for if it looks anything like rain they will not start the machines, as the manufacturer has a horror of washed brick. As smooth are away down, washed are still lower. In past years the foreman has looked for a complete change of men on the Fourth of July week as most of them wander off, and do not show up till the next spring. This year the men work steadier and are afraid to loose a day, for fear some one will take their place—what a change. The foreman would go to the shanty coax, beg and threaten, only to be laughed at, the men knowing that he could not fill their places—to-day there is a gang around the yard, each man hoping that some one will be off.

WILL HELP CAPT. CRAFT

To pound that journal fellow with a brick. Puck says, "What fools these mortals be." When one reads that brick must be guarded from salt air or water or they will not last, it would seem as though there were greater fools in this world then we would expect in this nineteenth century, and among a class which has, or is supposed to have, an educated knowledge of what they are writing about.

I do not know where the *Journal of Building* is published, but would advise the editor to make a tour of the coast states and use his eyes, as well as his tongue, as he visits yards, that are swept

by the winds of the Atlantic every day, and he will kick himself for his stupidity. All the South Jersey yards which ship to New York market are swept by the winds from the sea and no doubt many of your readers have seen some of their brick they are, to use the going expression, "as hard as lightning." Build a pyramid on the point of Sandy Hook with them and they will stand as long as the Obelisk in Central park stood in Egypt with no signs of decay. No more covering is used than on any open yard. Go to Long Island, he will find that the green brick is not done up in cotton, and on some of the yards he will find that the hacks are battened only one side, and if he will visit Fisher's Island where the waves of the Atlantic wash its shores he will find a yard that does not make its green brick under glass, and a burnt brick that will show the fallacy of his argument that only fresh water brick are strong. Is there any signs of the many thousands of brick buildings in New York City and Brooklyn requiring "impervious cement" to keep them from falling down? It is a dangerous pastime for children to play with edged tools, and if the editor of said paper does as well in all advice he gives his readers as in the case in point he is in danger of ruining his reputation of the knowledge of the strength of the common brick.

A SURPRISE

No doubt to your many readers was that threatening communication from Denver, as to what the Coxeyites will do the next time they march—go with arms in their hands—what next. It seems that there are more cranks in the world than are on a grindstone. Your correspondent should remember that the "ism" of which he is an exponent, if it ever makes that second start, of which he speaks, will wish that they had never been born, as the other fellow who does not believe in such nonsense will have a gun and will use it, and he is far larger and more powerful. Such talk is about on a scale with Sullivan and the Liliputians, the little fellows did well enough till Sullivan rose up and then they were not in it—so with Coxey and his followers—popular opinion suffers long, but like brother Jonathan, when it does take a hand, it is to some purpose.

THE MARKET

Stands about the same as at last report with no increased demand. The month that has passed was favorable for new

work as the weather was good. The supply exceeded the demand and at present rate of production on account of favorable weather the excess on market will be greater, there are from three to four million laying in market all the time.

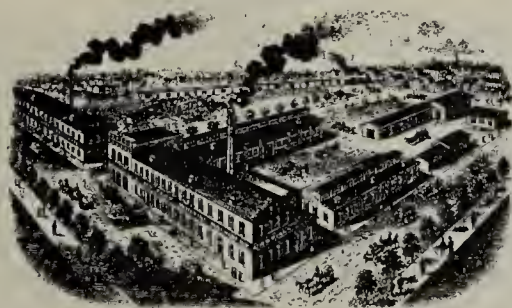
Jersey ordinary \$4 and \$4.12½; good \$4.25 and \$4.50; Hudson River ordinary \$4 or \$4.25; good, \$4.37½ and \$4.50; fine \$4.62½ and \$4.75; choice, \$5.

A. N. OLDTIMER.

A GOOD THING

For Clayworkers and Advertisers.

IT IS a generally admitted fact that no legitimate investment pays better than *good advertising*. For this very reason many advertisers are less cautious than they should be in placing their orders, but are all too prone to lend an attentive ear to plausible solicitors who unblushingly relate "fairy tales" of the medium they have to offer,

E. R. KEARSLEY, President
J. B. GORMLY, TreasurerW. C. LEMERT, General Manager
W. W. REEHL, AuditorA. R. BATLEY, Sales Supt.
JOHN THOMPSON, Mechanical Supt.

Address all communications to the Company

T. A. Randall & Co.,

Indianapolis, Ind.

Gentlemen: We wish to express to you our profound regard for the CLAY-WORKER as an advertising medium. It has been the means of bringing to us thousands of dollars worth of orders which we certainly would not have received had our advertisement failed to appear in your valuable journal. The tasty and attractive manner in which you get up our advertisements is certainly worthy of mention.

The reading matter which monthly appears in the CLAY-WORKER consists of practical points of the greatest worth to the practical clay-worker. It is certainly the most valuable journal in its line published in the United States for the buyer and the seller.

Assuring you of our appreciation, we are,

Yours very truly,

The Frey-Sheckler Co.
By W. W. Reehl
Auditor



Bucyrus, O. U.S.A. 5/23/94 189

ARTISTIC WORK IN CLAY.

IT IS characteristic of the terra cotta establishments of this country that they vie with one another in the production of truly artistic designs. The modern stone cutters are mechanics; terra cotta modelers are artists. An architect feels safe when his designs are in the hands of a terra cotta modeler. If they are to be executed by a stone cutter, he remains in a condition of uncertainty, which is usually followed by a state of disgust. The artistic impulse is now rarely to be found in a stone yard. It is well to bear in mind, however, that these designs originally were wrought in stone. The sixteenth century produced many artistic stone carv-



ers. The latter part of the nineteenth century finds relatively few. This is an unfortunate condition of affairs, which results in lowering the standard of public taste, and in that way operates to the disadvantage of all true artists. We are pleased to place before our readers the accompanying excellent examples of fine structural detail in which there is displayed a richness, and at the same time a refinement that is one of the characteristics of truly artistic work which now most readily finds expression in clay modeling. All of the designs shown were executed in terra cotta by the Perth Amboy (N. J.) Terra Cotta Co., for the Society of Savings' Building at Hartford, Conn. We are indebted to our most excellent contemporary, *The Brick Builder*, of Boston, for the use of the plates.

IF WE are to judge from the crowds that daily throng the leading retail stores, there is no dearth of business just at present. This may be attributed to persistent newspaper advertising. August is considered the "dull month" by business people, and as August is now upon its way we can only suggest that persistent advertising may mitigate its traditional dullness quite considerably.—*Art in Advertising*.

Written for the CLAY-WORKER.

THE CLAYWORKING INDUSTRIES OF OHIO.

Seventh Paper.

BY EDWARD ORTON, JR., E. M.

THE TEMPERING OF PAVING BRICK CLAYS.



MANAGEMENT in the grinding and screening processes only, is a matter which affects the makers pocket book more than anything else, but insufficient or improper tempering of clays affects the quality of the output at once.

The proper tempering of clay consists in developing in it the necessary amount

of plasticity to answer the mechanical requirements of the process by which it is to be manufactured. Naturally the requirements of different processes are very different. The tempering required for making paving bricks is nearly altogether for the so-called "stiff mud process," and as its name indicates, the clay is worked in a comparatively stiff and firm consistency.

A piece of newly mined fire clay or



shale on being brought into the air, and exposed to rain and heat and frost undergoes a slacking or disintegration, which to a certain extent tempers it—i. e., develops its plasticity. Some clays would become quite plastic with no

other treatment; others resist these influences to a large extent, and while they slack and crumble perhaps, the fragments thus formed are hard or non-plastic.

The grinding of clays before beginning the tempering process, accomplishes two things; first, it reduces the lump of clay to a uniformly small size, and exposes thus a large surface to the softening influences of water; secondly, it operates differently from the slacking provided by nature; this always breaks the clay on cleavage lines, while grinding breaks the clay without regard to its cleavage and exposes surfaces to the action of water which would never be exposed by natural slacking.

The success which the tempering process meets is in proportion to the amount of water which the clay will absorb. The majority of shales and fire clays when crushed and screened and then wet will absorb water so rapidly that they become soft and plastic while still in the tempering process. Some few will not, but will become entirely plastic if afforded time in which to absorb the water. Some clays persistently refuse to absorb water at all, but such clays are not used for paving material. Also others, mostly sedimentary river bank clays and the outcrop of the stratified clays, are already rendered plastic by the action of water in the position in which they are found, and only require the mixing action of the tempering machine to render their plasticity even throughout.

These differences in the nature of the material to be tempered make modifications in the treatment necessary in working different clays.

The two types of machinery used to effect this process are the Wet grinding mills and the Pug mills.

Wet grinding mills or the wet pans, as they are commonly called, are the same as dry pans, except that their bottoms are solid instead of grated, and that their mullers are generally lighter in weight and narrower in tread. The process of wet grinding is managed as follows:

A charge of ground clay is run into the pan from a storage bin above, and with it, a stream of water is turned on. The pan is in motion while this is being done. The clay rapidly wets up as it is stirred by the scrapers and mullers, and in a few moments the water supply is

cut off. The clay first becomes sticky, from an apparent excess of water, but as the grinding proceeds and the clay is directed constantly under the wheels and is ground finer and finer, the mixture stiffens up as the excess of water is absorbed by the fresh surfaces of clay exposed to its influences. It is often necessary to add water 3 or 4 times to satisfy the demands of the clay, though each addition as it is added, seems too much.



When the clay is finally reduced to a plastic state, and seems to remain so, the mass is removed by scoop shovels pivoted on a bearing near the pan, and

the wet pan treatment is well shown where two different clays are being mixed, one a fire clay which burns white and the other a shale which burns red. The mixture may be made of a light red color, showing neither white nor dark grains; the two clays are blended, and so intimately, that the mixture becomes an average of the two, chemical properties as well as physical.

The value of this fact is apparent, for if two clays are needed to accomplish what neither alone will do, a mere mixture of the two with water will not produce more than mechanical union, and in such a case, the body of the mixture will retain its own nature, but little influenced by the presence of the grains of the other clay. But the energy of the wet pan is sufficient to overcome this obstacle and produce a mixture so intimate that any small proportion of clay added will produce an effect commensurate to its quantity.

The other standard tempering device is the Pug Mill, a relic of the earliest efforts of man to work clay, and still unsurpassed in performing the duties for

if it is open top, is merely a stirring; there is no friction or kneading to any extent. If the top of the mill be covered, the clay will pack inside and as the pitch of the knives keeps the clay moving to the exit, the kneading action becomes quite vigorous. Under such treatment, a clay which is naturally plastic gets all the working that is needed, and a semi-plastic shale or fire clay which is able to absorb water freely, usually will become sufficiently plastic for satisfactory working. The power required in the open top pug mill is not great, but as the top is closed and the area of discharge becomes constricted, the power required increases very fast, and the effectiveness of the work in proportion.

But the action of a pug mill is unsatisfactory in one respect. It can only develop the plasticity which is native to the material brought into it; a rough, harsh clay will pass through it without being softened, and a mixture of such a non-absorptive clay with another plastic one, only becomes plastic in proportion to the quantity of the latter

Two dissimilar clays show as separate colored grains in the burnt product.

The relative character and quality of the work done by the two machines, the wet pan and pug mill, being understood there remains several points of a commercial importance to consider in making a choice. The first consideration is as to the character of the clay to be



controlled by a heavy lever in the hands of the temperer. In some pans this is done automatically, by a shovel started and stopped by the temperer. Pans are usually worked in battery of two or four, and one temperer takes charge of two, filling one and allowing it to grind and temper, while emptying the other, and so on in rotation.

The peculiarity and excellence of the work of the wet pan lies in the fact that its tempering or mixing action is supplemented by a grinding action hardly less severe than that of the dry pan, and that the effect of water under such conditions is at its very maximum. If clays cannot be made plastic by wet pan treatment, they cannot be profitably treated by any other for brickmaking. The thoroughness which characterizes

which it was originally designed and applied.

The pug mills of to-day are usually horizontal troughs, open or covered on top, and provided with a horizontal pugging shaft with spiral knives or paddles which revolve through the clay, mixing and working it up and down and toward the discharging end of the machine. The action of the pug mill,



treated. The full and proper determination of this point is of the very greatest importance. The subsequent success of the plant may depend on it alone. The nature of the plasticity of the clay must be studied; whether it is plastic naturally, or whether it is not plastic naturally, but becomes so readily in grinding and wetting. If it does not readily absorb water after grinding, efforts must be made to determine at the start, whether a pug mill will do the work or whether a wet pan must be used. If the clay is at all non-plastic in its nature, a wet pan is the only efficient means of tempering it, and if two dissimilar clays are to be used a wet pan is the only machine that will blend them.

If the clay is of such a nature that either kind of machine may be properly used, the next point to be understood is the relative cost of the two machines. The wet pan is largely in a disadvantage here, it costs from two to three times as much as a good pug mill.

In regard to quantity of output, the pug mill has again the lead. One good pug mill will temper the clay for 50,000 to 80,000 brick in 10 hours if kept full and well tended, while a wet pan working the same clay would hardly temper for more than 25,000 or 30,000 brick. One good wet pan, well handled, will temper for brickmaking purposes about as much clay as one good dry pan will grind under average conditions. For making sewer pipe a much more careful tempering is required, and two wet pans are used to temper for one dry pan. One pug mill will usually handle the united capacity of two dry pans with ease.

In point of labor, both machines require the full time and attention of an experienced man. One man can feed two wet pans and thus make nearly as much capacity as a pug mill, but when one wet pan is contrasted with a pug mill in cost of labor per thousand brick made, the wet pan suffers by the comparison. In regard to power consumed, a wet pan requires nearly if not quite as much horse power as a dry pan, and this is estimated at from 30 to 40 horse power, according to the conditions. An open top pug mill, even if run full, does not consume this much power, but whenever the top is closed or the discharge hole limited, then the work increases and the point is very soon obtained where it uses fully as much power as a wet pan does.

So that it may be stated, without fear of contradiction, that when a clay is to be used which can easily and naturally be made plastic enough by treatment in a pug mill, that this machine is by all odds, the cheapest in first cost, in labor cost, in power cost, and largest in quantity of output. But when any trouble is expected in subduing the clay, the wet pan is efficient beyond all comparison.

One further warning to those who have the solution of clayworking problems on hand for the first time. Do not be deceived by insufficient or careless trials of your prospective clay deposits, from samples taken near the surface. The outcrop of any clay is much more mellow and kind in the machinery than the bulk of the deposit which is protected by cover from the weather. Shale beds in particular are deceptive in this particular, and it is the usual and expected thing to see a plastic outcrop turn into a hard-working material, which cannot be made plastic in a pug mill at all, and requires the use of a mixture of clays to enable it to be worked. In some cases, this has occurred to the great detriment of the company concerned, and it has even been necessary to grind the shale mixture dry, and spread it out on a floor



ed thing to see a plastic outcrop turn into a hard-working material, which cannot be made plastic in a pug mill at all, and requires the use of a mixture of clays to enable it to be worked. In some cases, this has occurred to the great detriment of the company concerned, and it has even been necessary to grind the shale mixture dry, and spread it out on a floor

and water it down 24 hours ahead, in order to get the assistance of time in softening the shale for the pug mill. A wet pan would answer all requirements in cases of this kind. The work of the two kinds of apparatus can be contrasted in one other particular also. In the preparation of clay the wet mill is by charges of from 800 to 1,500 pounds each, which are tempered separately. It is impossible always to obtain the same degree of plasticity and the same degree of softness in these different charges. A pug mill is intended to work with a constant feed of ground clay, and it is claimed by many that the tempering can be kept much more uniform on this account. In practice however, the supply of clay coming from the pans to the pug mill is always variable; it is a feast or a famine and the temperer has before him the problem of tempering a variable supply of clay to a uniform plasticity. Success under such conditions is no easier to obtain than in the wet pan. By use of a storage bin and feeding device, by which the ground clay would be accumulated and fed at a uniform rate, this trouble could be avoided, but recourse to this expedient is nowhere practically in use at present, so that it cannot justly be claimed that uniformity of temper is attained better in one than in the other type of tempering device.

The water used in tempering is often used hot from the boilers or heaters. This is a great assistance in softening the clays, as hot water acts on them much as it does on any really soluble substance. In the winter the warmth imparted to the clay by the hot water is of great comfort to those handling it, and is also of assistance in preparing the clay for the drying process.

In case any changes in the chemical nature of the clay is contemplated by use of foreign ingredients, these should be applied through the agency of the tempering water, especially if they be soluble, for by this means they can be distributed evenly throughout the entire body of the clay.

IN THE RIGHT DIRECTION.

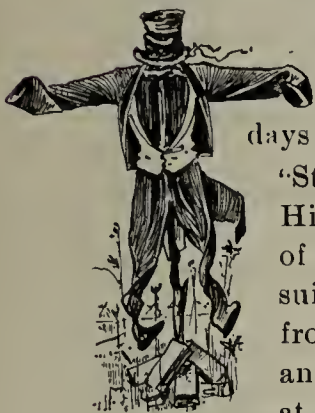
Preliminary steps have been taken for the establishment of a local association of brickmakers at New Orleans. It is hoped that every brickmaker in that city and vicinity will be identified with the movement. A good organization will be of benefit to each and everyone.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

The Cause of the Chicago Riot.

Editor Clay-Worker:



HE following "ad." appeared in all the daily papers of Chicago a few days since:

"Stolen from my home at Hinsdale, Ill., on the night of June 23, 1894, my dress suit. This suit was imported from Paris in December last, and was never worn except at the banquet given in honor of the National Association of Brick Manufacturers at the Auditorium. It was the pride of my life, and the envy of all my brother brickmakers. A suitable reward will be paid for its return, and only necessary questions asked."

WM. D. GATES,

Room 607 Manhattan Building.

The attention of the Chicago Brick Manufacturers' Association having been called to the above, a committee of five was appointed to take such action as to them seemed appropriate. The committee in accordance with instructions addressed the following to Mr. Gates.

"O, Willam D., thy 'ad.' but shows
Dependency of man on clothes,
The burglar who that suit would steal
Deserves, and should be sent to, Sheol.
That new dress suit! The stir it made
Will never from our memory fade,
Thy long, lank form it clothed with grace,
And wreathed with smiles thy homely face
As silver tongued thou didst pour forth
Enconiums on woman's worth.
Who that by day had seen thee wear
Thy Scotch homespun, and frownsled hair,
Would recognize in that dress suit,
The scholar, orator and beaut.
Its fit on thy dear form and tall
Was like the paper on the wall.
It filled with envy all who heard,
The words that their emotions stirred.

Five months have gone, and lingering still
In Congress is that Wilson Bill.
The weather man for rain still yells,
And Gates the same old chestnut tells
Of faithful Schnelder and his wife,
True to each other all through life.
The questions settled what to wear,
To hear Gates eulogize the fair.
No longer will the button hole
Of that dress suit disturb the soul
Of country craftsmen, dressed in tweed
Who of dress suits have felt the need.
No longer will the brethren wonder,
No longer o'er the subject ponder.
The burglar, wiser than he knew,
Has marked out plainly what to do.
Hereafter, not the proud and vain
Will set the pace for poor and plain.
The noblest work of God will stand

Without dress suits in this free land.
And at our next annual spread
Will sacks and cut-'ways take the lead,
The question's settled by the fates
That "pinched" the dress suit of Will Gates,
Thus, out of evil, comes the good
And squelched is the vain Hinsdale dude.

COMMITTEE.

Brickmakers Should Use Their Own Product.

Editor Clay-Worker:

I have never before written for your paper, there have been many things which I thought I would write about, but somehow I never did it. I have often seen things in your paper which I liked very much, and very often have seen things which disgusted me very much; I am now feeling that way. I have just been looking over the June CLAY-WORKER and see what you call a cozy brick yard office. I wonder why you did not call it a model office. It is the way things are spoken of nearly always by papers that want to puff something up.

Now it strikes me that that brick yard office is an ugly, frame house that would not do credit to a third class lumber yard. Are the people afraid to use their own brick in building an office? Do they know how to lay them, or have they no confidence in them, or are they too stingy, or too poor to put up something that is decent. I blame you as the editor of this paper for puffing up something like this, it isn't even a good frame house. I have noticed in travelling around that most of the brickmakers who don't live in frame houses have stone houses, and it is something that I could never understand. A brickmaker should not be ashamed of his business and he should encourage the use of the material which makes him his money.

Now I built a house a good many years ago and my daughters they wanted to build what they called a Queen Anne house, and somehow they got me to build a house of that sort; the lower part was of brick and the upper story was of shingles. But the chimneys that are on the outside show on the second story and it makes it look a good deal like a brick house. I have since kicked myself for not building it all brick. A young fellow that played architect was hanging about our house then and he talked a good deal and said, it was all the style and that it was cheaper than an all brick house and somehow I built it. I was in Philadelphia some time ago and there was a man showed me some houses that are owned by

brickmakers, and there they are nearly all of stone. These men had made their fortunes in brick, and brick was too common for them and then they used stone.

I have read your paper a good deal and altogether I expect I have got as much out of it as I ever paid for it, but if you have any respect for your readers and want to please them don't print any more pictures of frame sheds for brick yard offices.

This is all I was going to say this time, but while I am at it I might as well say something more. I notice that you print a good deal about brickwork in foreign countries and run down the brickwork in this country, and I don't understand why you should do it. The best brick that are made, are made in America and they are laid the best in America. Why I have looked over the pictures of foreign brick buildings that are printed in your own paper and have seen brickwork that would be a disgrace to any cub bricklayer. I think that the best architecture in the world is in Chicago or New York, or some of our American cities, and most of this talk about their knowing more about brickwork in Europe than we do and their making better brick something like a thousand years ago than we do, is just written by somebody who wants people to think that he knows a lot. I was thinking about going to Europe myself, but the hard times came on and I concluded that I had better stay home and attend to my business. But I believe in travel and I would like to go over on the other side and if I could pick up a good idea, why I believe I ought to do it. It has always been a principle of mine to take up with good things wherever I could find them, it don't make any difference where it comes from. It ought to be taken. It is what makes America what it is now; we get all the good things from every place.

S. M. T.

Benefits of Local Organization.

Editor Clay-Worker:

Please find enclosed this year's subscription for CLAY-WORKER. It is a good thing and I cannot do without it; must have it even if times are hard.

I see you do not have much news from this part of the country. In regard to the brick business in our city, there are nine yards in operation, all steam plants. Make soft mud brick and dry by the rack and pallet system. We all make a good common red brick. The past few

years there has not been much money in the business.

We have had an Association, or tried to have one, but it failed through petty jealousy, but the past year we came together again, and each yard sold out their summer's output to one man—W. A. Freeman, he being a dealer in builders supplies. We limit our output to the demand, and have it stipulated in our agreement that he is not to sell above a certain price, so that he cannot have or take advantage of the builders. The builders, as a rule, are satisfied with the arrangement, because now there is no varying in prices; they have now to buy from the one man, as we do not sell direct from the yards. We have given it one years trial, and we find it works well, so we have all made the same agreement for another year.

Each yard has a certain percentage of the sales according to their output. We find that this arrangement works well. We can now stay in our yards and attend to our business, no running around looking for money. We draw our money each month for the brick that we made the preceeding month less the hauling. Even if the brick are not sold, we get our money for them. This arrangement might not answer for some who believe in running their own business to suit themselves, but we have all found out that you have to be organized in some way if you want to make money in the brick business.

I want to tell you one thing more: I was much pleased with your Convention Number, and should have liked to have had the pleasure of attending the Convention, but I had spent one month in Chicago at the World's Fair, and I thought that was about all my pocket-book would stand for one season. I was also pleased to see and to know that you have so many bright and smart, good looking men in the craft. I find I have gained a great deal of knowledge and useful information from their writings, for which I would say, go along, you are doing a grand and noble work, if not for the older ones, then it will be for the younger generation of brick-makers.

T. FANNING,

Hamilton, Ont.

The Situation At Chicago.

Editor Clay-Worker:

At the present time all eyes are turned towards The-City-by-the-Lake, and all ears are held close to the ground that they may hear, and all hearts are filled with anxiety to know "the news from

the front." The Brickmaker's fire is out, and in all Cook County no bricks are being made. The entire lack of fuel, either coal or oil, has necessitated the stopping of all burning of clay. Were manufacturers able to make, they could in no way get their bricks to the market, as transportation of freight is out of the question while Debs has control of the commerce and industries of the country.

About the time the strike of the brickmakers was settled, the coal strike came upon us; and all factories that depended upon coal for fuel were forced to close their works. Then came the Debs insurrection, and those depending on oil to burn their wares were also forced to stop, and as we write there is not a brick plant making either pressed or common brick within a radius of two hundred miles of Chicago. Of course, as a consequence, the men and proprietors are idle, and building almost entirely stopped. Stone and lime dealers are as helpless as are the brick dealers and manufacturers in supplying their customers.

The query raised in our June communication as to "whether we are a nation" with strength enough to manage our affairs on well known and established principles of government has been brought to the point of testing and settlement sooner than we had expected, and we believe that it is well that thus soon the decision is to be made. To-day the line is drawn, and with the opposing forces of the National Government on the one side, and Dictator Debs on the other, as to who shall be the victor we feel safe in saying there can be no sincere doubt in the mind of any honest, true and loyal American citizen.

We feel the confidence born of assurance that the principles declared by the founders of our nation, that every man has the indisputable right to seek fortune, liberty, and happiness shall be sustained, and if he is successful, to use the results as best suits his pleasure or comfort; and in this he shall be protected by the strong arm of the Government, so long as he does not infringe upon the equal rights of his fellow men.

Now if Mr. Pullman, who started a poor man, can be bereft of his rights and property after years of labor and long personal sacrifice, he has gained his much or little, and cannot be allowed to conduct his business on the basis of his own experience and business sagacity, using the same brains and

energy that have brought him what he has, why, we ask, cannot any other American citizen be similarly dealt with? Debs started out with the assertion that he would break Mr. Pullman up in his business. If this could be carried out to the end, would not all the inducements for improvement and investment of capital be gone? Would not all those who have ability to increase wealth withdraw, and leave the workers of our land to build up for themselves the grand industrial enterprises, such as have in the past furnished them with all that they have had in earnings, with wealth destroyed, how and by whom are the working people to secure remuneration for their labor?

It has been the power of the few to give employment to the many that in all time has made civilization and prosperity possible. At no time in the history of the civilized world has the greater or even any considerable percentage of the people been endowed with all the necessary qualifications to be successful in building up and establishing either great or small enterprises.

Taking this view we do not see how labor is to change the laws of trade, we might say of nature, the laborer alone cannot carry on the great work of the world—invention, handicraft and great manufactures, art and science, all must depend on capital. When the laboring man attacks capital he cuts off the good right hand that makes a manly independent life possible, and he degenerates into a forlorn creature dependent on charity, his manhood is falling away from him. Labor and capital are inseparable. There can be no "Union" that takes in one and shuts out the other. They must stand or fall together.

"Organized capital is the very best friend of labor. Large enterprises, which can be carried on only by a combination of very large sums of money, always furnish an enormous amount of work for laboring people. Labor and capital go hand in hand in all the enterprises of the world. Their interests are mutual. What wisely benefits one always benefits the other. If capital gets into trouble, labor also suffers immediately. If laboring men are misled and get up strikes, both labor and capital immediately suffer. They are always either prosperous together or in trouble together. Nothing is more wicked than the constant effort of demagogues to get up a strife and keep capital and labor at

war with each other. The best real friend working people have in any community is always the person who gives them their employment. Such employer should always be able to rely upon the men whom he employs to stand by him in every attack upon his enterprise. The relation between the employed and the employers should always be confidential, and governed by the warmest friendship."—(R. C. Hoor, in N. Y. *Tribune*.)

Once this present trouble is settled, such action must be taken that will in the future make a repetition of it impossible. The American people must sound such a universal and loud protest that the constituted authorities cannot help but heed. Year after year the country has been fore-warned by the labor element that their ideas and desires must be carried out, or they would by force secure their demands, and for years the authorities have allowed them to inflict such injuries as they chose to inflict upon the public. Led by arrogant, ignorant and dangerous men, they have defied all law and good order, and right until further forbearance on the part of the people is suicidal, and fatal to prosperity and business success.

Invasion by a foreign foe could not be more injurious to the business interests of the public or to the rights of individuals than has been the present crisis in our nation's history.

Where the fault lies and how it is to be remedied the people must find out, and do their duty at the polls and elsewhere, carefully, thoughtfully, but thoroughly, not only in Chicago, but all over the land. This matter will not be settled when we send our letter to Indianapolis. We are in the midst of a Reign of Terror. Fire and famine are around us. But without doubt matters will be decided for better or for worse when you read this. We realize that what we write to-day will be old to-morrow. In fact, in Chicago where startling events are followed close on each other what is printed one hour is old the next.

There is a saying, we believe that is from Rudyard Kipling: "The only way to prevent what is past is to put a stop to it before it happens." We must learn a lesson from this trouble not only for ourselves, but to save the boys of to-day who will be the men of to-morrow, from such a humiliating experience as we are now passing through.

It was said by one of old, "Happy is

the country that has no history." Chicago has had nothing but history since the great fire of 1871; and it is still writing itself.

COSMOPOLITAN.

Chicago, July 9th.

Philadelphia News.

Editor Clay-Worker:

The builders are not having such a booming time as last year. We are not rushing up row after row and block after block of houses, as we have been doing for the past ten years or more. Standing on top of City Hall tower on a clear day it is impossible to distinguish the horizon except at two or three points. So far does the sea of brick and mortar extend. Our trolley line builders are pushing ahead with vigor, and our builders are taking considerable comfort out of the hope of big work as soon as the moneyed men decide to go ahead.

Our brick manufacturers from McAvoy and Jarden down to the little country yards are making the best of the situation. None are crowded; some are running one-fourth capacity. Every one wants more work. The Jarden people have the pick of the trade with excellent facilities, others among the larger concerns are preparing to make more brick from now on. The best posted pretend to think that there will be a general improvement after July 15. We personally known of several large contemplated operations which are awaiting the return of what is vaguely understood by "confidence." Money is plenty enough according to bank reports and scarce enough when it comes to be collected. Plans have been perfected for a large amount of building in West Philadelphia and in the suburban districts north of the city, enough to keep us all busy when the start is made, said a leading brickmaker.

The meeting of the Pottery manufacturers of the United States recently, at Pittsburgh was well attended and it resulted in restoring harmony. The

workmen have been on strike since January 1st; about that time a scale of wages was formulated which made a sweeping reduction of 10 per cent. but stipulating a reduction of 30 per cent. in the event of the then pending tariff schedule becoming a law. This has been a long and costly strike. The coal strike only indirectly affects us, as the east is receiving 200,000 tons of coal per week from the Virginia mines, and the anthracite coal production is 150,000 tons per day. The labor situation east is all right. The building trades are quiet. Wage workers throughout the east are inclined to conservative action.

The prices of brick are firm for the reason that every possible concession has been made. The same is true of other building material, including glass and builders' hardware.

While times are hard, do not believe that building is stopped—only for a time. Our building and loan associations are doing well. The banks have an abundance of money. Our industries are in excellent shape for future work. The condition of things cannot last long. With the close of the tariff discussion enterprise will awaken and moneyed men take courage. The lesson has been a terrible one, but we are near the end. The American people have done wonderful things during the past thirty years and one of the most important things done is this last one of adapting themselves to the unexpected surroundings of the past twelve months.

The greatest improvement in the condition of the people has been made in their houses and home surroundings. It is only necessary to compare the present with the condition of the wage workers 30 or 40 years ago. An impulse has been given which will spread out steadily into a grand civilization based upon the individual ownership of homes. The builders are the real pioneers of our incoming higher civilization.

ANON.

ADVERTISE IN THE CLAY-WORKER



If You want Them to Come Your Way.

THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK
MANUFACTURERS' ASSOCIATION OF THE
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THE STRIKE AND ITS LESSONS.

It would be almost criminal for any American citizen to stand in the presence of such a catastrophe as that which is to be known in history as the great strike of 1894, without studying it by the aid of every light that can be thrown upon it. The facts as to its origin and results, so far as developed, are too well known to need even recapitulation here.

Whether more violence and disturbance are to follow, and how much and of what character, cannot be foreseen at the time of this writing, though it seems probable that the worst is past; thanks to the prompt action of the President and his immediate advisers, for it soon passed beyond the control of State authorities, if indeed the authorities of the States most implicated cared to interpose at all.

The merits of the controversy between Pullman and his employes had absolutely nothing to do with that feature of the strike which affected the masses. That controversy was practically settled when it suddenly flashed upon the Nation that there existed a secret combination, so strong in numbers, so equipped with funds, and under such absolute control that at the will of one man, for any purpose he might have in view, and on any pretext he might conjure up, every car wheel in America could be stopped. It now is known that for a year or more he had been looking

for an occasion to test the efficiency of this organization.

The Pullman case, no more connected with the railroad management of this country than are the foundries or saw-mills, which furnish the iron and the lumber that go into track and bridges and machinery, furnished the long-looked for pretext, and at the drop of the hat the entire system of transportation was practically suspended. The pretext that the hauling of Pullman cars was the offense to be punished was absolutely false from the beginning, for freight cars with no passenger attachments, were the greatest sufferers. They were sidetracked and abandoned with perishable freights and live stock, as were passenger cars without Pullman sleepers.

That the leader of this crusade against the commerce of the Nation is a man so lacking in business qualifications as to have been a failure comparatively in every business enterprise, or that he had been twice under treatment for drunkenness by a distinguished physician in New York, and that he is a graduate of the Keely Cure, signify nothing. The mere existence of such a combination, with such resources and possibilities is a menace which ought not to be tolerated if it can be avoided.

EVOLUTION—NOT REVOLUTION.

The experience of the past few weeks of terrorism has developed latent powers of the National Government not known to exist, having never before been so called out. It was a surprise to the crowned heads of Europe, a third of a century ago, that a republic like ours, preserved its life when assailed by domestic foes, and some Americans were no less surprised. Little did dictator Debs imagine, when he began, that the President would order out the National Army to confront his men. He did it, and Mr. Debs was repulsed. Even less did Mr. Debs imagine that he would be held as a criminal before a United States Court under serious charges. He is so held.

This painful and expensive experience has suggested, first; that additional restraints should be placed upon the alien element of our population. In almost every scene of violence aliens constituted the muscle if not the brains of the insurgents. What these additional restraints should be does not come within the scope of our paper. It has suggested, secondly; that preventive being better

than cure, we should at once and vigorously close the schools of anarchy, which are open in all large cities. Men and women are permitted to sow the seeds of anarchy by lectures and by papers everywhere, in many instances women being the most aggressive. We might as well contend that the man who is flourishing a torch amidst inflammable materials, should not be restrained until the conflagration begins, as to say that men and women may talk anarchy with impunity, and be restrained only when their teachings are put into practice.

The warp and woof of all the disturbance of these terrible weeks is anarchism. Disregard and defiance of law lies at the foundation of all strikes which are connected with violence, as nearly all strikes are, and the violence of all strikes is carried on by men and women more or less imbued with anarchy. To what extent and by what means the freedom of speech and by the press should be restrained in the interest of good government are questions that should be well considered by political economists.

PRESIDENT CLEVELAND'S PATRIOTIC STAND FOR PERSONAL RIGHTS.

It is hardly too much to say that if the sentiment credited to President Cleveland shall become generally adopted by the American people, as the basis of all treatment of strikes which breed violence, it will not have been paid for too dearly. The President is credited with saying in substance: *I will use every soldier in the army and every force at my command if necessary to vindicate the constitutional right of every American citizen to work where he pleases and on such terms as he may agree to.* Stripped of all sentiment this is the only issue. No one objects to any man leaving the employ of another whenever he chooses, but when, having left of his own accord, he stands with a drawn sword to prevent another taking the place he has abandoned, then it is the duty of the State to protect that man by all necessary force. This is the case exactly. A few men having monopolized the best callings, call themselves "Laboring men," and refuse to allow others just as skilled to work after they quit.

If Mr. Cleveland's putting of the case shall open the eyes of the people to the real issue he will deserve well of all men who must live as wage earners. "The constitutional right" covers the case.

Finally this affair must lead to a radical revision of our commercial laws. Not merely the inter-state commerce law must be adjusted, but our international laws. To loot a vessel on the high seas has by international law been piracy for ages. Later conditions have applied the law to lakes. Why should it not apply to commerce by rail as well as by water? Make it piracy to obstruct or destroy cars loaded with merchandise, and make it mutiny for a crew of railroad employes to refuse to obey orders as it long has been with employes on ship board, and we will never see cars loaded with goods and stock, men, women and children abandoned by their crews in the midst of forests or swamps or at the yards.

TECHNICAL EDUCATION IN THE BUILDING TRADES.

A young architect said to an elder Brother: "I will have an easier time during my career than you have had during the earlier years of your work; your experience has had largely to do with uneducated workmen. Mine will be with those who are possessed with not only of a fairly good education, but also with those who have had special technical training in branches suited to the building trades." This statement was called out by an everyday experience in an architect's office. A workman came in to ask some questions about a plan, every one of which were answered by reference to the plan itself. There was on the sheet a drawing to the scale of a quarter of an inch to the foot, and full sized details of each particular part. The architect went over the details and patiently explained every point as was necessary, for the man who was acting as foreman was unable to understand a carefully prepared drawing. It was necessary that he should be made to understand it. Another lamentable fact in connection with building workmen is that those who are engaged in special branches have so little knowledge or interest in the work of those in other branches. More often than otherwise, the bricklayer is wholly uninterested in the work of the carpenter. He shows no regard for, nor does he care about the details of the work of the other mechanics associated with him on the job. It would be a very wise thing if the builders engaged in the various departments could be brought together to attend simple, direct lectures upon various details of a

builder's work, given by those who have a general knowledge of the various parts. The result would be to the benefit of all. It would certainly lessen the burden of the architect, help the owner by affecting the quality of the work, and lift great responsibility from the foreman and the general contractor. Technical education will in time develop great results, but a plan of this kind would largely help those who are now engaged in the building lines.

BRICKMAKERS SHOULD BE BRICK USERS.

In another column we print a communication from one of our readers in which he takes strong grounds against the habit many brickmakers have of disregarding their own building material in the structures which they put up for themselves. This complaint is not altogether without justification, and it would appear that our friend is himself a sinner in this respect. He acknowledges to having built a "half and half" house because of his contact with a chattering architect who persuaded him that half shingles and half brick was cheaper than all brick. This is both true and untrue. The first cost of a half and half house is undoubtedly less than one which is all made of brick. As to the ultimate cost, there can be no question. The life of such a building is the life of its weakest part. Its woodwork requires constant repainting and even with the best of care is subject to decay. The life of the building is not the life of the brickwork, but rather that of the decaying part—the woodwork. After all, our friend has done no better than those who build frame buildings. Consistency is a jewel.

WOE IS GATES!

As we are about to go to press, a harrowing (swallow) tale of woe comes from Chicago to the effect that the shadow of deep tribulation and sorrow shrouds in gloom the usually unclouded brow of our beloved Gates.

The details are meager and somewhat contradictory, but we gather from a hurriedly written autograph letter from a mutual friend, who ought to use a typewriter, that on a fated evening, during the recent riots, some heartless scoundrel invaded the beautiful terracotta home of W. D. Gates, at Hinsdale, ransacked the whole house and carried

off nearly every thing of value, including Will's far famed and long-reaching dress suit.

A corps of expert detectives were at once set to work on the case, but as yet nothing but clews have been discovered, and it is feared that the suit has been lost to Gates forever. He is bearing up under the great weight of woe manfully, but it is feared by his friends that he will never be himself again if his clothes are not recovered, for he prized that dress suit above all his earthly possessions.

To a friend who was trying to offer consolation, he said in tones of grief that brought tears to the eyes of those who heard it:

"It's awfully kind of you, D. V., to come and sympathize with me, but I can't stem this tide of grief 'til I get hold of that blamed thief. Oh! had I but a photograph or two, of that dress suit I used to loan to you. Leave me now to bear my loss alone; you make me tired," then collapsed with a groan.

And it was evident to those about him, that his mind wandered back to scenes of Auditorium triumphs when he and his dress suit held that vast audience in speechless admiration.

Poor Gates, his only consolation now is that he has the heartfelt sympathy of every clayworker in the land, and that henceforth dress suits don't go at N. B. M. A. Conventions, no how.

THE DISTURBING FEATURE OF THE PRESENT STRIKE.

All owners of property, the humble householder as well as the wealthy capitalist, may find the greatest cause for alarm in the readiness with which the labor of America follow the dictates of labor agitators. A few years ago, say four or five, one would have said that a strike of the magnitude of that brought about by the boycott of the Pullman Company, was an impossibility, and out of all reason on its present basis. It is the strength of it, the general unanimity of purpose, the sympathy which it receives from the large mass of the people, and the readiness with which organized labor acts that makes it alarming. If such organizations acted intelligently or if their leaders were educated and thoughtful men, there would be little to fear. The faculty of organization seems to be highly developed, while that of accurate reasoning is stunted, making a dangerous combination.

TRADE LITERATURE.

FOR THE FIFTH time in as many years it is our pleasure to announce an addition to our little family of clay journals. The interesting event occurred at Chicago the first inst. and the little stranger seems sufficiently robust to warrant the hope that it will survive the diseases and vicissitudes of infancy and in due time grow to formidable proportions. Its name is *Brick*, and like each of its three or four Chicago predecessors it is to be "the leading paper in the field," for so its publishers declare. The first issue is very creditable and consists of one hundred pages, half the size of the *CLAY-WORKER'S*, about equally divided between advertising and reading matter; that is, there are 27 pages of display ads., 15 pages of reading notices and 57 pages of straight reading matter and cuts, the latter being the equivalent in space of 28½ pages of the *CLAY-WORKER*, or little more than three-fourths of the amount of reading matter contained in this journal. The cover pages are printed in two colors (black and red) the title being quite attractive and calls vividly to our mind the initial number of the *CLAY-WORKER*, issued eleven years ago, the "scheme" of which was very similar, thus showing that great minds do sometimes take the same course. *Brick* will be issued monthly and the subscription price is one dollar a year. We wish the publishers, Messrs. Windsor & Kenfield, all the success their efforts deserve.

WE ARE INDEBTED to our esteemed cotemporary the *British Clay-Worker* of London for a valuable book on "The Manufacture of Glazed Bricks and Glazed Sanitary Ware." The subject is treated intelligently and in a practical manner making the work a valuable hand book for those wanting information in regard to the manufacturer of enameled ware. For full description see ad. on page 63, or write to the publisher, H. Greville Montgomery, 222 Strand, W. C., London, England.

FROM OVER THE BORDER comes a handy little pocket catalogue of terracotta and plain, moulded and ornamental pressed brick, manufactured by Taylor Bros., Don Valley Pressed Brick Works, Toronto, Canada. Besides the cuts of several hundred different designs of ornamental brick and an elaborate price list of same, this little book contains important suggestions to architects and builders. We presume a copy will be

mailed free to any of our readers on application.

"LETTERS FROM CLAYWORKERS" is the title of a dainty pamphlet being sent out by the Decatur Leader Manufacturing Co., Decatur, Ill. It contains a number of testimonial letters from brick and tilemakers using their machinery successfully. A copy will be mailed free to any clayworkers favoring that firm with their address.

WE ARE IN RECEIPT of a copy of the Berlin, (Ont.) *Daily Record* in which there is a very interesting account of the Wilford Continuous Kiln which is in operation on the yard of Messrs. Bramm Bros., near that city, turning out 25,000 brick a day in a manner and at a cost very satisfactory to them. This kiln is now doing good work at several other points in Canada, and Mr. W. A. Wilford the inventor proposes to introduce them in the States. To that end he solicits correspondence from any one interested. See his ad. on page 10.

"BRICKS, HOW TO MAKE 'EM," is the catchy title of a handsome folder on the front page of which is shown a splendid cut of the U. S. Brick Press, a full description of the machine and its workings is given, followed by testimonial letters from a few users. Mr. Oswald Kutsche, proprietor of the U. S. Brick Press Works, 72 W. Wash. St., Chicago, writes that he will be glad to send a copy of the folder and give any other information regarding their machinery to parties interested.

"MOST MEN'S HEARTS are Centered on Things in Earth!" This declaration in bold black letters attracted our attention to a leaflet recently received from J. C. Steele & Son, Statesville, N. C., which on further examination proved to be a brief description of a new stiff clay brick machine and an automatic cutting table of novel design which they now offer to the trade, a cut of which appears among our advertising pages. Write them for a copy of the circular if you are interested and they will be pleased to respond promptly.

TECHNICAL EDUCATION for Clayworkers is at last made possible by the establishment of a branch at the Ohio State University which provides for an industrial course in clayworking and ceramics. The department will be under the direction of Prof. Edward Orton, Jr., our well known contributor who is peculiarly fitted for the position being a practical brickmaker as well as a

proficient scholar and an energetic worker. Prof. Orton is now sending out circulars announcing the requirements for admission to the School for Clayworkers, outlining the course of study and indicating the cost of attendance, etc. Those interested can obtain full particular by addressing Prof. Edward Orton, Jr., Director Department of Ceramics and Clayworking, Ohio State University, Columbus, Ohio.

ONE CAUSE OF THE DISSATISFACTION AT PULLMAN.

One feature of the general scheme of the founders of the town of Pullman is not calculated to develop a condition of satisfaction and contentment on the part of the employes. There are clean streets, good sanitation in the homes and their surroundings, and pleasant buildings in which to live. The shops are well arranged and the hours of labor not unsatisfactory. Yet there is denied to those who live in that community that which is the ideal of all true American families—a home of their own. The employes are not allowed to own property in Pullman, but are obliged to rent dwellings from the Company. This develops both a positive and negative condition of unrest. Positive, because it removes from the workmen the possibility of satisfying his ambition to own a home; negative, because it removes from him that spirit of thoughtfulness and conservatism which comes with the ownership of property. This is a vital weakness in the Pullman organization and one of sufficient importance to result in its destruction as a successful business enterprise, regardless of what now appears to be its great advantages in the business world. During recent years our own city has been almost entirely free from ravages of destructive strikes. It is said that eighty-five per cent. of the residents of this city own their own homes. The danger of social disorders is minimized by this condition.

'Tis said a woman's letter is never complete without a postscript. However that may be, we know that many of our readers could make their letters to our advertisers much more satisfactory by adding this short postscript:—"The CLAY-WORKER." No explanation will be necessary; they will understand and thank you for the information, as they like to know the source of inquiries.

IN JULY.

IT'S so tarna, roarin' hot
 Things are sizzlin'. Ain't no air
 Sturrin'; over in the lot
 All the critters huddlin' there
 'N under one ole spindlin' beech
 There's one locust somewhere round
 Grindin' out a gaspin' screech,
 An' there ain't no other sound.
 I've fetched out a rockin'-cheer,
 An' a mug o' lemonade,
 An' a pa'm-leaf fan, out here
 By the laylocks, in the shade
 O' the north wing; got my vest
 Off, an' barefoot—folks have be'n
 Gawpin' at me—an' I'm jest
 Thinkin' 'bout cool things; 'bout when
 I was up in Idyho
 Oncet, an' druv ten solid mile,
 An' it twenty-nine below
 One my ears would freeze awhile,
 An' then t' other; got my nose
 Nipped, an' fingers, two er three;
 Biggest part o' me was froze.
 What few folks I met, there'd be
 Great white frost-bit spots somewhere;
 I was 'feerd my hoss 'd freeze
 Right in his tracks; fer his hair
 Sort o' riz up, an' his knees
 Fa'rly shook; I didn't know
 Whether we'd get home er not
 'Fore we friz there in the snow
 Stiffer'n pokers—Goi! it's hot!
 —Emma A. Oppen, in Puck.

IT'S HARD TO DRAW THE LINE.

TO steal from out your neighbor's purse,
 Is wrong, you will admit,
 But if in trade you ruin him,
 Is isn't wrong a bit.
 To take his coat from off his back
 Would be considered mean,
 But if you took his hide at law
 It then would proper seem.
 At cards just for a little game
 You sit with friends at play,
 The "ante" is so very small
 Where is the harm you say?
 Though each would scorn to steal a house
 When for another made,
 They calmy pocket earnings, which
 For shelter should be paid.
 Decollette is very neat,
 If shoulders plump and fair
 Can be displayed, the better, when
 A low cut dress you wear,
 But just how high, or just how low,
 'T would be a modest sign,
 Depends upon the point of view
 From which you draw the line.
 When tripping gayly down the street
 You raise your dress, that so
 Your skirts unspotted may remain,
 It's only neat you know,
 But if above the ankle or
 The boot-top you incline,
 Exactly where's the point to stop,
 It's hard to draw the line.
 At Narragansett, on the pier,
 Or strolling on the surf,
 We note the modest damsels
 We have met upon the turf;
 Compare their city manners
 And vivacious winning smiles,
 With races, dances, balls and wine,
 It's hard to draw the line.
 A city girl for exercise
 Who'd take a stroll at night,
 Would be considered vulgar
 And in all ways "not right,"
 Who if in bathing costume
 At the seashore sipped some wine,
 Would be the most admired, so
 It's hard to draw the line.
 —A. E. H., in Truth.

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Rock-faced and Roman brick, red and brown, granite, mottled and other colors made on order.

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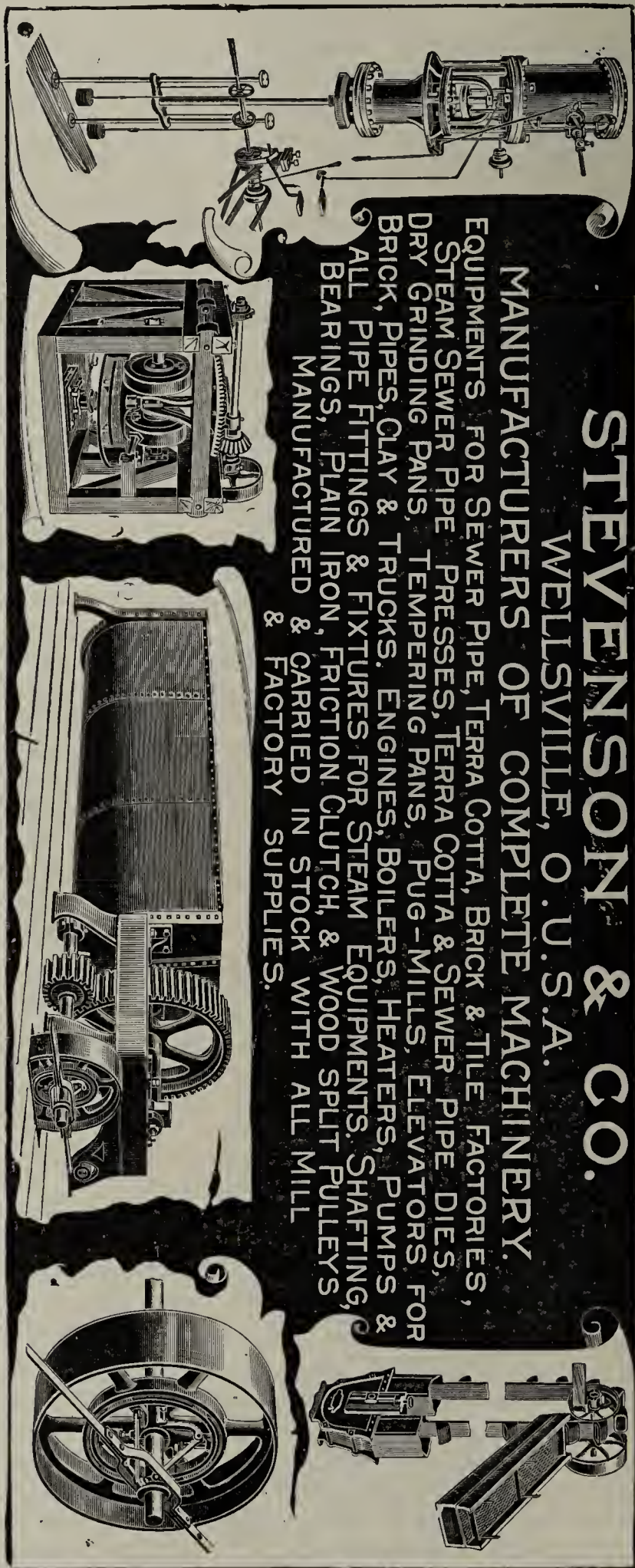
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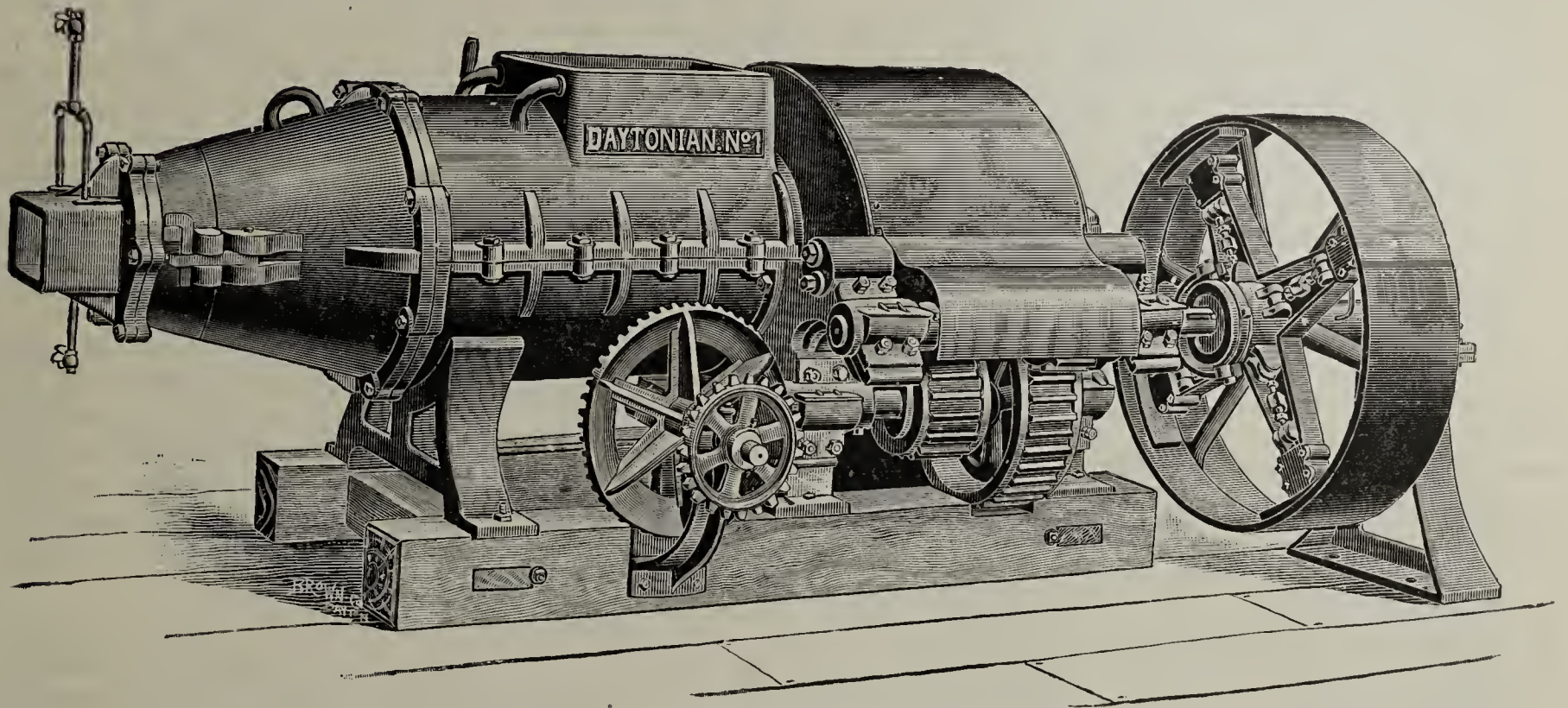


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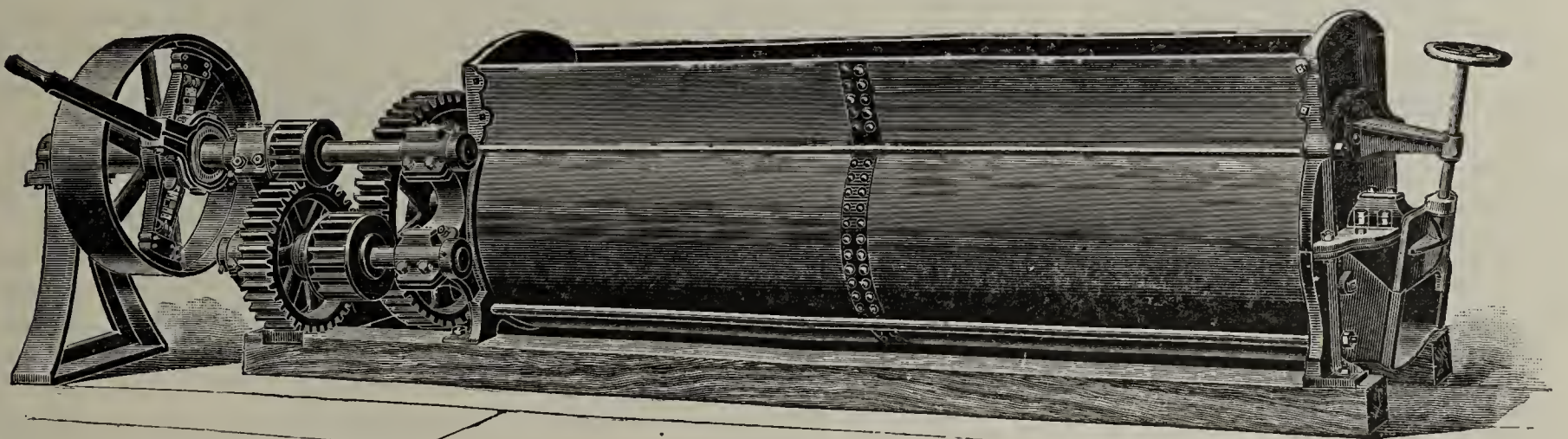
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Re-Presses* Adapted to
ALL USES.

C. W. RAYMOND & CO., Dayton, Ohio.

A BUSINESS EXPERIENCE.

Why is it, we said recently to a brick contractor of a thriving city, that a new brickmaker can come into your community and practically monopolize the best part of the business? That's easy, said the bricklayer. The brickmakers of our city have "played horse" with the brick contractors for years. We would go to them and make a contract for brick. Other contractors would come along and buy at a slightly advanced price, until the market was oversold. The first buyer, the one who purchased at the lower price, would be the last one to get the brick. He would drag along through the season and in the end come out at the little end of the horn. Deliveries would be irregular and unsatisfactory. This has been going on for years. Now we have brick delivered to us by a business man. There is nothing phenomenal about him. If we buy two or three hundred thousand brick from him, to be delivered at a specified time, we know to a certainty that we will get them. That is something we never did know before. Hence, the prosperity of our new friend and the croaking of old slow coach.

LIABILITY OF CARRIERS FOR BREAKAGE OF TERRA COTTA.

THE Supreme Court of Alabama has rendered a decision in the case of *McCarthy v. Louisville & Nashville Railroad Company*, which will greatly interest shippers of terra cotta and similar freight. The basis of this action was the failure of a railroad company to deliver some carloads of terra cotta in good condition. The principal defense set up was that the shippers, or their agents, improperly and negligently loaded the terra cotta on the cars in which it was to be, and was, carried, and that such improper loading proximately contributed to the alleged injury complained of.

The contract of carriage was an unconditional common law contract, one without reservations or exceptions. Such being the case, the court holds that, by its terms, the carrier insured the safe delivery of the terra cotta to the consignee, and assumed liability for any loss or injury arising from any cause except the act of God, the act of a public enemy, or, to a certain extent, the fault of the owner of the terra cotta, or his agent.

The strictest proof of all possible care

on the part of the carrier in the transportation and delivery of the freight is, under such circumstances, no defense. The third possible exception to the rule of absolute liability, while it may consist merely of negligence imputable to the shipper or his agent, is, in no sense, and bears little analogy to, the defense of contributory negligence available in actions against common carriers of passengers, sometimes in actions against carriers of live stock, and even, it may be, in actions against carriers of goods,—inanimate things—under contracts of affreightment which limit liability to loss or injury occasioned by the carrier's negligence.

Nowhere in the books, it is said, can any reference be found to the defence of contributory negligence against the common law liability of common carriers of goods. Therefore, the court holds that in such a case as this, the consignor or consignee, is entitled to recover judgment unless the carrier introduces evidence to remove the presumption of negligence on its part, even although the improper loading of the freight contributed to its injury. In this case the evidence tended to show that the terra cotta was improperly and negligently packed or loaded by the shipper, who sold same to consignee who instituted the suit, and it afforded an inference, or, rather, room for an inference, that but for this fault of the seller and consignor, the injury would not have occurred.

To this state of facts the rule above stated was held applicable. If the improper loading was apparent—that is, was a fact which addressed itself to the ordinary observation of the carrier's servants,—or if it was not apparent, but the carrier was yet guilty of negligence, but for which the injury would not have happened, the carrier, it was said, would be liable, notwithstanding the negligence of, or imputable to, the consignee.

AN AMERICAN CLAY DRYER IN ENGLAND.

"It at once occurred to our representative," says the Editor of the *British Clay-Worker*, speaking of a test of the Cummer Clay Dryer, "that there might be a danger of driving off the water of hydration as well as that of porosity, in which case the clay would be 'perished,' as the clayworkers say, and its strength and plasticity seriously impaired. Accordingly, Mr. Cummer and

Mr. Erith, who were present, gave him leave to take away any portion of the dried clay for examination. This was done, and the sample analyzed in the laboratory, with the result that the clay, though dry, was found to be absolutely uninjured. So much for the scientific opinion, and in addition it may be noted that the proprietors of the works that our representative visited, where this machine is in operation, are well pleased with their investment, and none are more competent to give a practical opinion."

DETROIT NEWS NOTES.

The building of the Central High School, requiring 3,000,000 brick, has been abandoned owing to the great protest against the site. The medical faculty were loud in their objection, claiming it to be too near Grace Hospital. A strip of land about 200 feet divides the two.

The Detroit Brick Manufacturer's Exchange, at a recent meeting decided to drop the price of brick, offering stock at \$6, and common at \$5. It is hoped these prices will encourage the market.

It is estimated there are 45,000,000 brick on the market with very little demand.

Dennis Burke is erecting a new substantial kiln shed on some unoccupied ground, which he will stock. His main shed is already filled.

G. H. Clippert of C. Clippert & Son, has just erected an imposing brick residence.

A number of plants began operations May 15, but by the end of July it is safe to say they will shut down for the season, unless there is a huge demand before that time.

Brick were steady during the fall and winter months, selling stock at \$7, and common at \$6 to a very dull market.

The Huyett & Smith Mfg. Co., are doing some work in the brick dryer line despite the dull times. However, they are not crowded with orders and are taking advantage of the opportunity to overhaul their extensive factory and make some needed repairs and additions, so that when the revival does come, as it surely will in the near future, they will be ready to do their full share.

DOROTHY DALE.

Geo. Ross, P. O. Box 87, Uhrichsville, O., writes that he is going into the fire brick business and would like to receive estimates of cost of plant including engine, boiler, pug mill, dry pan, etc.



Engraved by
Baker-Randolph Co., Indianapolis.

THE HERO.

Specimen Illustration by Half Tone Process.

WOOD ENGRAVING.

BY SHARPE TOOLE.



THE first to achieve results of any importance in the making of blocks for multiple reproduction was Albrecht Dürer, an artist of distinction in his time. His method consisted of the simple reproduction in relief of a line previously drawn by pen, brush or pencil. His work, therefore, had the same appearance as a modern line etching, barring the style or technique which was peculiarly his own. About that time Europe became convulsed with political turmoil, which effectually crushed out all intellectual advancement, and engraving as an art was lost for more than a century. This condition continued until its renaissance by Bewick, an Englishman, whose method was directly opposite to all previous experimenters. The novelty of his style and the merit of his work attracted the attention of the world. Although crude in the extreme, judged by the modern standard, his prints are yet a most interesting study to the best engravers of our time.



Bewick, then, was the father of wood engraving, as his method, the intaglio or white line, is the same as used by all schools of wood engraving of the present day, while Dürer's method ceased to be an art, having since been reduced to merely a chemical process,

attaining better results with a great saving of time and labor.

In the latter part of the "seventies" occurred another sensation in the art world when a few American wood engravers broke away from the established rules of technique, an act which proved to be the birth of the so-called "American School of Wood Engraving," which is now acknowledged by all to have reached the highest standard in the history of the art.

While the American engravers of distinctly artistic subjects were doing so much toward the advancement of wood engraving, those who labored in distinctly commercial lines were not lagging, but kept well up with their brothers. The result is that commercial illustration is also of a very high standard. The most intelligent of manufacturers have discovered that excellence pays just as well in one place as another, and after the best mechanical skill has produced an article, it is yet of the highest importance that the merits of that article be properly shown to the public, especially as the business methods of the day require much buying by other means than personal examination. It is, then, important that illustrations be accurate and attractive.

Along with the advancement of illustration necessarily came that of electrotyping and printing, as greater skill and care were required in the proper duplication of the engraver's work. The exquisite results obtained in these lines are well exemplified in the leading American magazines. The work of making printing blocks, their electrotyping and proper manipulation upon the printing press, is so closely allied that many houses throughout the country have



equipped themselves for the entire work, making themselves independent of others, and able to fill such orders at a great saving of time and inconvenience to themselves and customers.

The wisdom of this plan asserts itself at once to any one when it is seen that the engraver who has planned certain effects can follow up the work as it advances to each department and by suggestive criticism secure a result in the finished proof-sheet not probable otherwise.

In commercial illustration, too many are content with good engravings, or good printing, or good paper, alone, in the preparation of advertising matter, when any one without the other two makes first-class results impossible. Better all bad than part good and part bad. But, better still, is to have all first-class, thus not only elevating the standard of the matter but doing justice to the article sought to be shown.

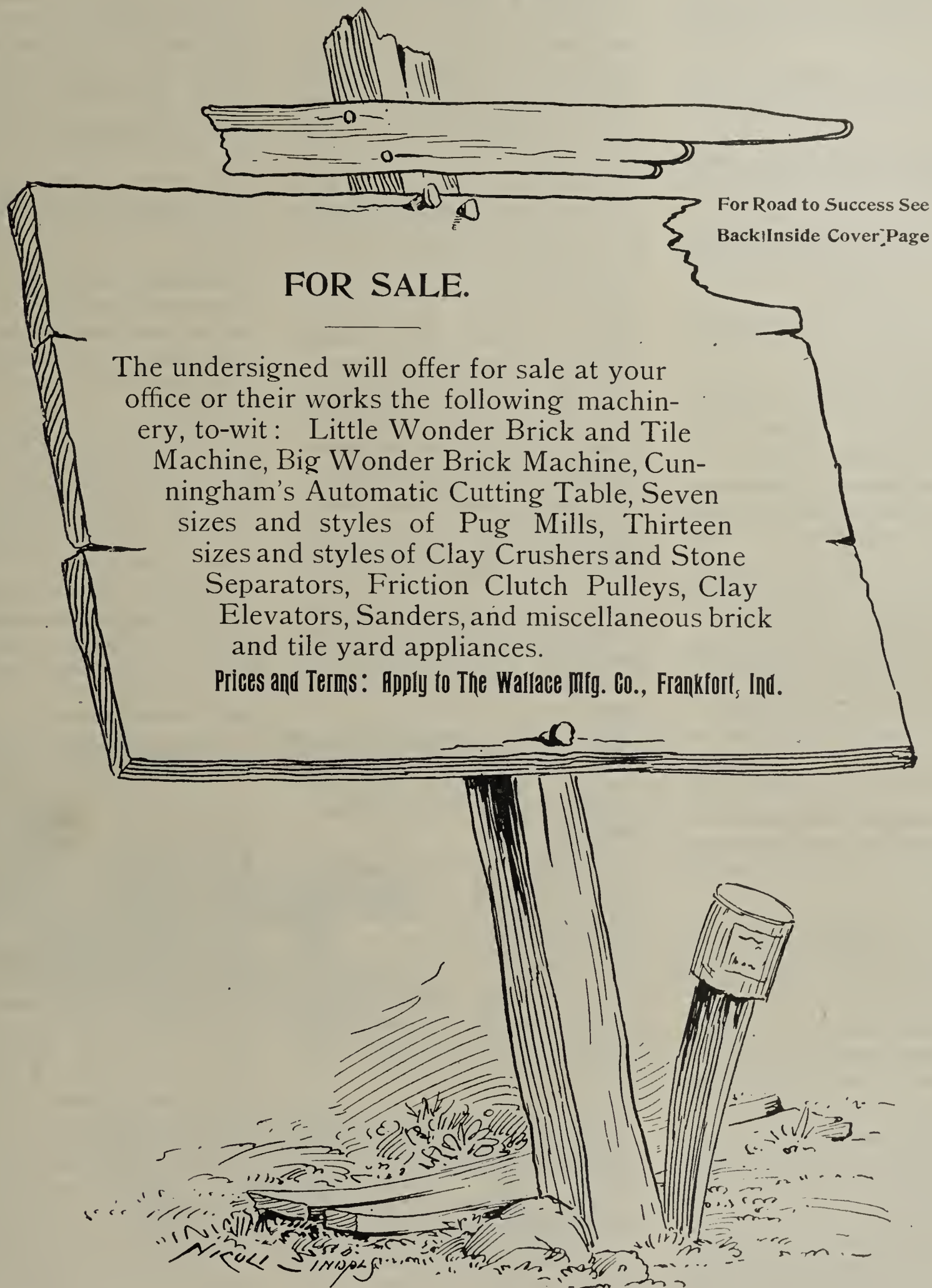
The buyer will get his first impression of an article from a catalogue.



Skilled workmen are consulted, and certain selections are made because they "look the best." The order of purchase is mailed, and in due time check for payment. The illustration made the sale. And if you should look at the illustration closely, you would, no doubt, find, snugly tucked away in some corner, the imprint of



of Indianapolis, one of the most prominent of the great Western houses doing designing, engraving, electrotyping, printing and binding, all in one establishment.



EDITORIAL NOTES and CLIPPINGS.

Brick pavements will be put down at Battle Creek, Mich.

The tile factory of Ulrey Burkholder, Teegarden, Ind., was burned the 29th ult.

The Ocean Springs (Miss.) Fire Brick Co., will make some improvements in its plant.

Reid & Son, Ashtabula, Ohio, suffered a loss of 10,000 green brick on their yard by storm.

The Hocking Clay Manufacturing Co., has been incorporated at Logan, Ohio. Capital stock \$100,000.

The Rhodenbaugh pottery at Benton, Ark., the largest pottery in Saline Co., burned down the first inst.

A fine bed of shale suitable for first-class paving brick is said to have been discovered at Monongahela, Pa.

Mr. Walter Sullivan, a pioneer brick-maker of Lockland, Ohio, died at his home in that city the 7th. inst.

R. M. J. Zahnizer, Greensburg, Pa., has purchased the Rohrbacher & Tox Brick Works, near Grapeville, Pa.

All of the brick plants at Canton, O., are running full time again and the outlook for a good year is favorable.

Mr. F. E. Frey, formerly of Bucyrus, has been at Canton, Ohio, for some time perfecting machinery designed by him.

The Galesburgh Paving Brick Co., have been compelled to close down, being unable to get oil on account of the railroad strike.

If you have something you don't want, or want something you have not got, advertise in our "Wanted, For Sale, Etc." columns.

The Simpson Brick Press Co., Chicago, Ill., write that business is good with them and that, in fact, they are behind with orders.

John Murray has purchased the brickyard on the estate of Jules Borden, Cohoes, N. Y., and will take possession immediately.

Several of the fire brick works at Uhrichsville, Ohio, have started up again after a temporary shut down occasioned by the coal strike.

Frank D. Brown has removed his office from Major Block to Room 817 Continental Bank Building, Chicago, Ill. He

writes that he has a fine location and will be pleased to have his brickmaking friends call when in that vicinity.

L. C. Barnes, Bloomington, Ill., wants to purchase a good second-hand dry press (Whittaker make preferred). Also second-hand dry pan.

If you are a progressive clayworker and want to keep abreast of the times, you should subscribe for the CLAY-WORKER—\$2.00 a year.

J. P. Norton is turning out 80,000 brick per day at his yard at York Corner, Me., and is shipping his brick as fast as they can be burned.

Frank W. Clark, of Rome, Ky., writes that he is going to start a brick and tile plant and would like to purchase some good second-hand machinery.

The Nay Aug Slate Brick Co., Scranton, Pa., has been organized, with a capital stock of \$65,000. They will manufacture both building and paving brick.

The great pottery strike at Trenton, N. J., which began last January, is at last over, and the factories will commence operation without further delay.

Jas. H. Horner, Astoria, Ill., informs us that he has had to put on an additional force of men this season in order to enable him to keep up with his orders.

The "Frey" brick machine and repress are to be used in the new plant of the Cleveland Brick Co., at Canton, Ohio. These machines are built by the Bonnot Company.

The Boston Tile & Fireplace Co., has been incorporated at Portland, Md., with a capital stock of \$50,000. They will manufacture and deal in brick, mosaic tiles, etc.

Geo. W. Robinson, senior member of the firm of Geo. W. Robinson & Bro., brick manufacturers of Baltimore, Md., died the 6th. inst, after a short illness of but two weeks.

H. S. Purple, manager of the Columbia, (Pa.) Brick Co., while working about the yard met with quite a painful accident, his left hand being caught in some machinery and was badly crushed.

The Rome Brick Co., Rome, Ga., will add a new Columbia dry press machine and a complete outfit for making brick by that process, furnished by M. F. Williams & Co., of St. Louis, Mo. When this part of their plant is completed, they will be able to turn out from their

main plant soft mud, stiff clay and dry press brick and are seriously thinking of putting in an equipment for making vitrified pavers.

If after making improvements in your yard this spring you find you have a lot of second-hand machinery which you have no use for, get rid of it by placing an "ad." in our "For Sale" columns.

The Ramsey Brick Co., Lexington, Ky., expect to remove their present plant to new quarters ere long, and are investigating the dry press process with a view of adopting it if their clay is suitable.

The Monarch Brick Co., has been incorporated at Glen Easton, W. Va., for the purpose of manufacturing brick and terra cotta. H. H. Briggs, J. W. Gunn, J. C. Wiedman and Jennette M. Gary are interested.

Mr. E. D. Keplinger, whose portrait appears elsewhere in this issue was formerly a dry goods merchant at Canton, Ohio. He is now the manager of one of the largest paving brick plants in the country.

A company has been organized at Rockdale, Tex., for the manufacture of fire brick. They have a capital stock of \$30,000, and will put in the latest improved machinery, etc. Mr. Joe Loewenstein is interested.

While feeding clay into a crusher at A. H. Lupton's brickyard in Bridgeton, Pa., Geo. Green, a laborer, slipped into the machine and his foot was caught between the heavy rollers and so torn that amputation was necessary.

The Union Co-operative Pottery Co., composed of potters from East Liverpool has purchased the Jno. R. Wylie pottery plant at that place and will have everything ready within two weeks to give employment to one hundred men. Fred. G. Croxall is president, Jos. T. Manar vice-president, F. W. Fowler, secretary and treasurer and Wm. Smith general manager.

The New Jersey Terra Cotta Works at Perth Amboy, N. J., were destroyed by fire the 27th ult. The origin of the fire is unknown but it is supposed it was caused by sparks from a kiln. Within fifteen minutes after the fire was first discovered the walls fell, the employes barely escaped, some of them jumped from third story windows into oak trees. Mr. Hansen the superintendent, estimates the loss at about \$200,000.

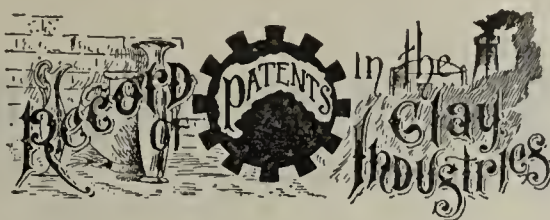
UNDESIRABLE COMPANY.

Somehow or other there is a prejudice against pirates. Nobody seems to like them. They usually sail in big boats and look well enough at a distance, but no one cares to cultivate a close acquaintance with them. We suppose this is largely owing to the way they have of taking what belongs to others and appropriating it to their own use without so much as saying, "By your leave, sir."

Some pirates live mostly upon the high seas and make no pretensions to gentility. We have a great deal of respect for this class, compared with a specie of land pirates who sail under false colors, that they may take the property of others and claim and use it as their own.

It is not a creditable thing for some of our contemporaries to pirate our matter and the matter of other papers as they do commonly and with no credit, but we suppose there is no help for it. However, we are free to say we dislike pirates of any ilk and particularly literary pirates.

Wm. Duvall, a prominent brick manufacturer and one of the oldest residents of Georgetown, D. C., died in the 77th year of his age at his home near that city June 25th.



Complete specifications with drawings of any patent may be secured from Edward C. Weaver, Councillor and Attorney in Patent Law, 900 F. Street, Washington, D. C. Enclose fifteen cents in stamps to cover cost of each copy, and order by the number of the patent.

520,868—Process of Making Enameled Brick, etc., by Andrew M. Strusholm of Perth Amboy, N. J.

520,869—Dry kiln for Pottery, by John C. Titus of New Bremen, O.

521,196—Brick Truck, by Dwight M. Warner and Charles E. Hammond of Sparta, Mich.

521,349 — Brick Machine, by Henry Stuckey of Bucyrus, Ohio.

Design Patent 23,391—Tile, by William B. Hayden of New York City.

A new and enterprising company has been organized in the City of Brotherly Love for the purpose of establishing in that vicinity an extensive dry press brick manufactory. They will be known as the Knickerbocker Brick Co., and will operate one of the Ross-Keller Brick Machine Company's largest presses. The rest of the plant will be in keeping and they hope to soon be making a high grade of front and ornamental brick.

NEW ADVERTISEMENTS.

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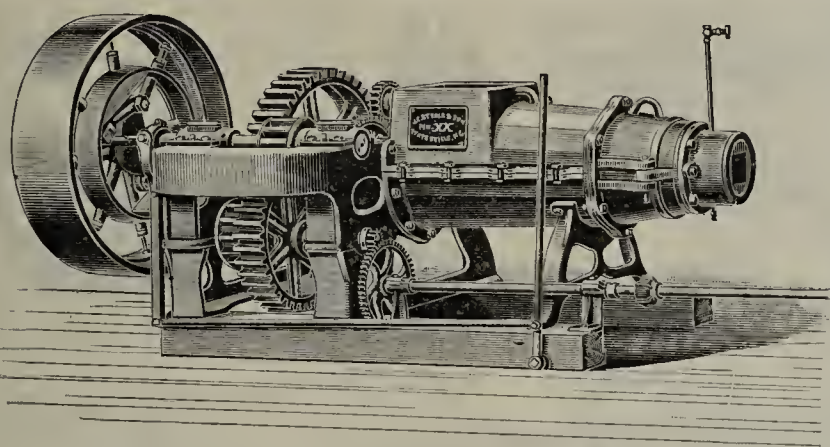
Jas. Lucas, a pioneer brickmaker of Deering, Maine, occurred at his home recently at the age of 67. He owned a number of yards and was actively engaged in operating same at the time of his demise.

THIS is the time when we revel in roses (according to poets and such men as those is); when breezes are balmy and skies ever blue, and nothin' on earth for a fellow to do, but to lie on his back in the shade of a tree, and hark to the hum of the blundersome bee.—*Art in Advertising.*

A St. Louis subscriber writes us that another child is born to the old original Hydraulic Press Brick Co., of St. Louis. It is the New York Hydraulic Press Brick Co., located at Canandaigua, N. Y. E. C. Sterling, Pres.; H. W. Eliot, Sec'y and Treas. Capacity 5,000,000 face brick. Will make red, buff and mottled brick, and are going for the N. Y. trade. E. J. Burke will be Gen'l Manager. Work has begun, clay is being gathered and will be in full flush by spring.

A. T. Blatchford, of Blatchford, Meeds & Co., Verona, Pa., in renewing subscription, says that firm is building a new plant which will be equipped with the latest improved machinery and appliances, the order for which has been placed with Messrs. Stevenson & Co., Wellsville, Ohio. They will manufacture both building and paving brick. Mr. B. closes his communication by saying, "Your valuable journal is fully appreciated by us. We think it the most helpful assistant of the kind to be had."

The Only Brick Machine Manufactured in the South



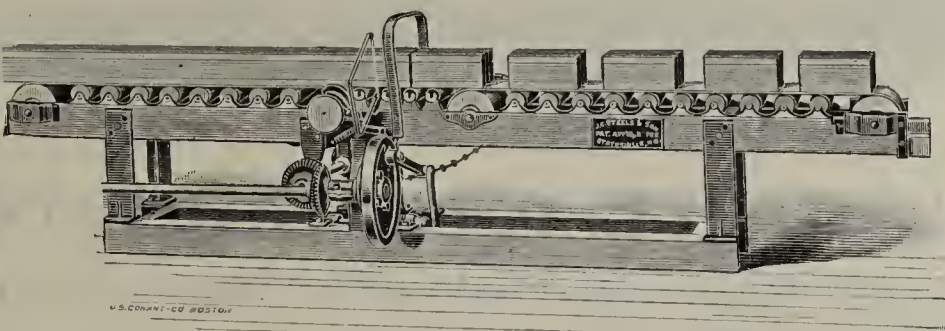
THE accompanying cut represents our Two XX Machine, which embraces all modern improvements. It is very heavy and strong, having a daily capacity of 15,000 to 25,000 brick a day.

This machine with our Automatic cutting device, which is new, novel and efficient, makes one of the best equipments for a plant of moderate capacity. Makes either side or end cut brick six days in the week.

If you want to make brick economically don't fail to get our terms and prices.

We confidently believe we have the best as well as the cheapest brickmaking machinery now on the market.

We can furnish everything required about a first-class plant including our celebrated Brick Truck for Portable Hack.



Also Kiln Castings, Pug Mills, Winding Drums, Clay Cars, Switch Frogs, Friction Clutch Pulleys, Brick Moulds, Barrows, Etc., Etc.

Write for circulars, mentioning the CLAY-WORKER.

J. C. STEELE & SON, Statesville, N. C.

NO DEARTH OF 'EM.

Though doughty Dick hath sailed away,
In foreign lands awhile to stay,
We scarcely feel ourselves bereft;
We've such a lot of Croakers left.

—Art in Advertising.

SUPERINTENDENT WANTED. For a clayworking factory in the East. Production, architectural terra cotta, building brick, fire brick, etc. Must be a first-class man. Answer stating age, years of experience, and at what factories.
72 d "EAST," Care Clay-Worker.

NIAGARA FALLS

EXCURSION

VIA

BIG FOUR ROUTE

Tuesday, August 7th,

ONLY \$5 ROUND TRIP

| | |
|-----------------------------|---------|
| Put-in-Bay and Return, | \$ 4.00 |
| Chautauqua and Return, | \$ 5.00 |
| Toronto and Return, | \$ 6.00 |
| Thousand Islands and Return | \$10.00 |

This will be the grandest excursion of the season, running through to Niagara Falls via Lake Shore & Michigan Southern Ry. and New York Central R. R., with solid train of elegant coaches, reclining chair and Wagner sleeping cars. No change of cars at any point and no delays en route going or coming. Big Four Excursionists will not be compelled to lay over at junction points for connections. Tickets good returning on all regular trains within five days from date of sale.

—DON'T MISS IT!—

Call at Ticket Office of

BIG FOUR ROUTE

early and secure space. This will be the First, Last and Best Excursion.

H. M. BRONSON, A. G. P. A., Indianapolis, Ind.

E. O. McCORMICK, D. B. MARTIN,
Pass. Traffic Manager, Gen'l Pass. Agt.,
CINCINNATI.

IMPORTANT IMPROVEMENTS

In Burning All Kinds of Brick.

BRICKMAKERS before deciding upon putting in new kilns or altering old ones, should write to the following address for information. We control the Patents of the **W. A. WILFORD CONTINUOUS KILN**, which holds the lead, also, our Up and Down Draft to meet the requirements of all Brick and Tilemakers. They can be built for one half the cost of any other kiln of the same capacity, and, burns all of uniform hardness and color, and with from 50 to 75 per cent. less fuel. Easy and simple to handle, as every brick can be seen by the burner while burning, therefore, leaving no excuse for bad burns. Results are guaranteed or no money. The leading Brickmakers are using our Kilns with complete success. Our charges are low. We keep expert builders and burners for same.

Write us for Information and Testimonials.

The Wilford Patent Kiln Co.,

CORRESPONDENCE SOLICITED.

TORONTO, CANADA.

Fire Brick

We make a special High Grade Fire Brick (all shapes) for Brick Kiln Construction.

NOT EXCELLED By any. Our quotations will surprise you.
We sell Fire Brick on their merits and their use will prove **AN ECONOMY.** GROUND CLAY IN
.....BULK OR SACKS.

We solicit your favors.

Manufacturers of.....
High Grade Fire Brick for Every Purpose.

THE AMERICAN FIRE BRICK & CLAY CO.,

MINERAL POINT, OHIO.

STRONG, WELL - BUILT, SERVICEABLE STEAM ENGINES

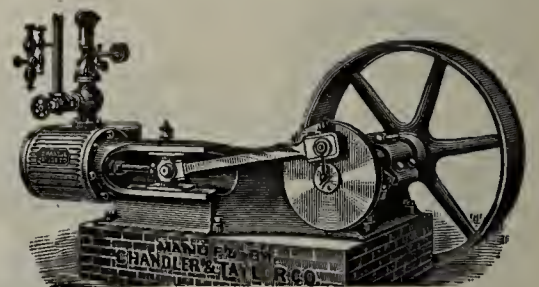
12 to 100 Horse-Power.

Adapted to heavy continuous work. Every Engine tested under full load.

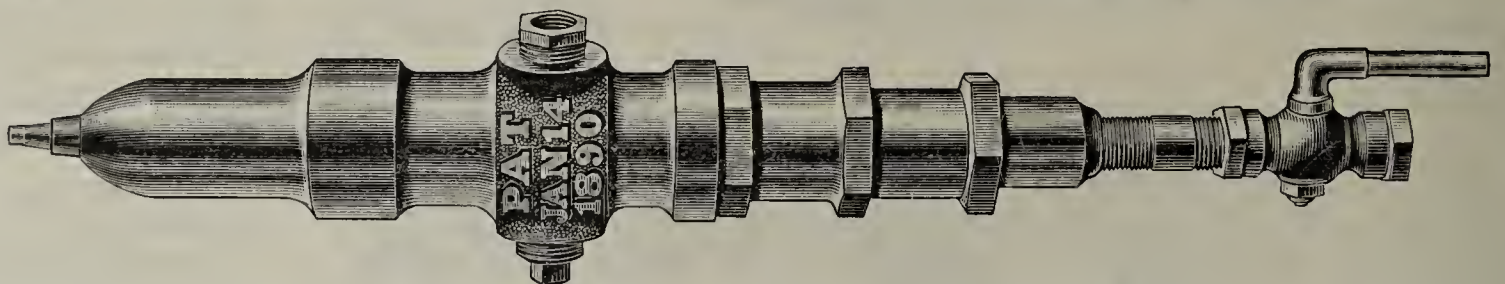
Suitable Tubular & Firebox BOILERS On hand for immediate delivery

For descriptive catalogue address

CHANDLER & TAYLOR CO., - Indianapolis, Ind.



GRAVES'



PATENT (ADJUSTABLE) OIL BURNER

Used by Hydraulic Press Brick Companies at Findlay, O., Chicago, Ill., Toledo, O., Waters Pierce Oil Co., (Standard), St. Louis, Mo., and others.

For particulars write

HYDRAULIC PRESS BRICK CO.,

The Best and Most Economical Burner in the Market.

ST. LOUIS, MO.

DO NOT BUY A

[FOUNDED 1879.]

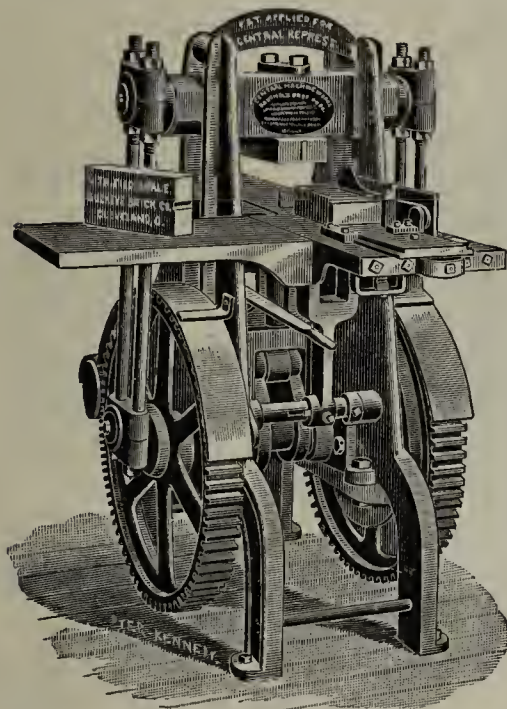
SOFT CLAY BRICK MACHINE

Until You Have Investigated Ours.

Send for Photo.

W. E. TALLCOT & CO., Croton-on-Hudson, N. Y.

REPRESSSES and BRICK MACHINES.



.....

This cut represents one of the most complete Power Represses ever offered to brick-makers.

It has been tested in every way and given entire satisfaction. It has a capacity of 15,000 brick per day.

Our No. 2 Reprasse Double Mould has a capacity of 30,000 per day. They can be seen in full operation at the Buckeye Brick Company's plant at Wickliffe, Ohio.

—MANUFACTURED BY—

CENTRAL MACHINE WORKS,

Send for Circulars and Prices.

226-236 Abbey St. CLEVELAND, O.

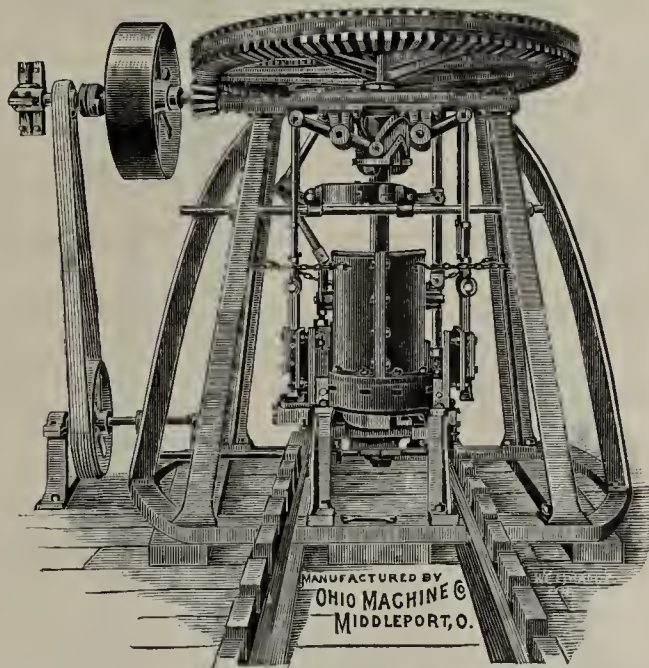
THE "AJAX" BRICK MACHINE

MANUFACTURED BY

Ohio Machine Co.,
Middleport, Ohio.

Under the very Latest Improved Grant-Murray Patent.

This machine is constructed with the object of giving to purchasers the very best results obtainable for the money invested. It is at once Simple, Durable, Convenient, and Easily operated. We claim these machines make the strongest brick in the market, a brick that is very superior for Street Paving and building purposes. Their superior quality as pavers may be ascertained by reference to some of the leading cities of Ohio and West Virginia. This machine works the clay very stiff, pressing all the clay into each brick that it will possibly contain, thus imparting the quality requisite to a No. 1 Paving Brick. We guarantee these machines to our customers, and solicit investigation as to their merits. For further particulars please correspond with



OHIO MACHINE CO.,

MANUFACTURERS.

We manufacture the Grant & Murray Patent Reprasse Brick Machine, pressing 4 brick each revolution and 40,000 per 10 hour day.

Middleport, Ohio

MENTION THE CLAY WORKER

When writing to advertisers

MENTION THE CLAY WORKER.

FOR SALE, WANTED, ETC.

Advertising rates in this column 25 cents a line, or 4 cent a word, each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

FOR SALE. 190 Penfield Dryer Cars, 7 in. long, 23½ ins. gauge, 3 rolls to each wheel. Address MILWAUKEE BRICK & CEMENT CO., 71 d 1003 Pabst Building, Milwaukee, Wis.

FOR SALE. Thirteen thousand good white pine Hacking Pallets, dressed on one side, size 10 inches wide, 35 inches long, 7/8 inch thick. C. & A. POTTS & Co., Indianapolis, Ind. 71 d

FOR SALE. One Brewer Tile machine, good order. One New Departure Tile machine, good as new. One 40 horse-power engine, good as new. One Brewer Crusher, absolutely new. EDGAR M. HEAFER, Bloomington, Ill. 71 d

WANTED. To purchase a dry press of the Whittaker make second-hand, in good repair; also dry pan. Address L. C. BARNES, Bloomington, Ill. 71

SITUATION WANTED. A competent and thorough burner of dry pressed brick, at present employed as head burner by a leading concern, desires similar position elsewhere. Can refer to present employer. Address H. S. H., 732p Care Clay-Worker.

WANTED. Position by practical brick man, having many years experience in the manufacture of mud and dry pressed brick. Best of reference. Address BERT, care Clay-Worker. 81 c

SEND your Chicago collections and legal business to Saylor & Frazer, Attorneys at Law. 171 LaSalle St., (N. Y. Life Building) Chicago, Ills. 612 L

FOR SALE. One Raymond Power Reprasse, daily capacity ten thousand brick. Size of box 8¾ by 4¾. Also several Miller hand presses. Address W. B. HARRIS & BROS., Zanesville Ohio. 61 d

FOR SALE VERY VERY CHEAP. Your choice of the following second-hand machinery (not our manufacture,) in good order: One Auger machine with tile dies to 12 in. and side cut lubricating brick die. One Auger machine with tile dies to 8 in. and end cut lubricating brick die. One Auger machine with side and end cut lubricating brick dies. Two Steam Plunger machines with tile dies to 10 in. Side cut brick dies. Two Smooth Roll Crushers. MICHIGAN BRICK & TILE MACHINE CO., Morenci, Mich. 71 d

A FINE OPPORTUNITY FOR INVESTMENT. At a recent meeting of the directors of the Coaldale Brick and Tile Co., at Coaldale, Ala., owing to the large contract for paving brick awarded them by the city of Jacksonville, Fla., and the prospect of securing many large contracts for vitrified paving brick soon to be awarded at various southern cities, it was decided to increase the capacity of the plant in that direction in order to handle the extensive business now opening up in the Southern cities in the paving line. The treasurer was instructed to offer for sale all or any part of the \$45,000.00 stock now in the treasury at not less than par. Parties who have capital to invest in an industry that will bring in handsome returns, will find it to their interest to confer with the undersigned as to character and value of the company's property and the probable profits to be divided on paving brick. The Coaldale Company is the only one in the South that is manufacturing the highest grades of press and ornamental brick, which they are marketing in several states. JOHN W. SIBLEY, Treasurer, Coaldale, Jefferson Co., Ala. 71 d

SITUATION WANTED, by a man who thoroughly understands the manufacture of art and floor tiles and enameled brick by the *one burn* process.
Address Wm. DOUGLAS, 94 Marietta Road,
62 c Zanesville, Ohio.

WANTED. A place as superintendent by a practical brickmaker of 25 years' experience in all methods of making. Knows how to handle men. References good.
Box 7,
61 c Care "Clay-Worker."

WANTED. Position as manager in enamel brick works by a thorough, practical man. Glazing, enameling and burning white and colors, plastic, stiff mud and dry press made brick in all its branches. Best of references. Address,
R. T. E.,
63 c Care "Clay-Worker."

FOR SALE Very cheap. Two Clay Pulverizers in a No. 1 order. One set of Clay Rolls. One four-mould Dry Press. One Clay Elevator Shafting and Pulleys. A great bargain, if sold together.
Address, M. F. W. & Co.
2 tfd Care "Clay Worker."

FOR SALE. One No. 2 Pott's Disintegrator, in use one month. One up-right Potter's Pug Mill. Address D. CULBERTSON & Co.,
26 c White Hall, Ill.

FOR SALE One Grand Automatic Brick Machine, pallets and racks for 20,000 brick. One boiler and engine; one lot of kiln doors and grate bars, cheap, and in good condition.
Address, X,
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FOR SALE. One 40 h. p. engine, one 20 h. p. engine, two 60 h. p. boilers, one Little Wonder brick machine, one set of Drake rolls, one Drake granulator, one hoisting machine and shafting pulleys complete for a brick plant. Address
THOMAS MOULDING Co., 409-34 Clark St.,
5 tf d Chicago, Ill.

FOR SALE. To Brickmakers. About 1,800 twin pallets, five cars and two transfer cars, Chambers make, for sale cheap. Apply to
THE HERCULES CEMENT Co.,
43 c Catasauqua, Pa.

SECOND HAND MACHINERY. We offer the following second-hand machinery for cash:
One 30-inch by 10-foot iron pug mill, with friction clutch pulley. Good as new.
One Wallace Brick and Tile Machine.
One Ohio Brick and Tile Machine.
One Acme Brick and Tile Machine.
One Hoosier Soft Mud Brick Machine.
One 30 h. p. double vertical stationary engine, in excellent condition.
One Adrian Automatic Cutting Table, in good order.
THE DECATUR LEADER MFG. Co.
s1 tf Decatur, Ill.
See our Advertisement on page 93.

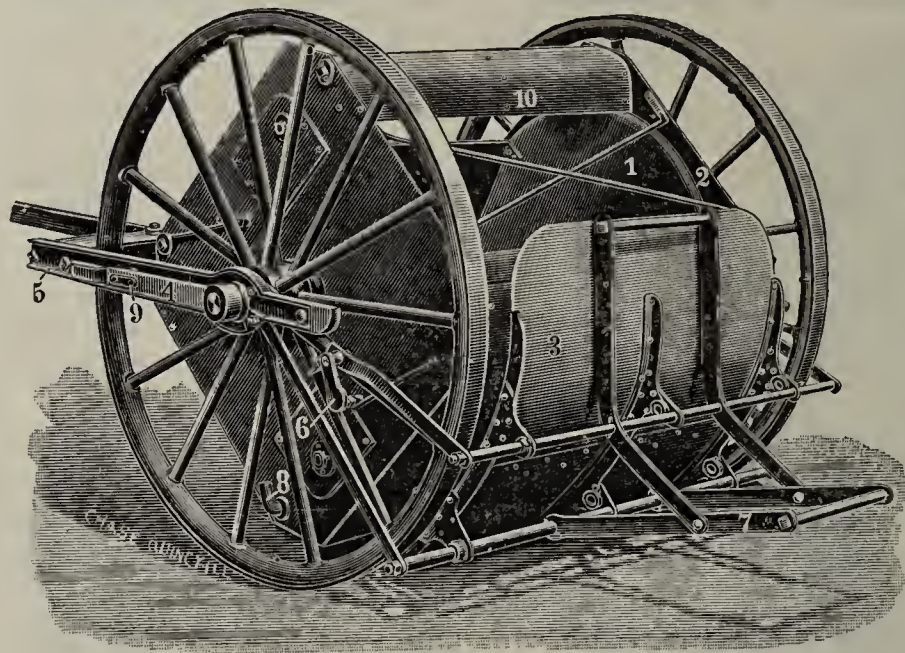
FOR SALE OR LEASE. A fully equipped BRICK PLANT, consisting of Jonathan Creager's Sons, of Cincinnati, Improved Automatic Brick Machine, having a capacity per day of 30,000; Engine, Boiler and Steam Pump, Pug Mill, Disintegrator, Hoisting Drum, Sanding Machine, Revolving Dump Table, etc., etc. Also a Repress Machine of the C. W. Raymond make, of Dayton, Ohio. The plant is located at RADFORD, VA, and was built for the purpose of supplying this Company's works with material for its construction. The works having been completed, and the business of the Company being the manufacture of Cast Iron Water Pipe and Special castings, we have a BRICK PLANT to dispose of. Will sell with land, lease, or to be removed. Address,
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PATENT BRICK BOXES,

Are durable save labor and are practical for delivering brick in every way. Also rights and territory for sale. Write for circular. Address

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The QUINCY CLAY GATHERER.



For gathering and shedding Dry Clay it is unequalled.

It is self-loading and unloading.

It is the cheapest and most approved Clay Gatherer.

Gathering Clay by this method dispenses with shovellers and avoids strikes.

No Brickyard complete without the Quincy Clay Gatherer.

For prices and further information, apply to

ILLINOIS SUPPLY
& CONSTRUCTION
COMPANY,
ST. LOUIS, MO.

This is by far the best machine that has been introduced to gather dry clay for making pressed brick. No pressed brick works is complete without one.

NEW .. AND .. NOVEL,

The Columbian Pottery
and Brick Kiln.

NO WASTE OF FUEL, LABOR
OR TIME.

ALL PERFECT GOODS.

THOROUGH REGULATION OF
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OUTPUT UNIFORM AS TO TIME
AND QUALITY.

The fires remain in one division ONLY
and are continuous.

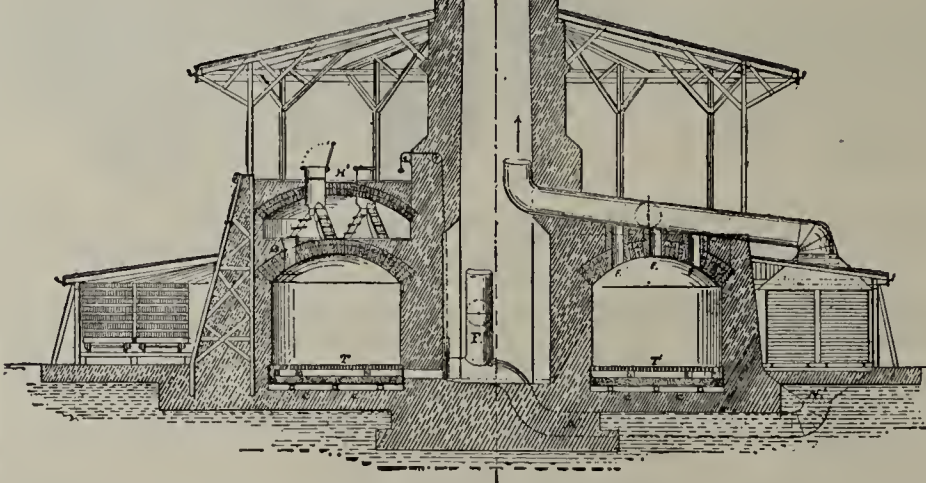
Goods move on a ROTATING FLOOR
to and from the fires.

Radiating heat and spare heat are used
for drying and
heating air for
combustion.

A perfect and
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Winter and Summer.

Kiln and dryer
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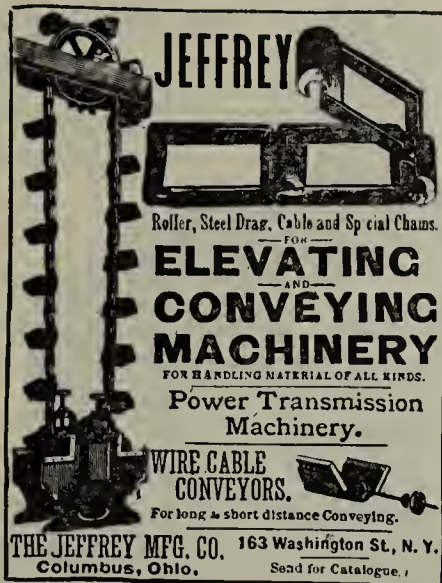
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For Handling

CLAY,
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BRICK,
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Also Furnish

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NEW DISCOVERY KILN.

Patented April 13, 1886, June 12
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More Than **1,000** Now Stand as
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It is neat, compact, durable, easy to handle, constructed on scientific principles. Has been improved and now burning almost everything made from clay, such as Sewer Pipe, Vitrified Pavers, Etc., to Pottery and finer wares. Built any size up to 100,000. In short it leads the way.

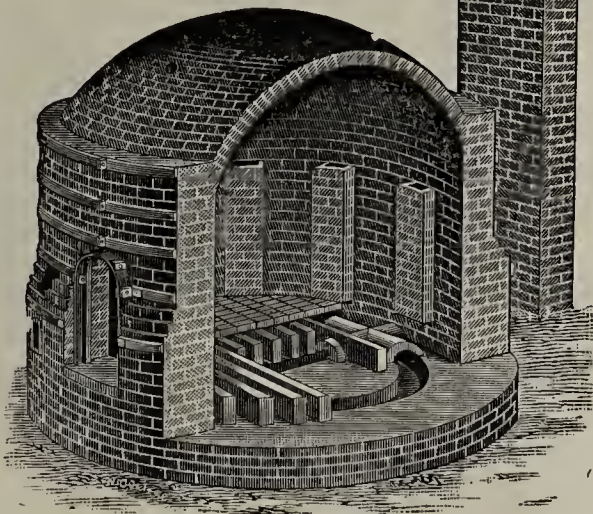
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To know more and what they say of it, address,

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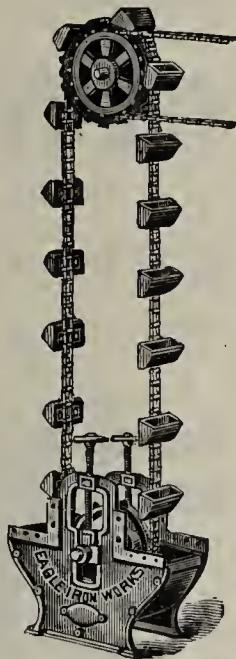
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DRY AND WET PAN CLAY
CRUSHERS. CLAY ELEVATORS
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TO ELEVATE AT ANY ANGLE.
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[Mention the Clay-Worker.]



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Look out for our *New Iron Frame Dry Pan*, which we are now perfecting

It embodies new and valuable patented features peculiar to itself, and will easily lead them all.

FOR SALE. Second-hand materials. Address
Tiffany Pressed Brick Co., Momence, Ill.

Pitch. Teeth. Bore. Face. Diam.

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|--------------|-----------|-----|-------------|-----------|--------|
| 1 Spur Wheel | 2 1/4 in. | 100 | 4 7/8 in. | 5 1/2 in. | 6 ft. |
| 2 " " | 2 1/4 " " | 56 | 2 7-16 " " | 3 " " | 42 " " |
| 2 " " | 2 1/4 " " | 56 | 4 7/8 " " | 5 1/2 " " | 42 " " |
| 1 " Pinion | 2 1/4 " " | 14 | 3 7-16 " " | | 12 " " |
| 1 " " | 2 1/4 " " | 14 | 2 15-16 " " | 5 1/2 " " | 12 " " |
| 1 " " | 2 1/4 " " | 17 | 3 11-16 " " | 5 1/2 " " | 14 " " |
| 1 " Wheel | 2 1/4 " " | 66 | 4 7/8 " " | 5 " " | 50 " " |
| 1 " " | 2 1/4 " " | 53 | 3 11-16 " " | 5 1/2 " " | 40 " " |
| 2 " " | 1 1/2 " " | 66 | 2 15-16 " " | 4 " " | 32 " " |
| 2 " Pinions | 1 1/2 " " | 16 | 2 15-16 " " | 4 " " | 9 " " |
| 1 " " | 1 1/2 " " | 15 | 2 7-16 " " | 4 " " | 8 " " |

1 No. 6 38 in. } B. F. Sturtevant Blower, Boston,
1 " 7 40 " } [Mass.
2 " - 31 " }

1 Steadman Pulverizer, 44 in x14 in. cage.

1 Carload scrap iron, one-half wrought, one-half cast.

6 Side dump cars, capacity about 3/4 yard clay.

1,500 ft. rails (20 lb. to yard) 50 splices, 200 ties, also spikes

5 Wheel scrapers.

1 Disc Pulverizer.

31 1/2 bbls. manganese, about 800 lbs. per bbl.

4 3/4 " Colorific about 400 lbs. per bbl.

134 3 in. x15 ft. boiler flues. 13 3 in. x12 ft. boiler flues.
53 c

Home-Seekers' Excursions South.

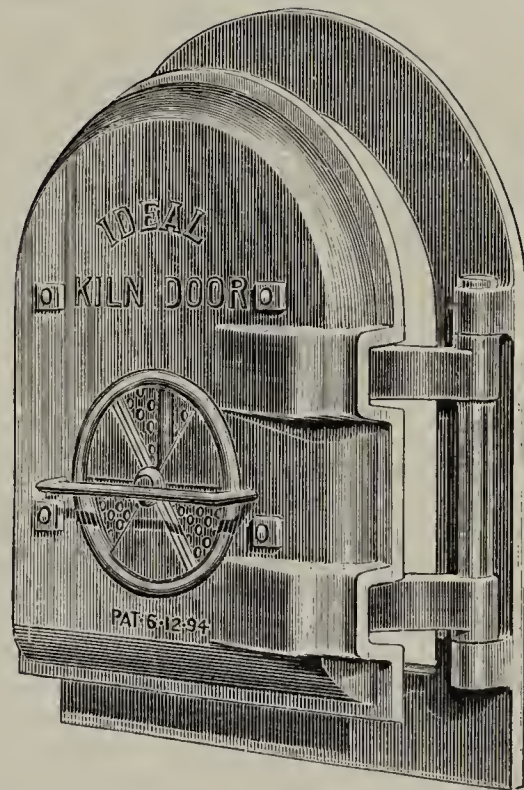
The Baltimore and Ohio Southwestern Railway has arranged a series of Home-Seekers' excursions to points in Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi and Louisiana at one fare for the round trip.

The dates of these excursions are as follows: July 5th, August 7th, September 4th, October 2d, November 6th and December 4th.

Tickets will be good for twenty days, with stop-over privileges in State to which ticket is sold.

A splendid opportunity to visit the Valley of Virginia and other points South.

For rates and further information apply to the nearest agent of the B. & O. S. W. R'y, or address O. P. McCarty, General Passenger Agent, St. Louis, Mo.



By using the **IDEAL DOOR** all evil effects of exterior air currents are obviated.

Increased percentage of high grade brick and of uniform color.

Economy in fuel consumption.

Absolute control of fire under all circumstances.

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CHARLES PICKLES, St. Louis, Mo.



NIAGARA FALLS EXCURSION!

Thursday, August 2, 1894,

— VIA THE —

Lake Erie & Western R. R.

"NATURAL GAS ROUTE."

On Thursday, August 2, 1894, the Lake Erie & Western R. R. will run their popular annual excursion to Cleveland, Chautauqua Lake, Buffalo and Niagara Falls at following very low rates, viz.:

| | | | |
|--------------------|--------|---------------------|--------|
| Peoria..... | \$7 50 | Fort Wayne..... | \$5 00 |
| Bloomington..... | 7 00 | Muncie..... | 5 00 |
| LaFayette..... | 6 00 | Connersville..... | 5 00 |
| Michigan City..... | 6 00 | Rushville..... | 5 00 |
| Indianapolis..... | 5 00 | New Castle..... | 5 00 |
| Tipton..... | 5 00 | Cambridge City..... | 5 00 |
| Lima..... | 4 00 | Fremont..... | 4 00 |
| Sandusky, \$4 00 | | | |

With corresponding reductions from intermediate points.

In addition to the above, the purchasers of these tickets will be given privilege of special excursion side trips to Lewiston-on-the-Lake, including a steamboat ride on Lake Ontario, for 25 cents. To Toronto and return by Lake from Lewiston \$1.00; to Thousand Islands, \$5.00. Tickets for the above side trips can be had when purchasing Niagara Falls ticket, or at any time on train.

Besides the above privileges, with that of spending Sunday at the Falls, we will furnish all those who desire a side trip from Brocton Junction to Chautauqua Lake and return FREE OF CHARGE.

Tickets of admission to places of special interest at or near Niagara Falls, but outside the reservation, including toll over the International Bridge on the Canadian side, elevators to the water's edge at Whirlpool Rapids on the Canadian side, will be offered on train at a reduction from prices charged after reaching the Falls.

Do not miss this opportunity to spend Sunday at Niagara Falls. The excursion train will arrive at Niagara Falls 7.00 A. M., Friday, August 3, 1894, and will leave the Falls returning Sunday morning, August 5, at 6 o'clock, stopping at Cleveland Sunday afternoon, giving an opportunity to visit the magnificent monument of the late President Garfield, and many other interesting points.

TICKETS WILL BE GOOD, HOWEVER, TO RETURN ON REGULAR TRAINS LEAVING THE FALLS SATURDAY, AUGUST 4, FOR THOSE NOT DESIRING TO REMAIN OVER. TICKETS WILL ALSO BE GOOD RETURNING ON ALL REGULAR TRAINS UP TO AND INCLUDING TUESDAY, AUGUST, 1894. SECURE YOUR TICKETS, ALSO CHAIR AND SLEEPING CAR ACCOMMODATIONS, EARLY. THOSE DESIRING CAN SECURE ACCOMMODATIONS IN THESE CARS WHILE AT THE FALLS. FOR FURTHER INFORMATION CALL ON ANY AGENT LAKE ERIE & WESTERN R. R., OR ADDRESS

C. F. DALY, Gen. Pass. Agent,
Indianapolis, Ind.

The YATES IMPROVED DOWN DRAFT KILN,

For Burning All Kinds of Brick.

DON'T FAIL to get our descriptive Circular and References.

BOTH ROUND AND SQUARE KILNS.

FULLY PROTECTED BY PATENTS.



THIS Kiln has worked its way to the front by results, which is the highest test of merit.

Send stamped envelope for particulars to

ALFRED YATES,

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or, W. N. PIKE, Contractor, MALDEN, MASS.

CHAMPION Brick Mould

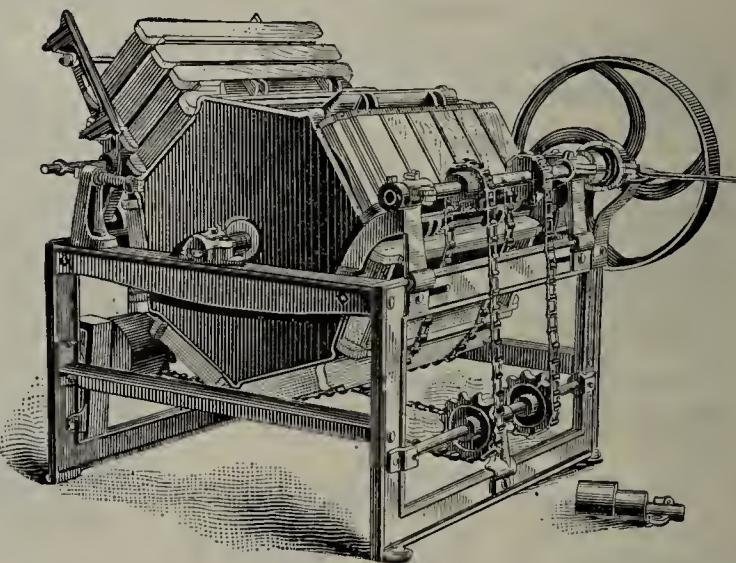
SANDING MACHINES.

This cut represents the latest improved Champion. No belts, apron or gearing. Simple, strong, and Serviceable.

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Manager and Sole Agent,

HAVERSTRAW, N. Y.



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Any person purchasing Champion machines from other than the above, render themselves liable to damages, as no other person has the right to manufacture said machines.

The suit brought against one of my purchasers by Buck has been abandoned, and suits are now being brought by me against users of Buck Machines as infringers of my patents. A. H. NEWTON

THE THURMAN FUEL OIL BURNER CO.,

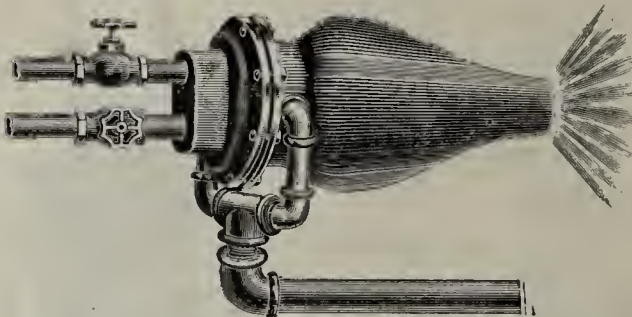
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We are not Connected with any other Oil Burner Company.



The only perfect Crude Oil Burner on the market. The cheapest and best. Absolutely smokeless. It is Economical. Reliable. Requires no expert to manage. Cheaper than Coal. It perfectly atomizes the oil with the air and steam.

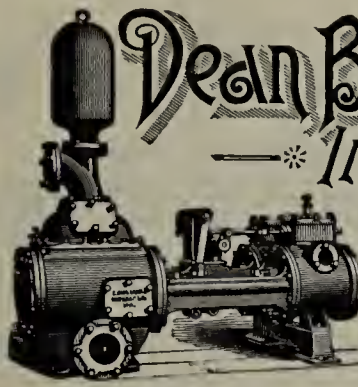
MAKES LESS NOISE THAN ANY OTHER BURNER.

For stationary Bolders, Brick Kilns, Locomotives and all Steam Plants. No soot. No Sparks. No Smoke. No Odor.

TRY OUR IMPROVED BURNER IN YOUR KILNS.

— Write for Prices. —

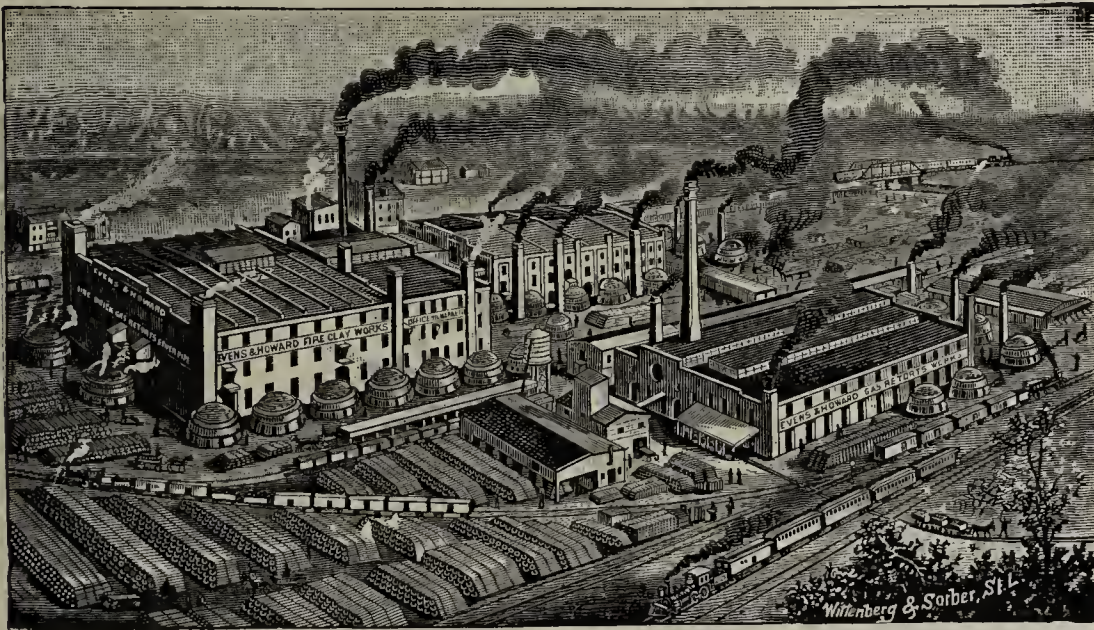
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SINGLE & DUPLEX PUMPS.
HORIZONTAL AND VERTICAL PUMPS.
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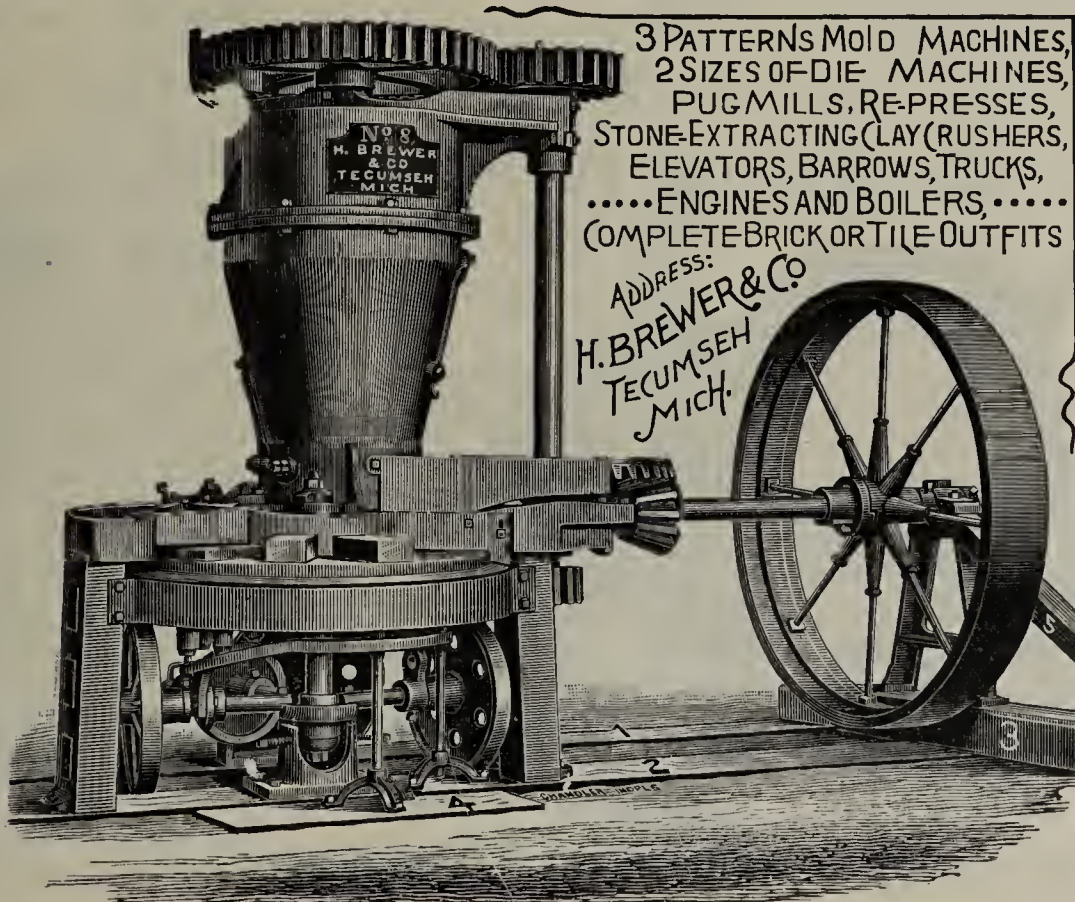
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2 SIZES OF DIE MACHINES,
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THE MANUFACTURE OF GLAZED BRICKS AND GLAZED SAN- ITARY WARE.

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KNIGHTS OF PYTHIAS,
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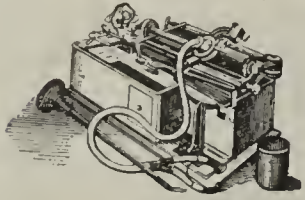
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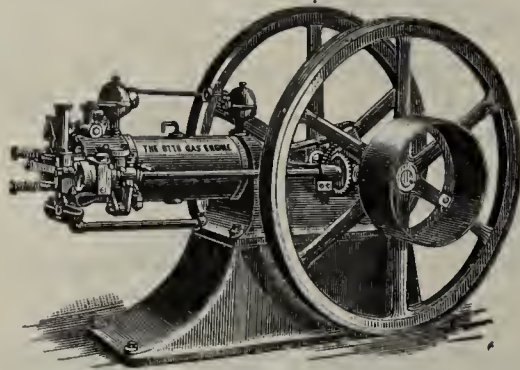
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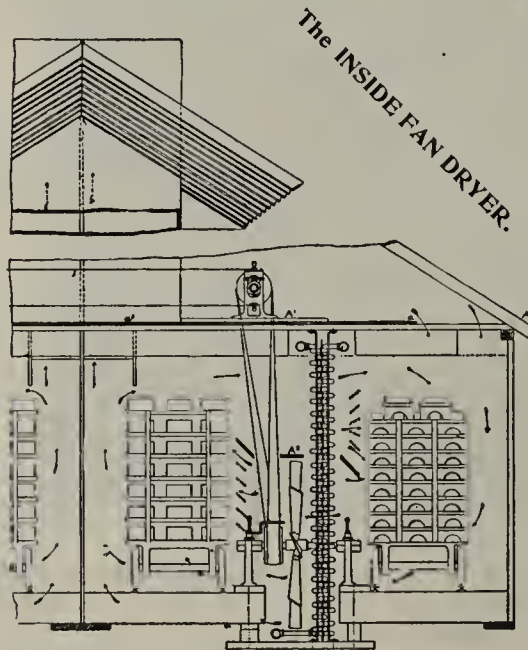
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Send for Catalogue, Prices, etc., describing work to be done.

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Solid "Air Dried" Bricks Easily Secured in From Five to Ten Hours, Saving Attendance and Use of Live Steam at Night.



U. S. Pat. Aug. 16, 1881. No. 245,742.
U. S. Pat. Mar. 31, 1891. No. 449,170.
U. S. Pat. Mar. 31, 1891. No. 449,231.
British Pat. Mar. 31, 1891. No. 5,520.
Canadian Pat. May 30, 1892. No. 39,025.
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These times demand economy. You can save fuel by adopting this system. Write for full particulars of new features.

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Apparatus For Drying Bricks, Lumber
and Other Material.

❖ 161 Grand St., RAHWAY, N. J. ❖

~ A VACUUM ~

Is created by fans close to steep drainage pipe radiators.

No air pump (or extra engine, boiler or firing) is required.

This "Air Surface Condensation" wastes no heat (as in water cooling), because the air that cools the pipes is used for drying.

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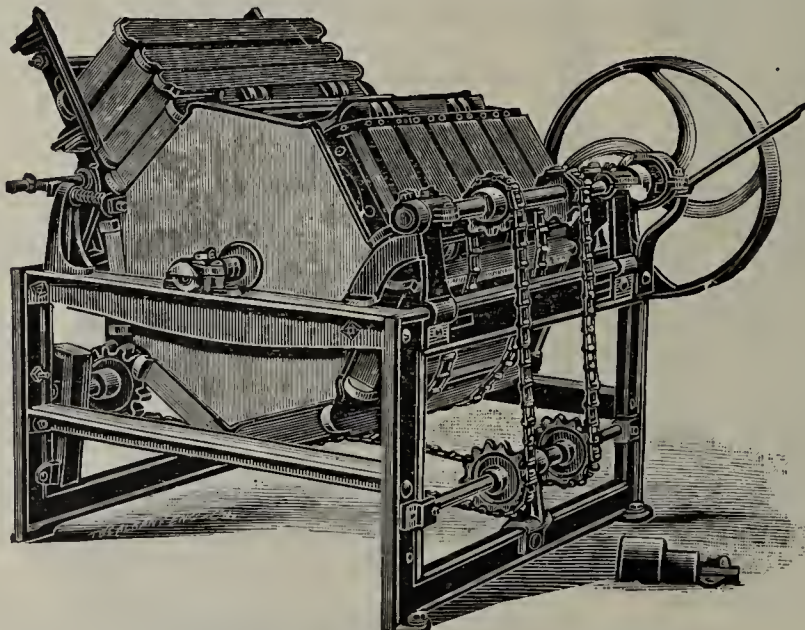
Come and see several dryers in operation; or send for testimonials of superior drying in from 5 to 8 hours; and with the heat from the engine exhaust steam only.

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BRICK MOULD

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J. A. Buck, the inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine, having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton to letters patent for said machine.

The "New Champion" is a great improvement over the old "Champion," doing away with belts and gearing, and being much more simple and durable.

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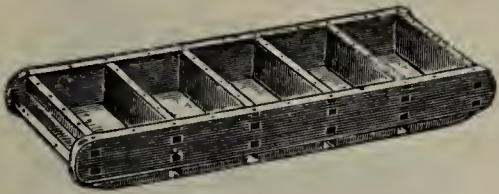
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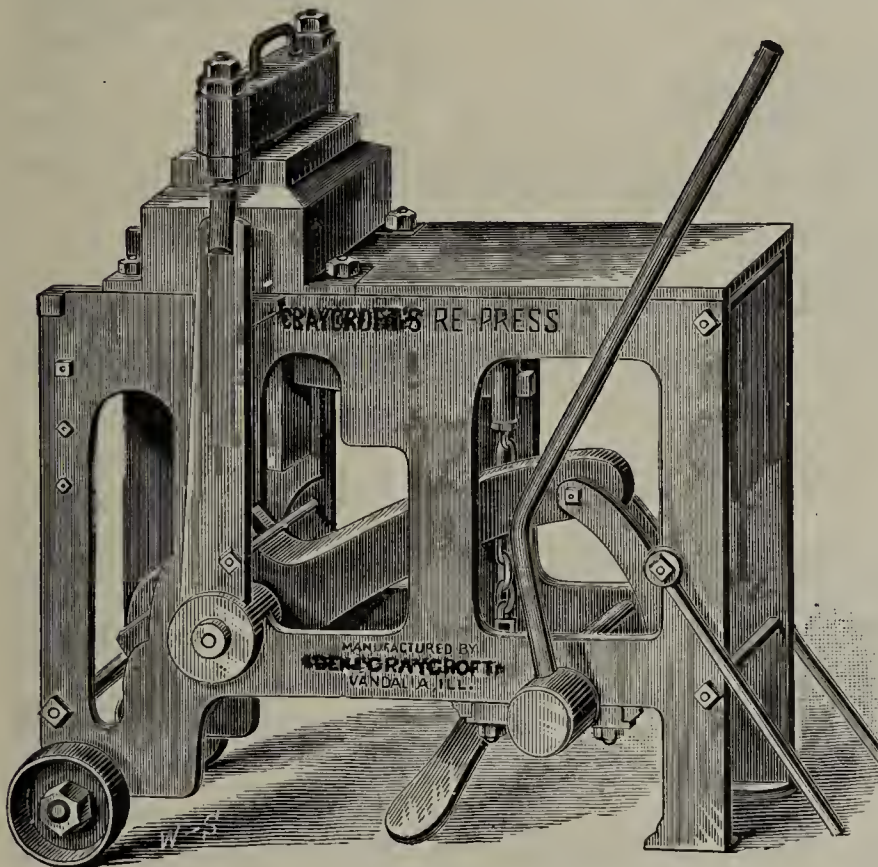
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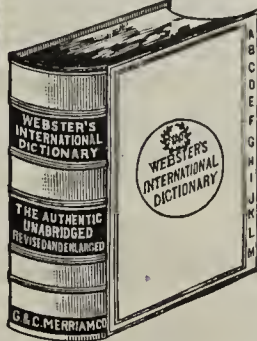
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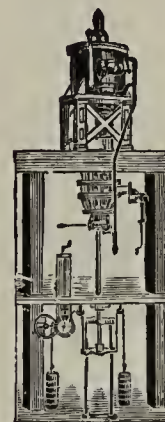
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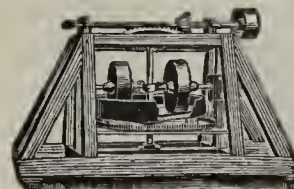
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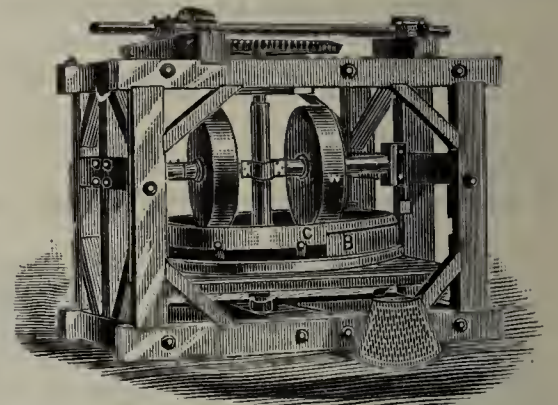
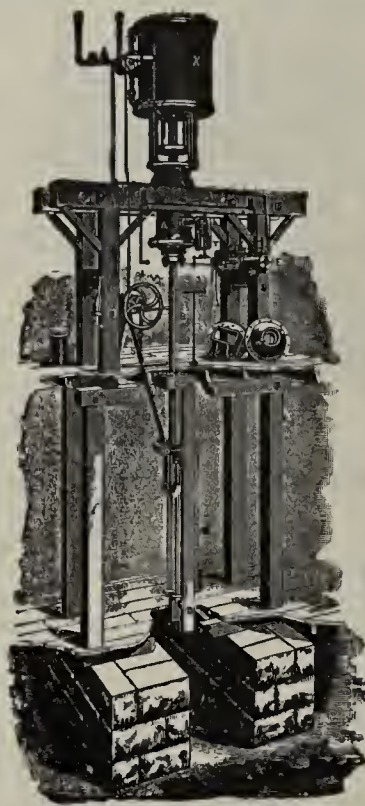
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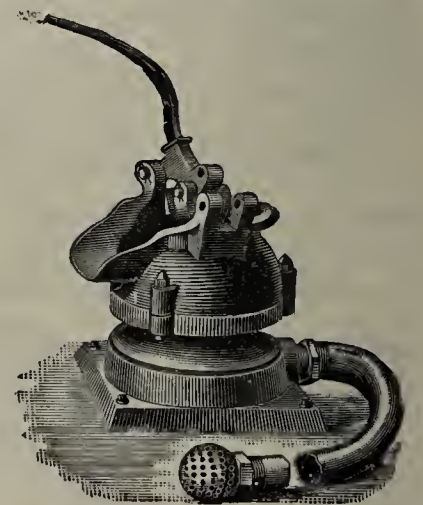
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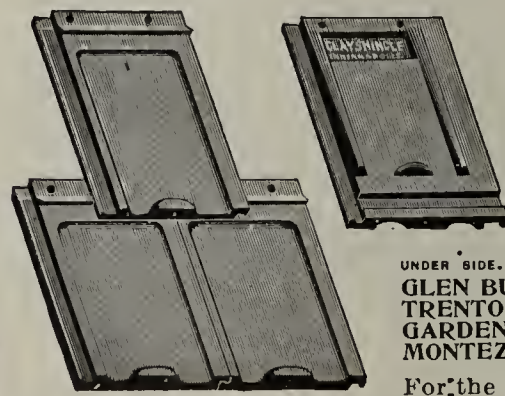
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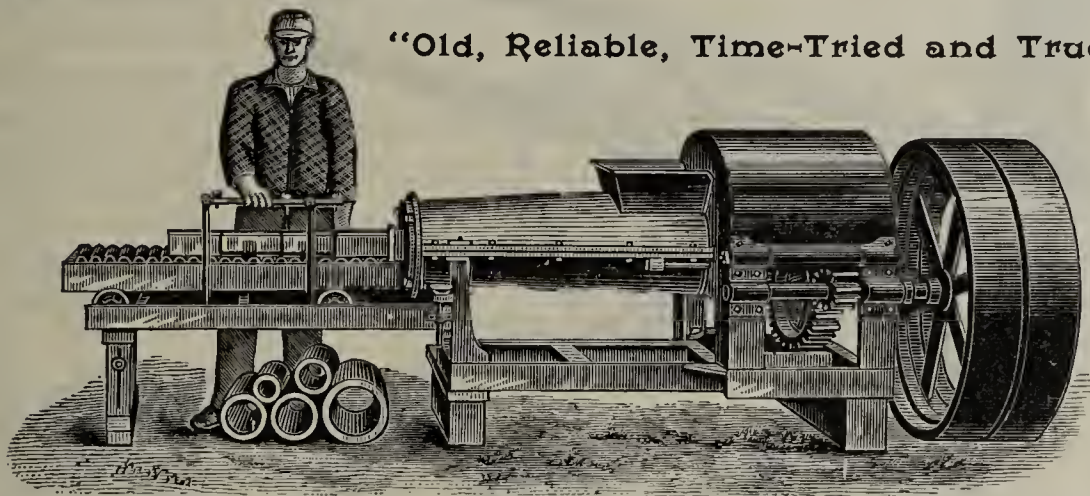
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|------------------------|------------|
| No. 20 Passenger..... | 7:05 a. m. |
| *No. 22 Passenger..... | 1:20 p. m. |
| No. 24 Passenger..... | 7:00 p. m. |

| ARRIVE. | |
|------------------------|-------------|
| *No. 21 Passenger..... | 10:30 a. m. |
| No. 23 Passenger..... | 2:50 p. m. |
| No. 25 Passenger..... | 6:20 p. m. |

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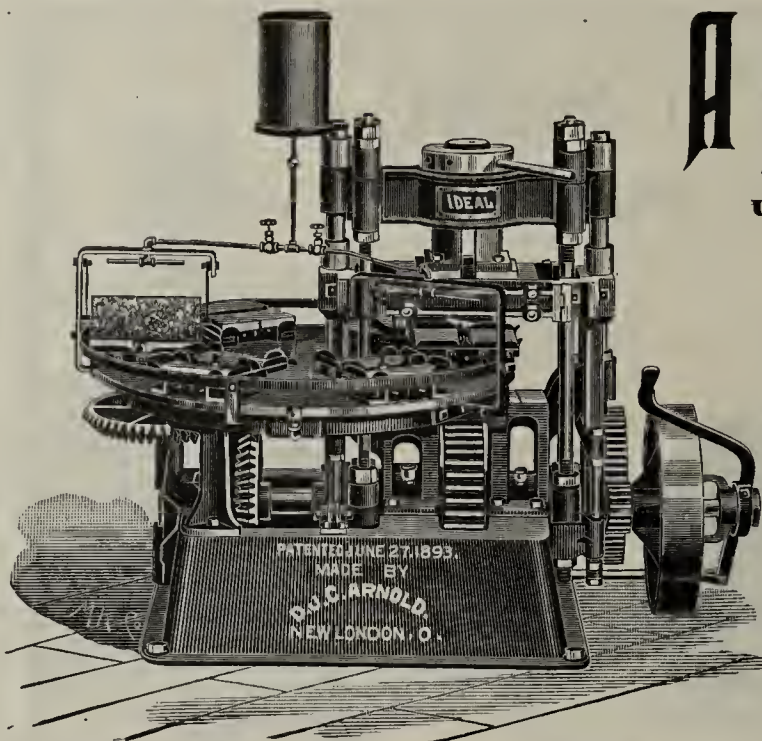
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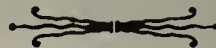
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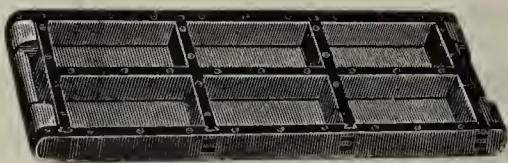
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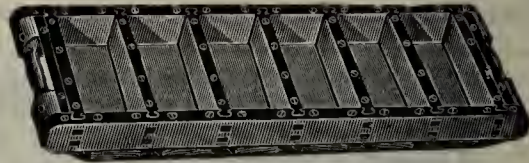
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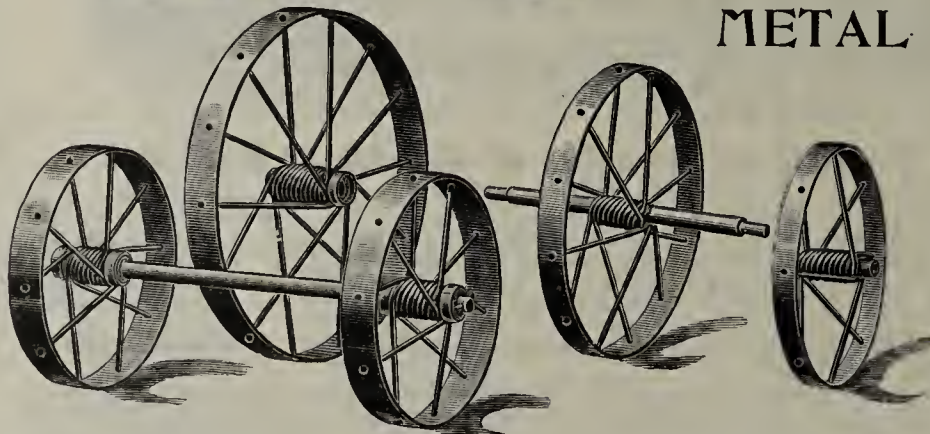


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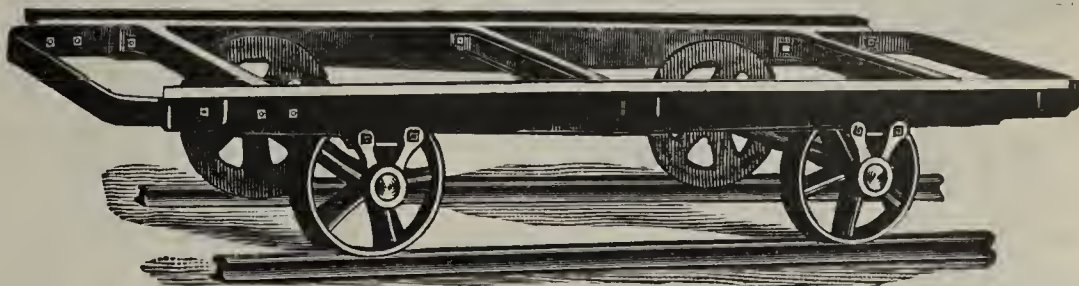
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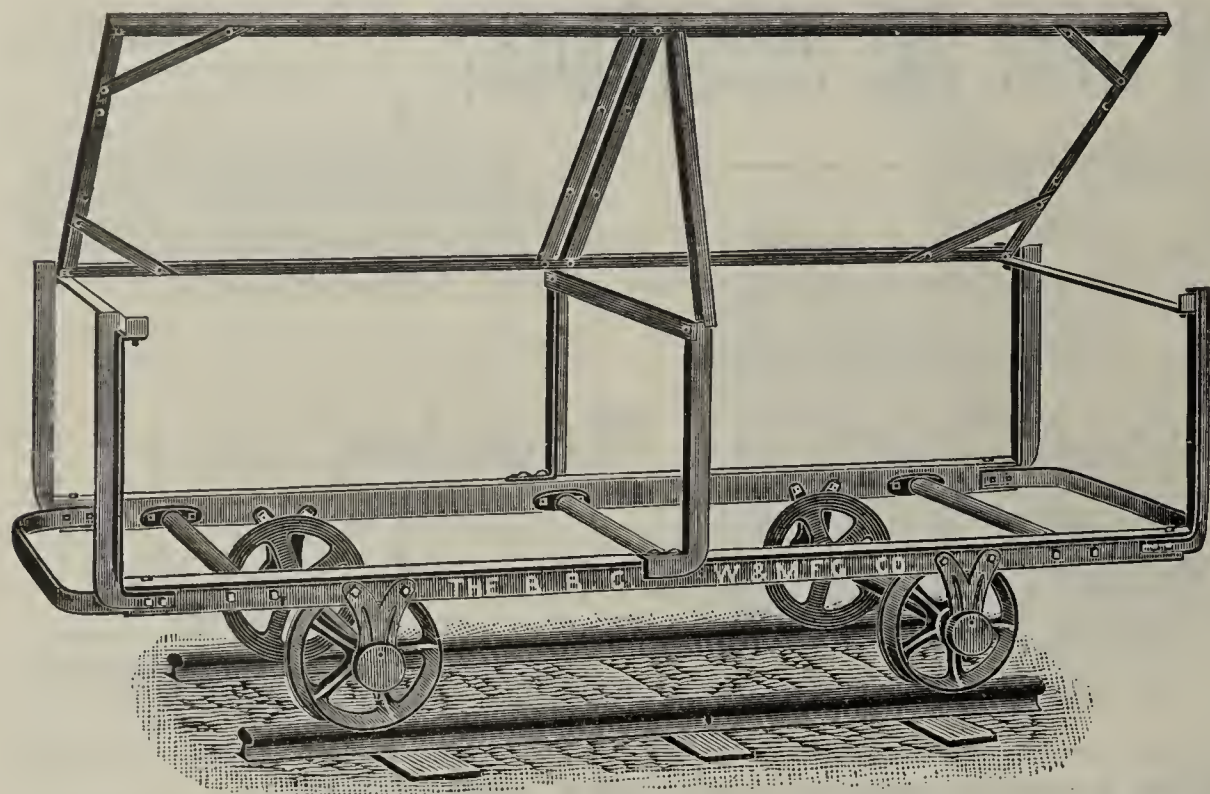
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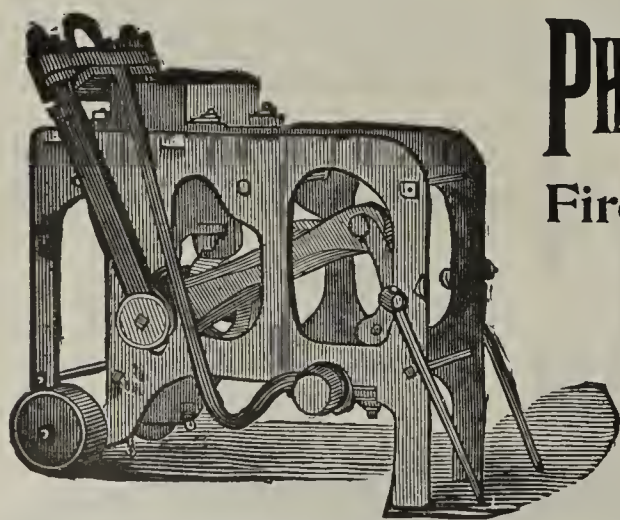
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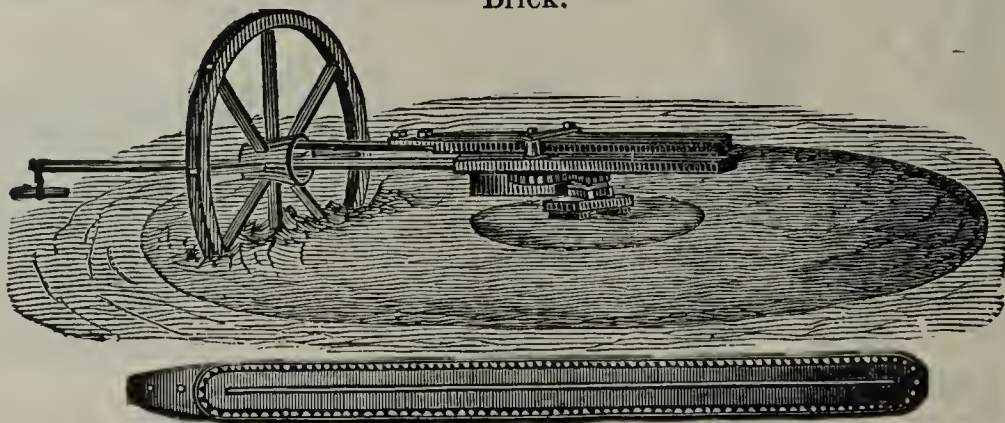
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Fire and Red Brick Presses all sizes.

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Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



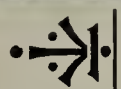
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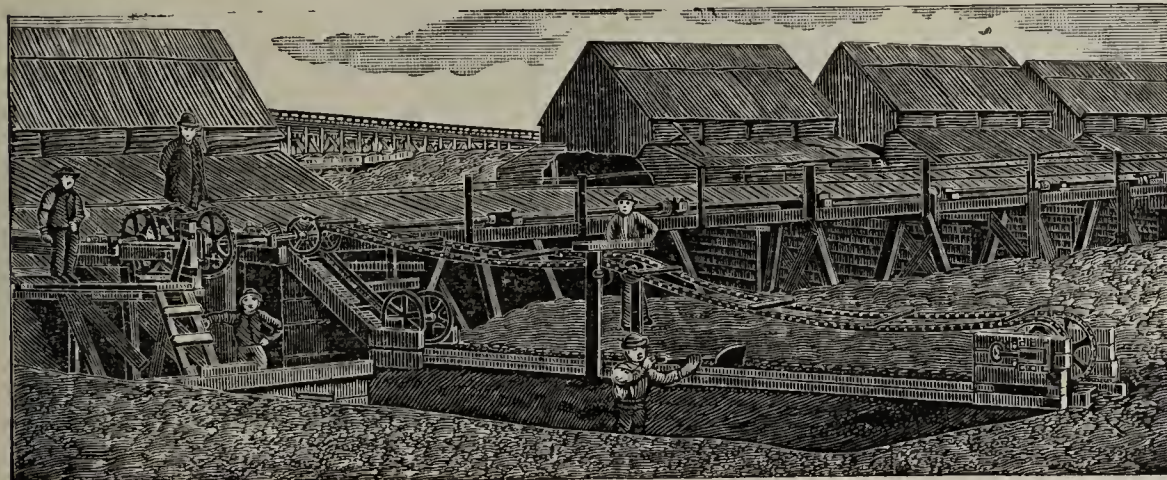
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Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed at a glance by every practical brickmaker.



Mey Patent Clay Elevator.

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It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

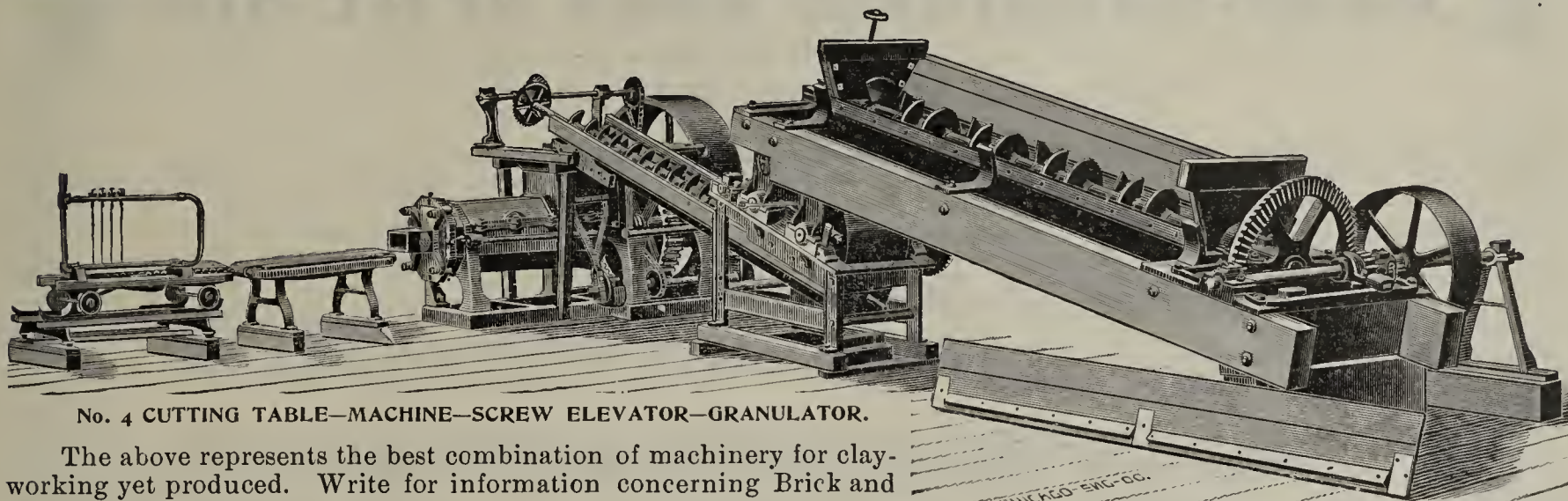
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of the best quality of brick in a day than he can by the old method thereby saving time and making money.

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IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.

What Users say of the MOCK SYSTEM.

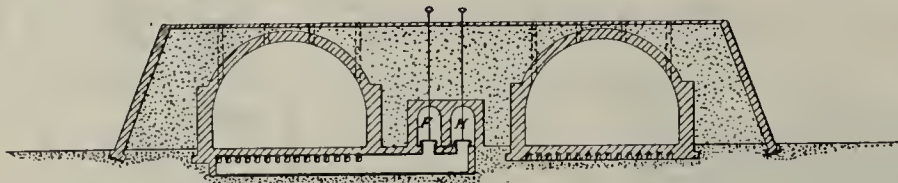
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Accuracy of results reduced to a certainty.

Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.

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DEAR SIR:—In reply to your inquiry as to the working of our Continuous Kiln we take great pleasure in saying that the same is a success in every respect. As you well know our people were somewhat doubtful as to ability of your kiln to burn first quality of pressed and ornamental brick, but we have now demonstrated to their satisfaction, that the same can turn out from 35 to 40 per cent. of the finest quality of press and ornamental brick the color of which is even superior to those we formerly burnt in the E— downdraft kiln. As to common brick will say that every brick comes out hard and of good color. Wishing you success, we remain,

Yours truly

SAN JOSE, Cal., Aug. 25, 1893.

PETERSEN BRICK CO.,

Per H. M. STAMMER, Superintendent.

For particulars address

P. L. YOUNGREN, Oakland, Cal.

**Why Pay Royalties? Why Pay Yard Rights?
When You Can Get**

Bickel's Improved Down Draft Kiln

GUARANTEED WITHOUT.

We will build this Kiln and guarantee it to give satisfaction, either by contract or on a per cent. basis.

This Kiln is Simple and Durable in Construction, and Economical in Operation, and does not require an expert to handle it. Any good burner, who understands his business, can easily manage it.

There are no small tile to break or burn out, and no iron exposed to the flames.

This Kiln is built Strong, and to any desired size, and adapted to burning Fire Brick, Vitrified Brick, and Dry Pressed Brick, and all kinds of Pottery goods. Built Square or Round.

Advantages of BICKEL'S IMPROVED DOWN-DRAFT KILN: It burns the brick uniform throughout. It has no light or salmon brick in bottom courses. It does not burn the bottom courses at the expense of the top. It does not check or crack the brick as an up and down, or combined draft kiln will, and costs you less money to build.

For further information, address

BICKEL BROS. CONTRACTING CO.,

920 Market Street,

[Mention the Clay-Worker.]

ST. LOUIS, MO.

Freydesign, Canton, U. S. A., July 15th, 1894.

To Practical Brickmakers,
Everywhere:

The "Frey" brick machine built at Canton, Ohio, is a machine that pleases brickmakers.

Designed by a gentleman whose whole life has been devoted to the improvement of clayworking machinery.

A good working brick machine is not alone essential; other considerations are also of vital consequence.

Accessibility of working parts, convenience in getting at all parts--points that are appreciated.

A good many machines require too much power; faulty design is generally the cause.

Brickmakers know a good thing when they see it.

Write for full description of the latest and best.

ITS SPECIAL ADVANTAGES ARE WHAT YOU ARE LOOKING FOR.

We like to answer questions.

Address THE BONNOT COMPANY,
CANTON, OHIO.

THE OHIO STATE UNIVERSITY

Will open on September 12, 1894,

A Technical School for Clayworkers,

THE FIRST OF ITS KIND IN THE COUNTRY.

The course of study will cover two years, and will be such as is most directly useful to practical men. Chemistry a specialty. Clayworking laboratory with complete mechanical outfit operated by electricity. Terms of admission easy and expenses low.

. TUITION WILL BE FREE.

For circulars and all further information, address

Prof. Edward Orton, Jr.,

Director Department of Ceramics and Clayworking.
Ohio State University.

COLUMBUS, OHIO.

THE BEST KILN ON EARTH.

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

St. Louis, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

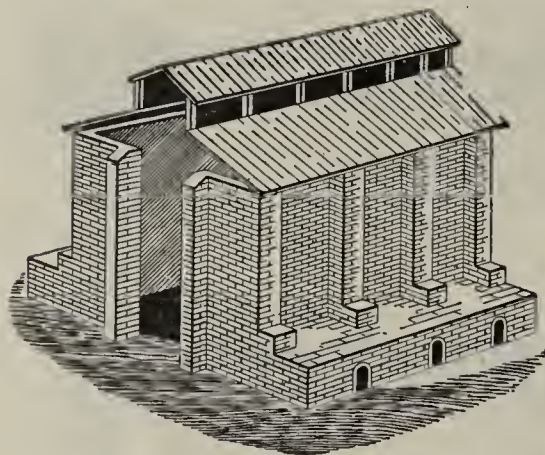
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

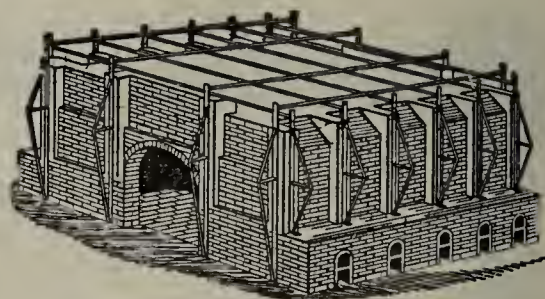
[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.



LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED.

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

∴ ∴ VITRIFIED PAVING BRICK. ∴ ∴

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }
NEVADA, Mo., July 17, 1892. }

H. REPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK CO., Office, 5,218 St. Louis Ave. }
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,
COTE BRILLIANT PRESSED BRICK CO.,
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

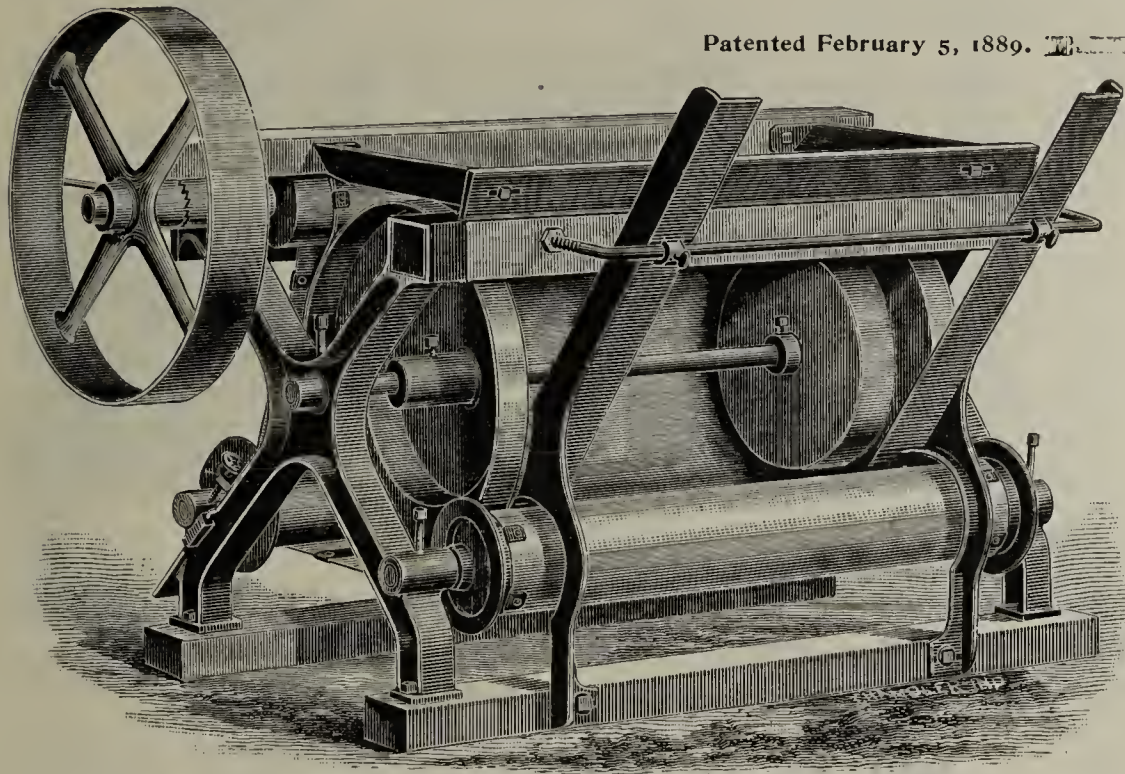
LOUIS H. REPELL,

1,913 Indiana Ave.



KANSAS CITY, MO.

The Potts Mould Sander.



Patented February 5, 1889.

Conrad Clippert & Son,
MANUFACTURERS OF
STOCK BRICK.

Detroit, Mich., June 11, 1894.

C. & A. POTTS & CO., Indianapolis, Ind.,

Gentlemen:—You will please find a draft for \$—
in payment for the two sanders. We have run
these two machines almost a month, and can say
they do all you claim for them, for which we are
very much pleased, and would not be without them.

Yours truly,

C. CLIPPERT & SON.

We claim this sander will sand the moulds better than can be done by hand, that it does not waste or spill the sand that a sixteen year old boy can operate it. It is simple in construction, strong and durable.

C. & A. POTTS & CO.,

Mention CLAY-WORKER.

Indianapolis, Indiana.

The KAUL Continuous Brick Kiln.

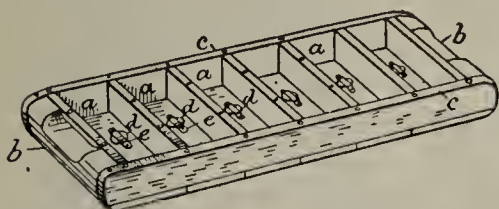
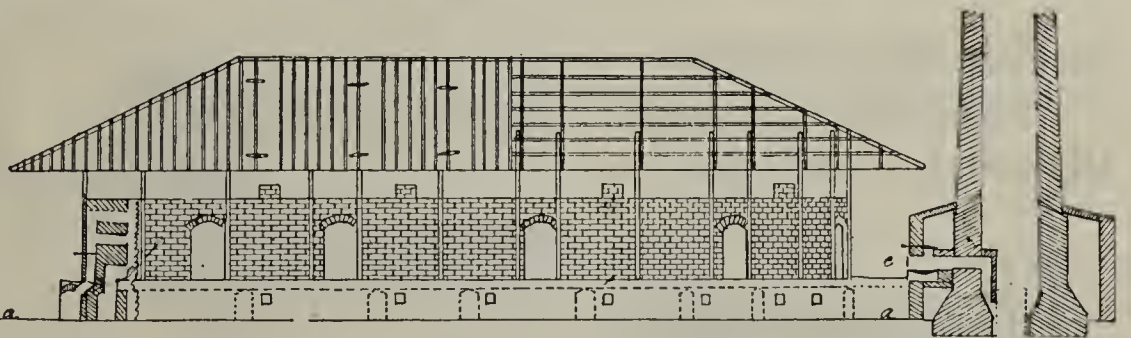
Patented March 23, 1892.

THIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.



machine clean as it also does the table when molding by hand. By the use of this mold brickmakers can improve their product and save time and money. For full particulars, etc., etc., address

KAUL'S PATENT BRICK MOLD

Something New, Practical and Profitable.

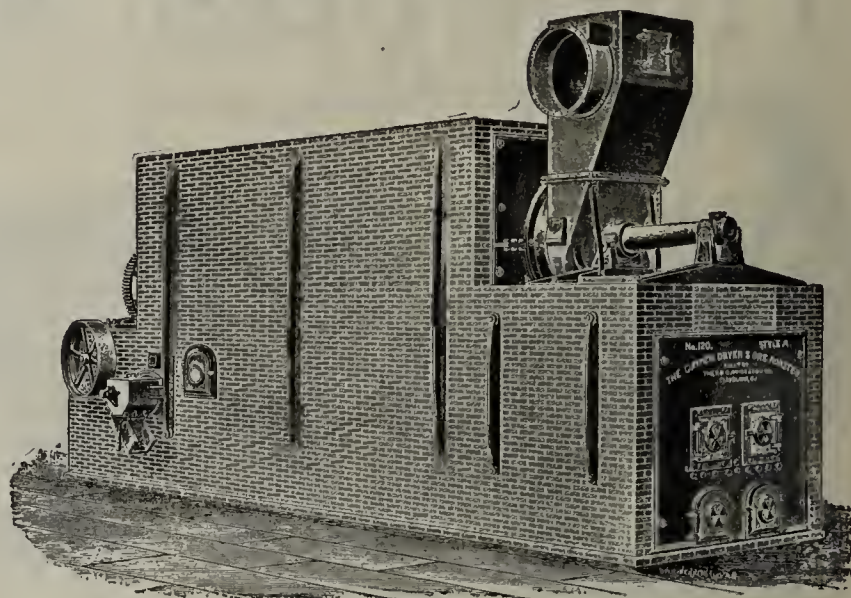
In the bottom of each chamber of this mold is a valve by which air is admitted when emptying the mold. Thus the brick leave the mold freely, insuring better edges and truer brick. It not only admits of more rapid and better work, but saves a great deal of sand which cannot run through the bottom as in the old way. It keeps the slats or rollers of

Mention the Clay-Worker.]

CARL F. KAUL, Madison, Neb.

LABOR DISPENSED WITH; VERY LITTLE FUEL USED; NO BREAK DOWNS; SUPERIOR PRODUCT OBTAINED: CLAY DRIED SUMMER AND WINTER, RAIN OR SHINE, ARE A FEW OF THE SPECIAL ADVANTAGES OBTAINED BY USING THE

Cummer Clay Dryer



SIX SIZES MADE.

Prepares from 3 to 20 tons of clay per hour for dry pan or pulverizer. The clay is handled mechanically (without men) from bank to press or other machines.

NEW METHODS.

DRIES

Phosphate, Sand, Earths, Paint Stocks, Peat, Coal, Salt, Marl and Clay for Cement making, Chalk, Cereals of all kinds, Tankage, Night Soils, Animal Manure, etc., etc.

CALCINING AND ROASTING MACHINERY

for Gypsum, Ores of all kinds, Phosphate, Paint Stocks, etc., etc.

THE F. D. CUMMER & SON CO.,

613-616 Arcade,

CLEVELAND, OHIO, U. S. A.

SEND FOR
OUR NEW CATALOGUE.

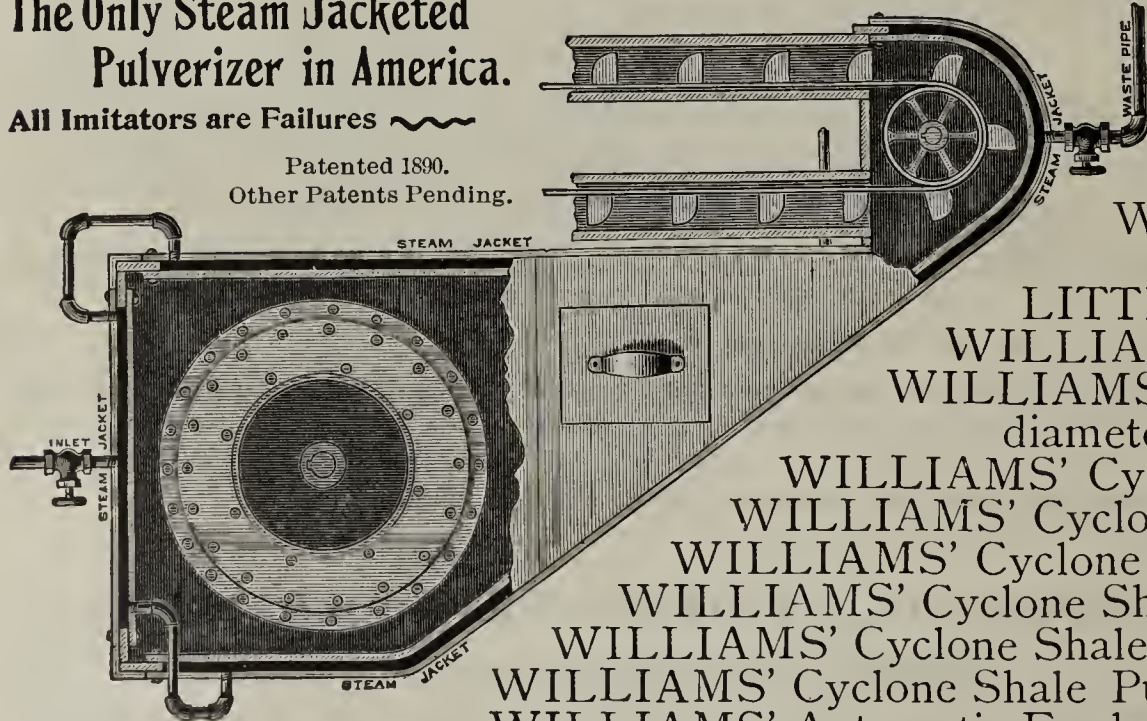
CHARLES ERITH & CO., No. 70 Grace Church St., London, E. C.

WILLIAMS' CLAYWORKING MACHINERY.

The Only Steam Jacketed
Pulverizer in America.

All Imitators are Failures

Patented 1890.
Other Patents Pending.



WILLIAMS' Clay Elevators.
WILLIAMS' Triple Roll Clay
Crushers.
WILLIAMS' Brick Trucks,
Three sizes.
WILLIAMS' Revolving Clay
Screen.

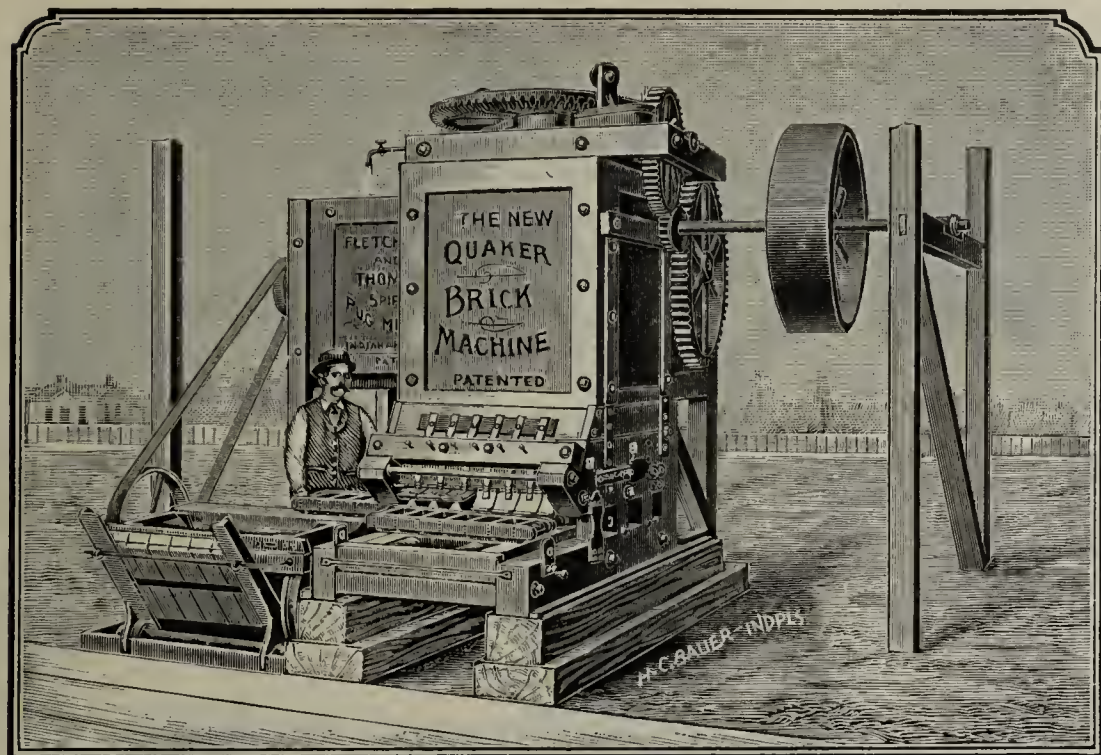
LITTLE'S Steam Jacket for Pulverizers
WILLIAMS' Clutch Pulleys and Couplings.
WILLIAMS' Cyclone Clay Pulverizer 30 in.
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.
WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.
WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.
WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.
WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.
WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.
WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.
WILLIAMS' & LITTLE'S Patent Steam Clay Screen.
WILLIAMS' Pony Pulverizer for Testing Clay and Shale.
WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Clay Cultivators.
WILLIAMS' Clay Bunchers.
WILLIAMS' Brick Barrows.
WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO.,** 2705 and 2707 N. Broadway. **ST. LOUIS, MO.**



EXTRA HEAVY, COMBINED OUTFIT CAPACITY: 40,000 TO 50,000 PER DAY.

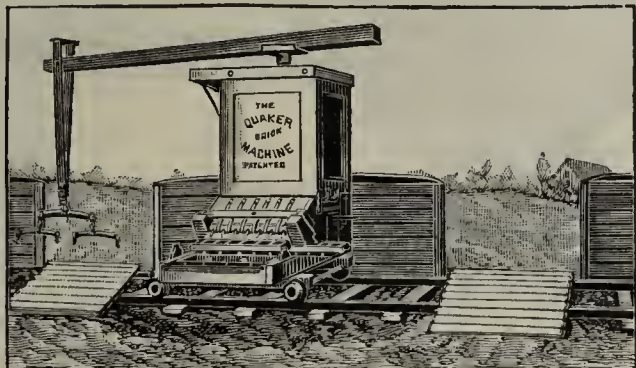
THE NEW MODEL

QUAKER

HORSE POWER.

The best machine for
the man of moderate
means ever used.

Capacity 15,000 to
20,000 per day.



WE CONTRACT TO ERECT AND EQUIP

PLANTS COMPLETE IN EVERY DETAIL.

Send for Illustrated Catalogue and Special prices before placing
your order, as we can save you money.

S. K. FLETCHER, General Agent,
Successor to FLETCHER & THOMAS,
INDIANAPOLIS, IND.

**"Leviathan"**

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours, I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our class of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,
WM. H. ASHWELL.**MAIN BELTING CO.,**

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

Thompson's Water-Proof Belt Dressing for
Leather, Rubber and Canvas Belting.

No user of Belting can afford to be without it.



the End.

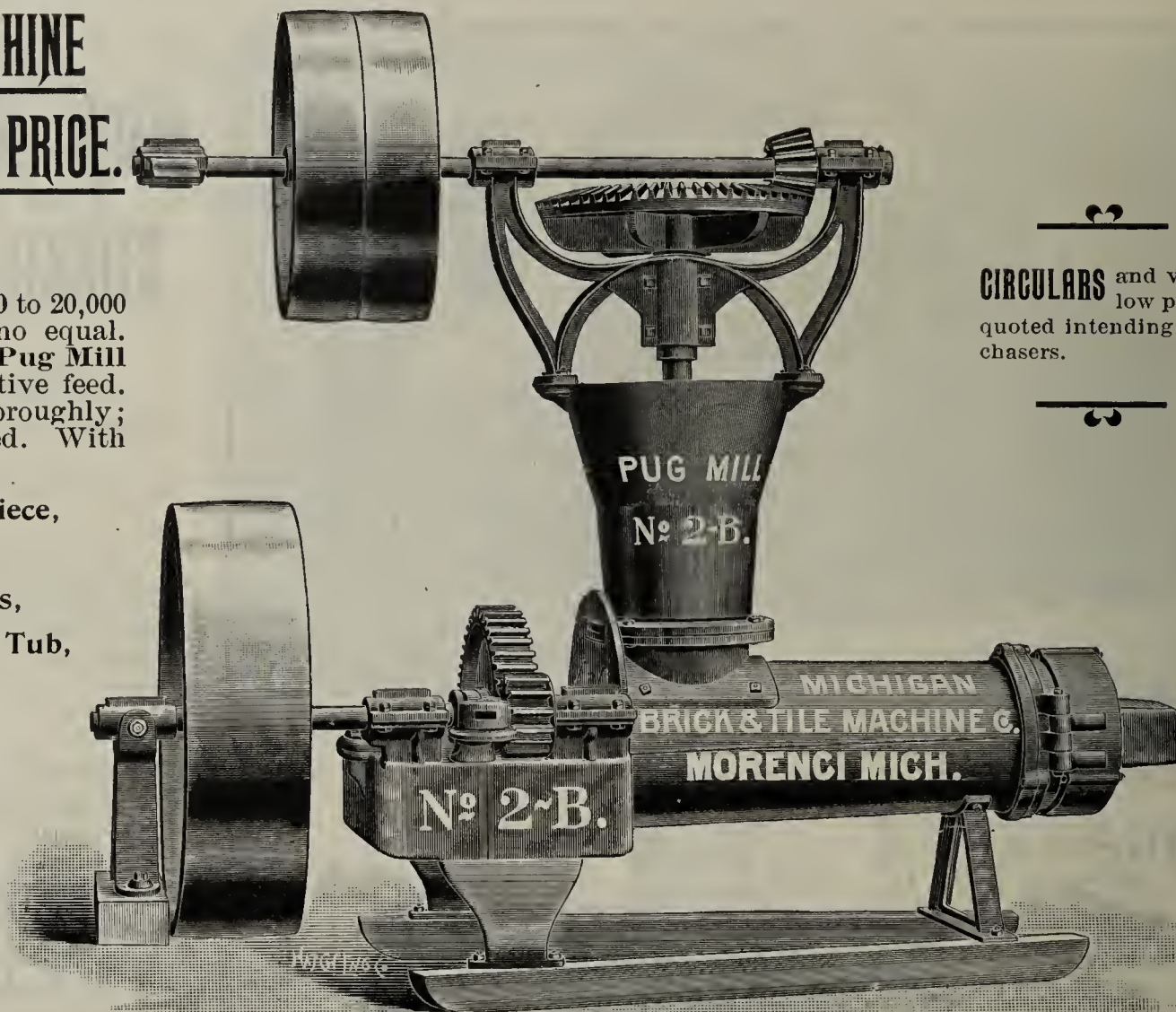
A SMALL SIZED MACHINE AT A VERY LOW PRICE.

FOR a daily output of 12,000 to 20,000 first class brick it has no equal. For tile it is superior. With Pug Mill as shown in cut it has a positive feed. Mixes and pugs the clay thoroughly; making the output unexcelled. With

Safety Hinged Nose Piece,
Steel Shafts,
Extra Long Bearings,
Solid Main Frame and Tub,

And many other important improvements; it is a very desirable machine to have. Address the Manufacturers,

MICHIGAN BRICK AND
TILE MACHINE CO.,
Morenci, Mich.



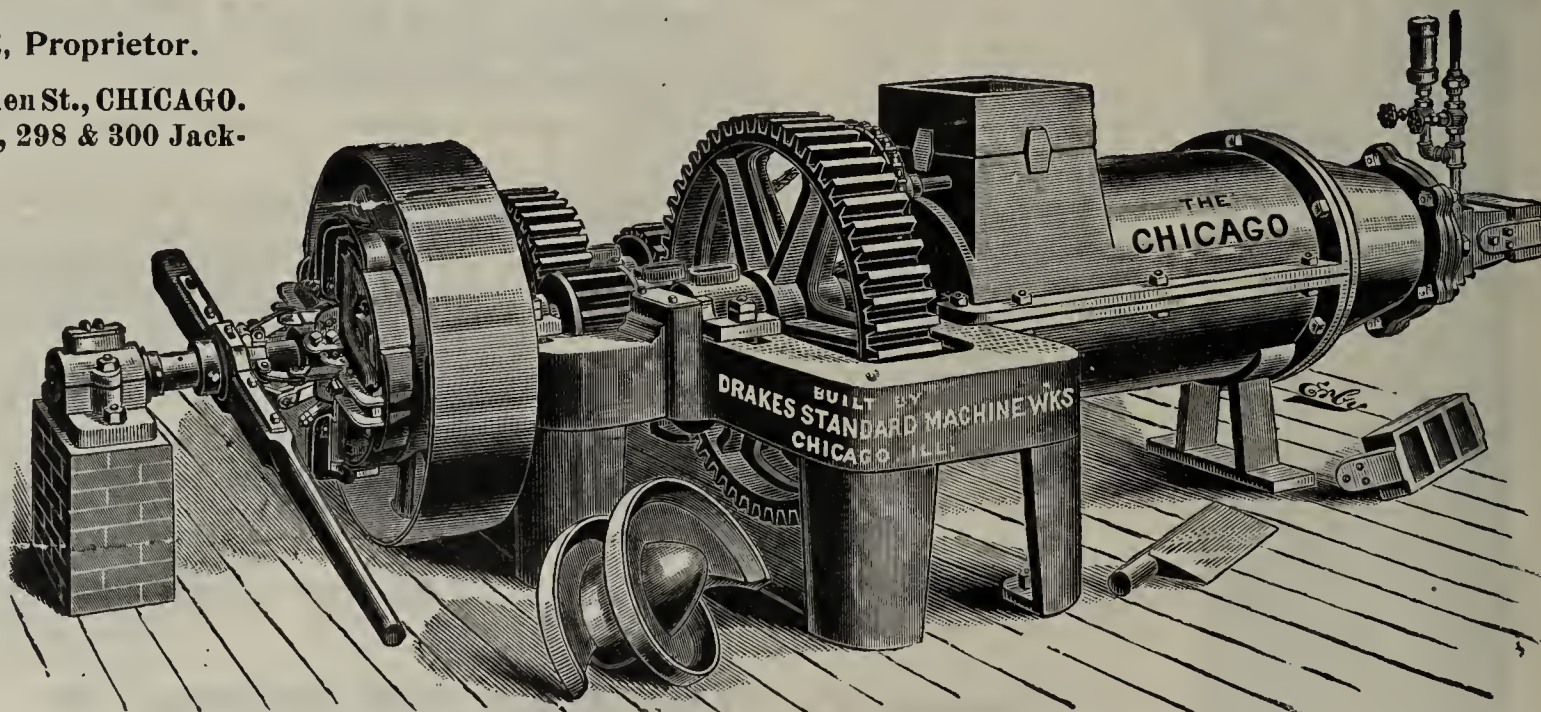
CIRCULARS and very low prices quoted intending purchasers.

DRAKE'S STANDARD MACHINE WORKS,

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY.

C. T. DRAKE, Proprietor.

Factory, 7 & 9 Garden St., CHICAGO.
Office & Salesroom, 298 & 300 Jackson Boulevard.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 50,000 brick per day. Surpassed by none. References: Turner Brick Co., Turner, Ill.; John Mooney, Highland Park, Ill.; A. H. Maynard & Son, Waukegon, Ill.; Myers & Toll, Chicago, and others.

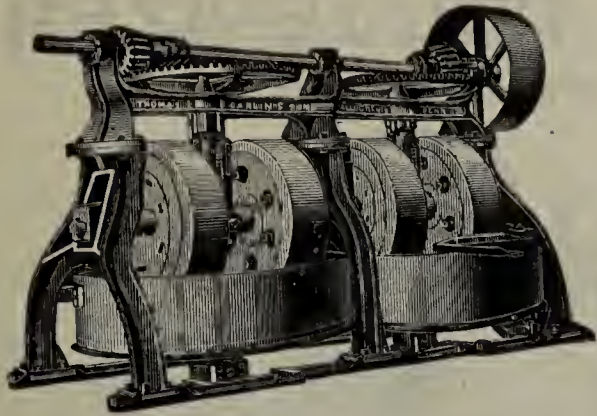
We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, CLAY CRUSHERS, HAND REPRESSES, ETC., ETC.

Our "GRANULATORS" are the leaders in Chicago. So says Alsip Brick Co., who are running 11 Granulators; also Hayt & Alsip May, Purington & Bonner Brick Co.; Purington-Kimbell Brick Co.; Purington Brick Co., and many others.

PRICES REASONABLE.

CORRESPONDENCE SOLICITED



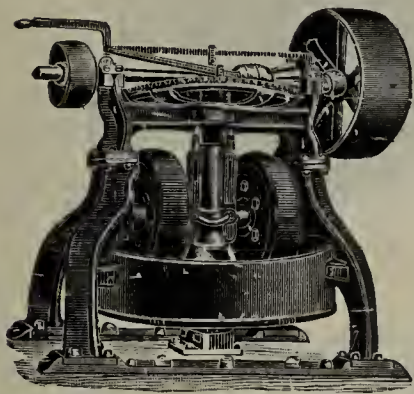
OUR SPECIALTY.

GRINDING AND MIXING PANS

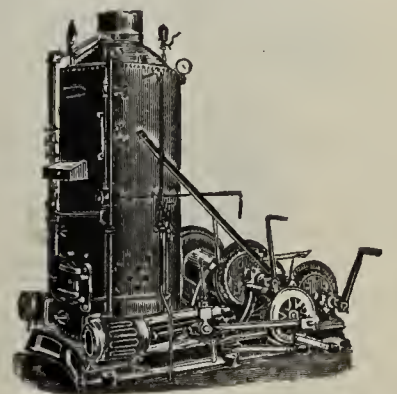
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,
 ENGINES AND BOILERS, HOISTING ENGINES,
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,
 ALLEGHENY, PA.



One 9 foot Dry Pan.
 One 6 foot Dry Pan.

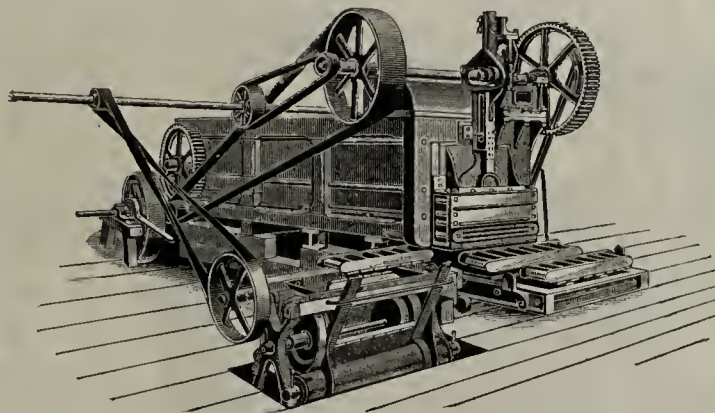
IN STOCK: { One 8 foot Wet Pan.
 Eight 3 foot gauge Dump Cars.

THE POTTS

HORIZONTAL STOCK BRICK MACHINE.

Made with either Wood or all Iron
 Pug Mill.

The Wood Frame Machine is the
 Largest and Heaviest of its Class.



The all Iron Machine has no equal
 it is the most complete machine
 of the kind ever offered the trade.

The Horizontal machine will work any clay direct from the bank without the use of an extra pug mill. It has no equal for making straight brick which have clean sharp corners and smooth surfaces. It fills all parts of a six brick mould evenly.

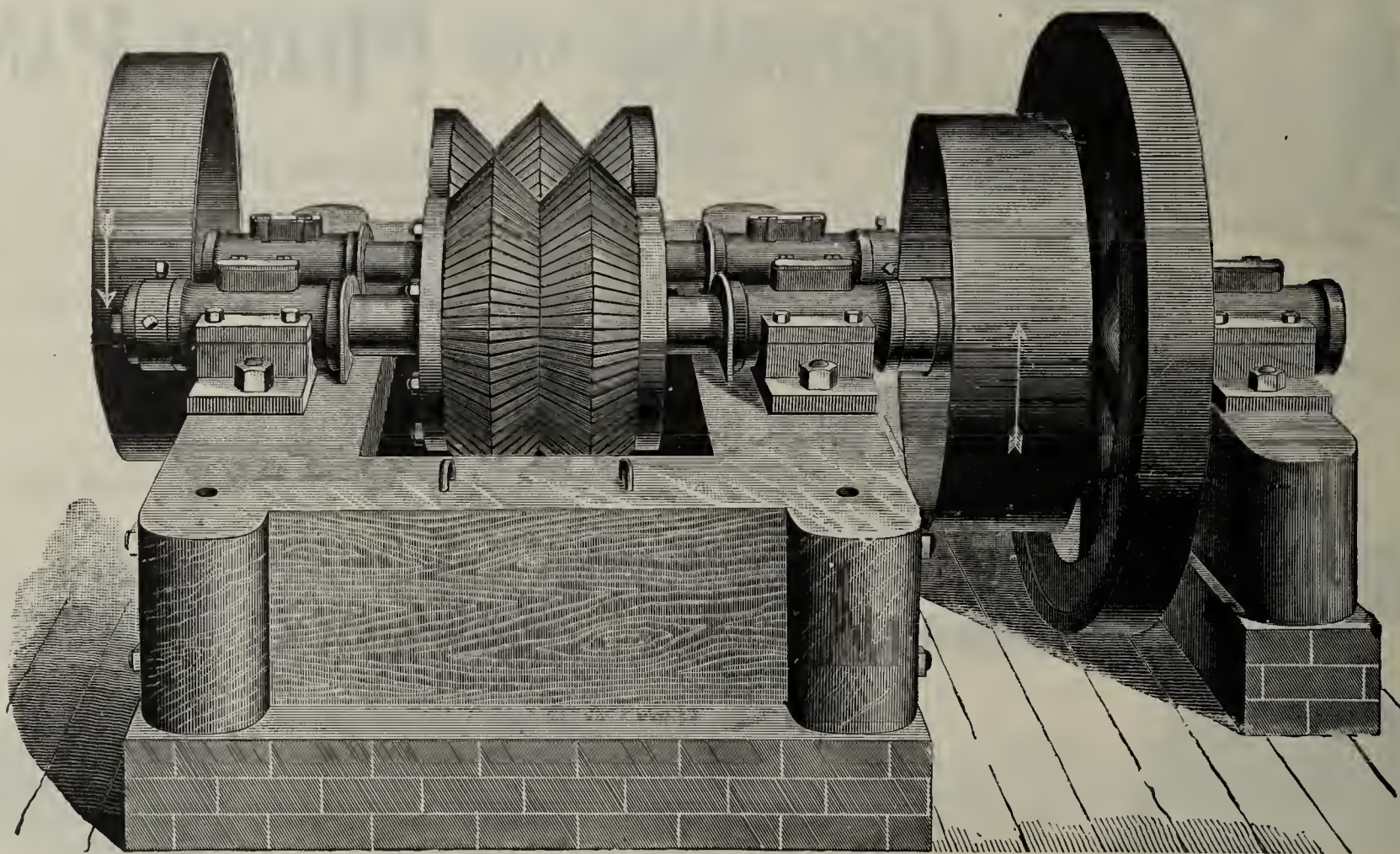
Write for prices and terms.

C. & A. POTTS & CO.,

INDIANAPOLIS, - - - INDIANA.

NEWELL IMPROVED CLAY PULVERIZER

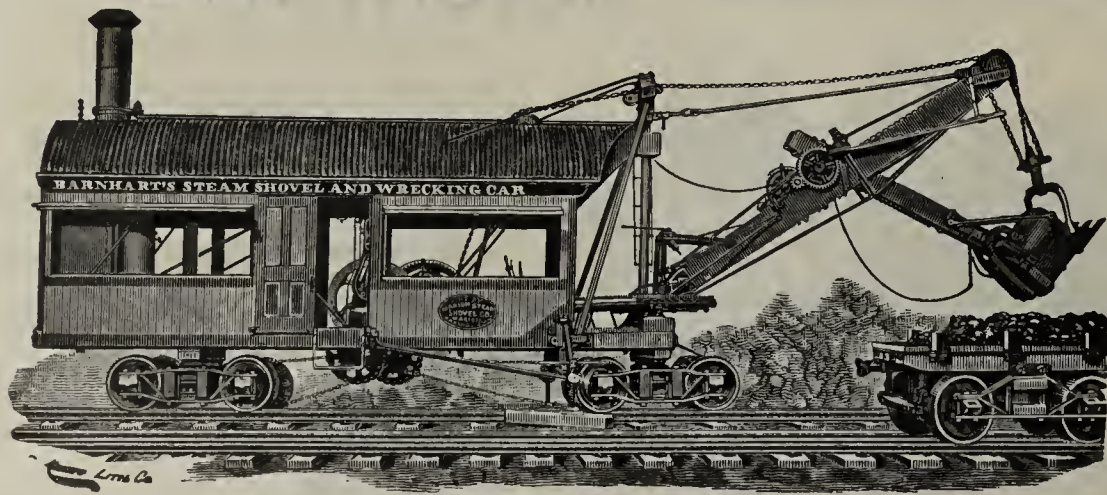
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeyer Building, New York, U.S.A.
26 Cortland and 21 Dey Streets,

STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

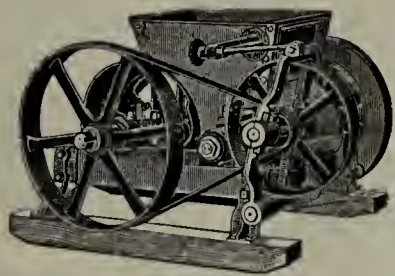
The Marion Steam Shovel Co.,
608 West Center Street,
MARION. . . . OHIO.



STYLE C—¾ YD

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick

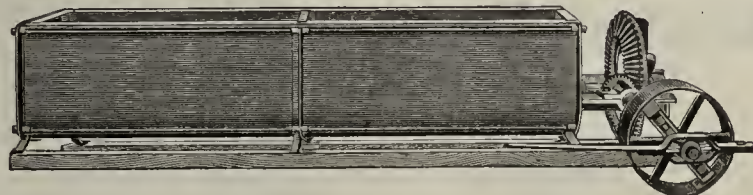
If you are Using a Vertical Machine and are troubled with Hard Dry Lumps of Clay or Stone, try a



POTTS DISINTEGRATOR

It will grind the clay and grind or separate the stone. Try a

PUG MILL



this will temper your clay better than you can do by any other process, at the same time it will save from \$3 to \$5 per day. For further information write

~~~~~

C. & A. POTTS & CO.,  
 INDIANAPOLIS, - - - - - INDIANA.

MANUFACTURERS OF  
IMPROVED

# CLAY WORKING MACHINERY

OF EVERY DESCRIPTION

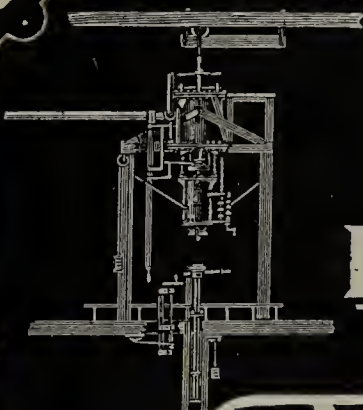
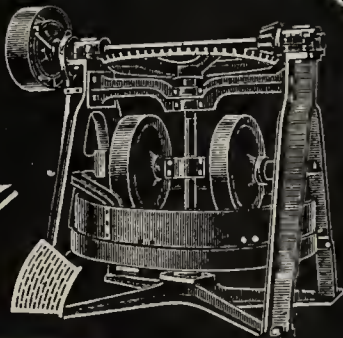
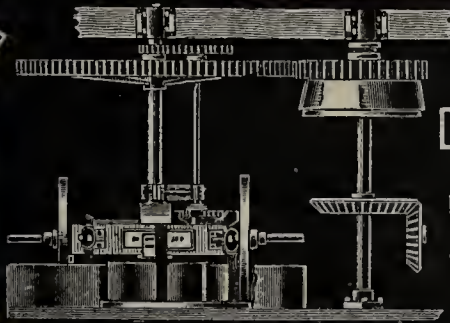
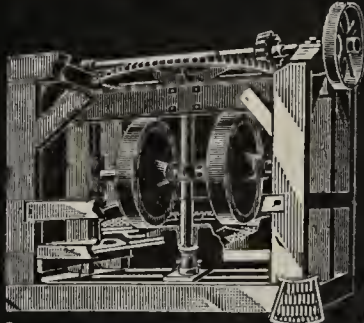
## TAPLIN RICE & CO.

(CLAY MILLS,  
STEAM SEWER PIPE PRESS,  
DRY & WET PANS, DIES, CLAY BLOCKERS,  
POTTERS' WHEELS AND  
MACHINERY OF ALL KINDS.)

## AKRON, OHIO, U.S.A.

PROMPT ATTENTION  
& DISPATCH GIVEN  
TO ORDERS

SEND FOR  
CATALOGUE  
A



# Fisher Engine, Foundry and Machine Works.

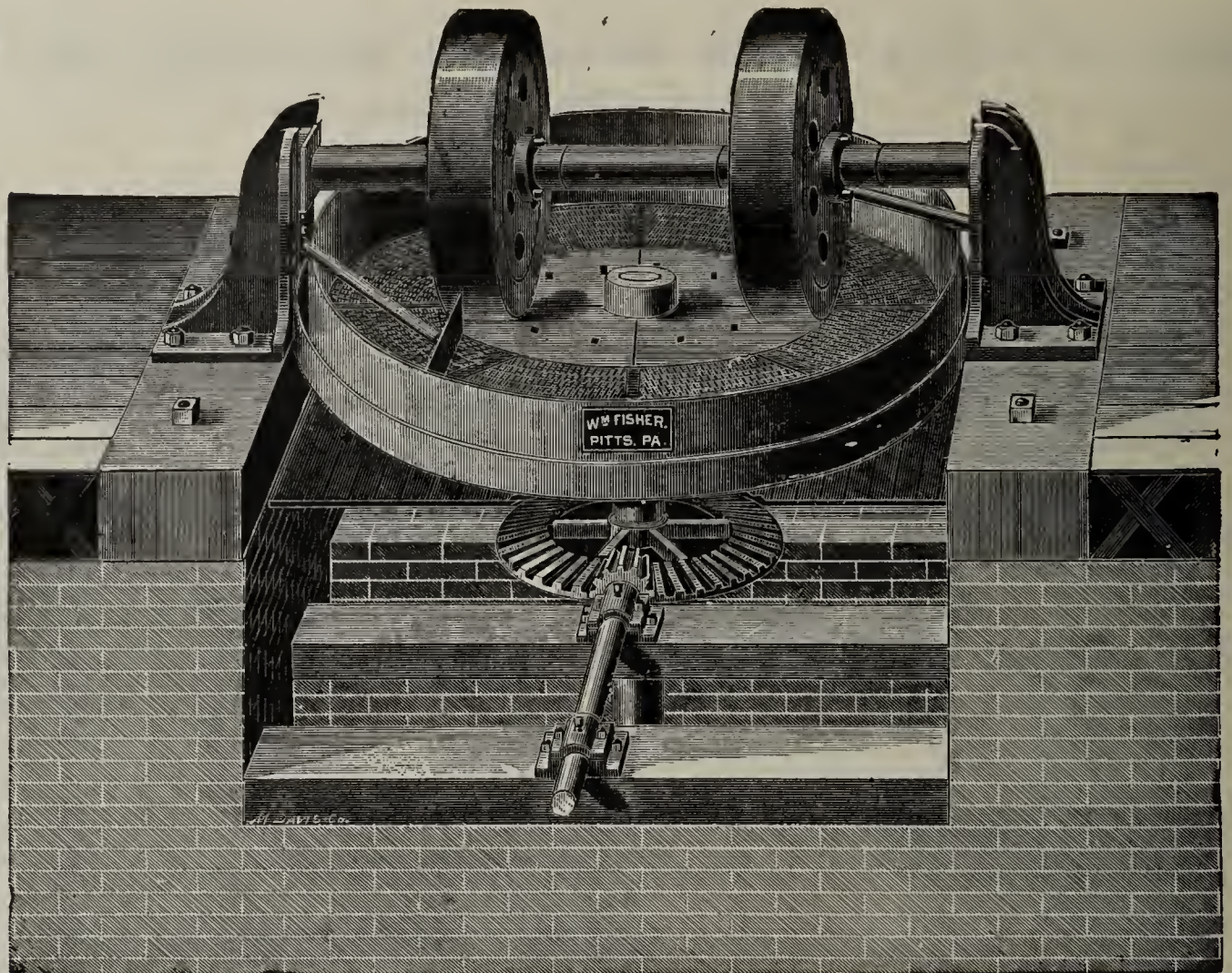
WM. FISHER, PROP.

Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,  
FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

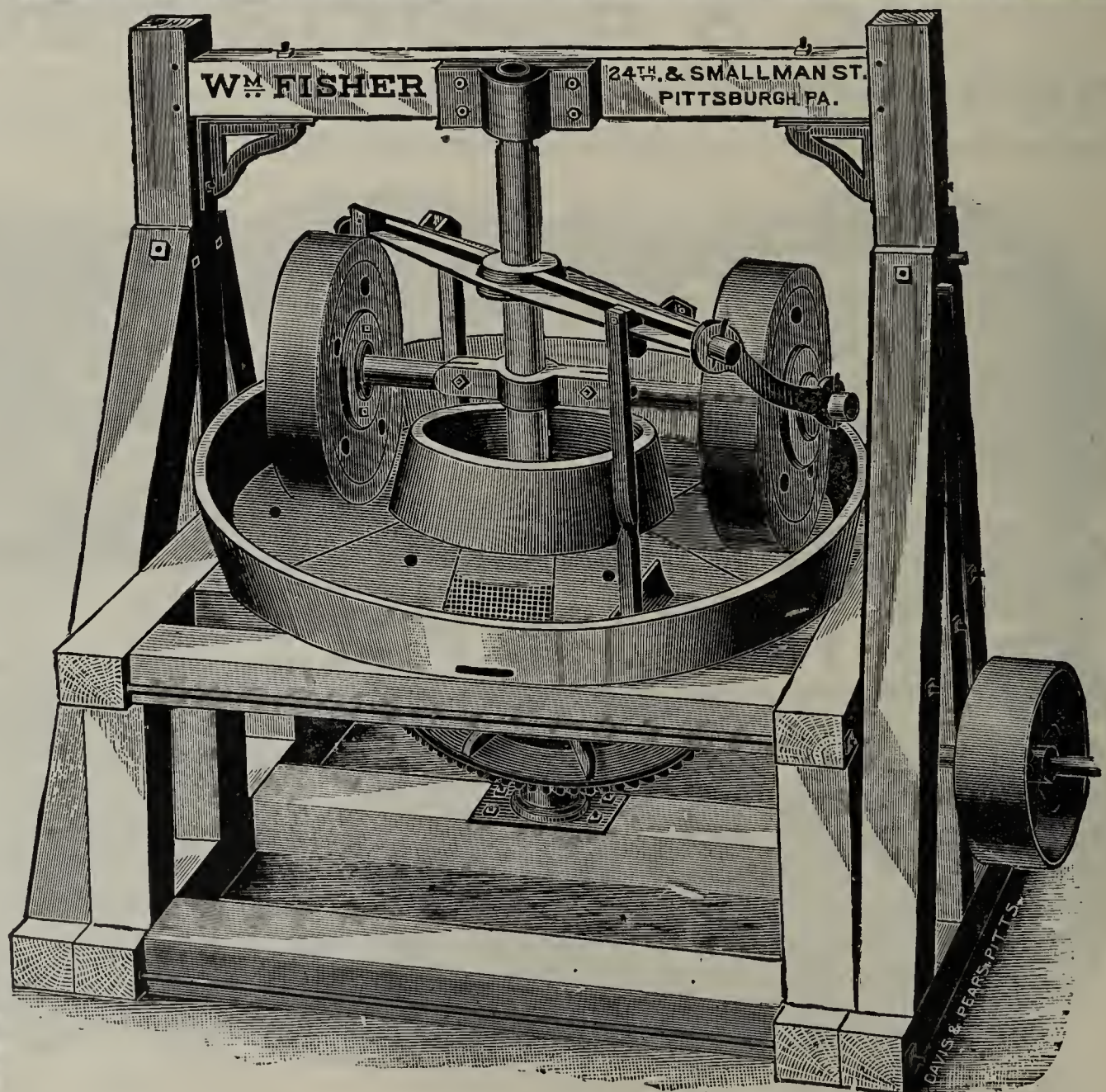
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.



☞ When writing for prices, state kind of material and capacity required.



# We Can Prove It!

All dry press machine manufacturers claim their machine is the best, but we are the only ones that can **PROVE** our claim. Three of the many points of superiority of the Penfield Press may be briefly stated as follows :—

1st. The Penfield Dry Press Brick Machine is the strongest made and gives the brick the most powerful pressure.

2nd. The Penfield Dry Press Brick Machine devotes more time to the operation of pressing, and holds the pressure on the brick longer than is done by any other press. The elliptical gears secure a long dwell of the pressure on the brick and a quick return of the pressing parts.

3rd. The Penfield Dry Press Brick Machine not only exerts the most powerful pressure and holds it longer on the brick, but it also practically represses them in the mold. The pressure is released entirely, giving opportunity for reaction of clay, and is then repeated with increased length of stroke, thus compressing the clay far beyond the limit possible with an unrepeatd or unaugmented pressure.

— — — — —

In consequence of these three features, we can press more clay into each brick, making the brick denser and stronger, with beautiful polished surfaces, sharp, well-defined corners, and perfect outlines. Verily,

# The Penfield is the Best

— — — — —

For names of those using the Penfield Dry Press Brick Machines, address,

## J. W. Penfield & Son,

— Willoughby, Ohio, U. S. A.

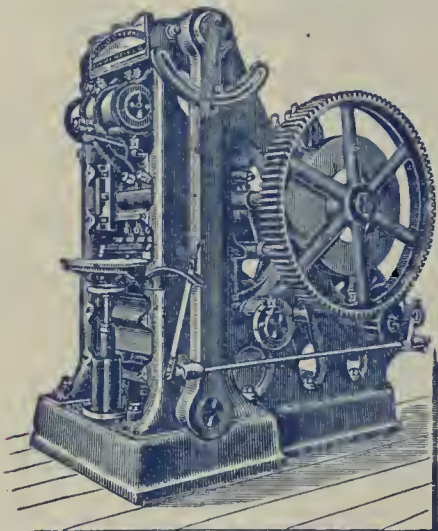
J. W. PENFIELD & SON  
WILLOUGHBY, OHIO

J. W. PENFIELD & SON  
WILLOUGHBY, OHIO

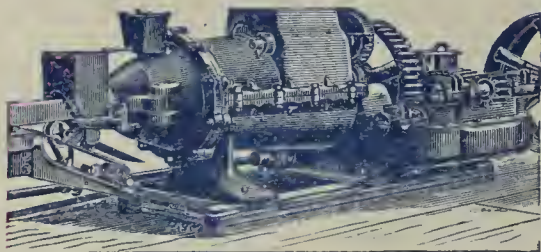


# J. W. PENFIELD & SON, WILLOUGHBY, OHIO, U. S. A.

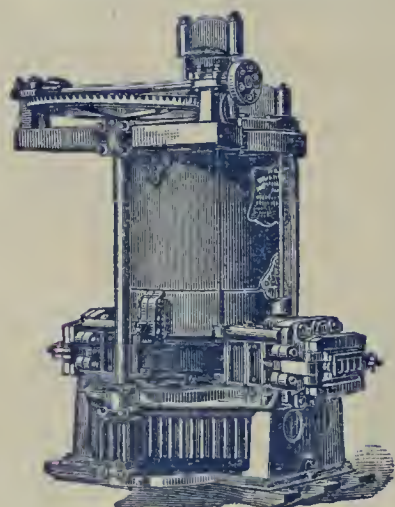
Some Things We Make:



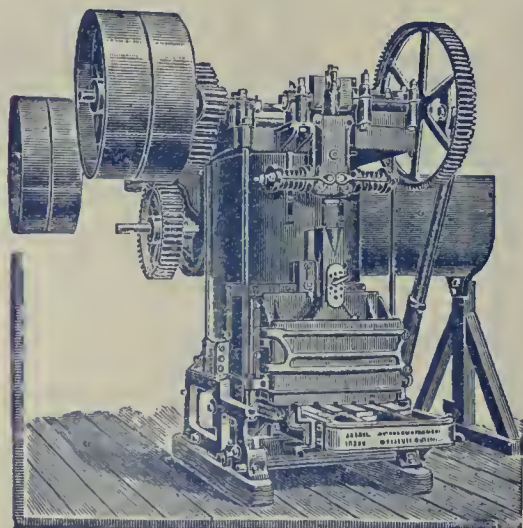
Dry Press Brick Machines.



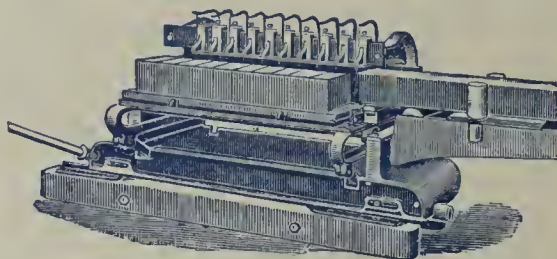
Auger Brick Machines;  
Auger Tile Machines.



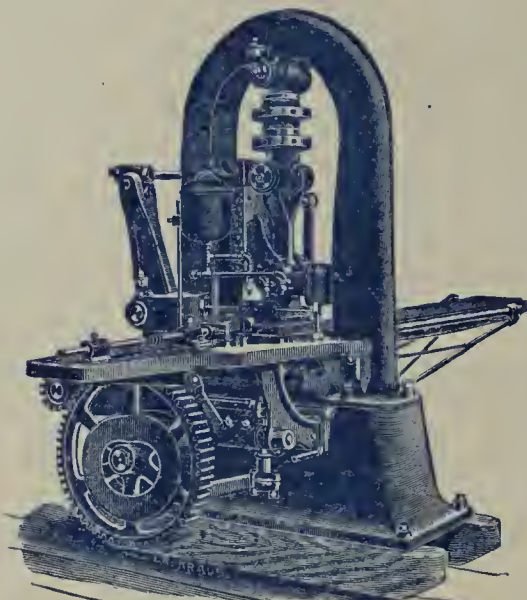
Plunger Brick Machines,  
Also suited for making Tile, Fireproofing, Etc.



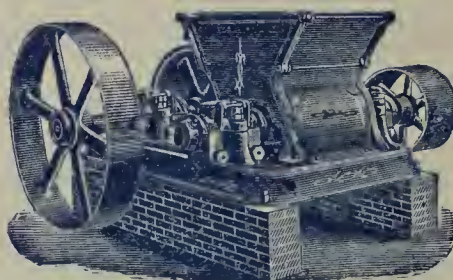
Stock Brick Machines,  
For Sand-Mold Brick.



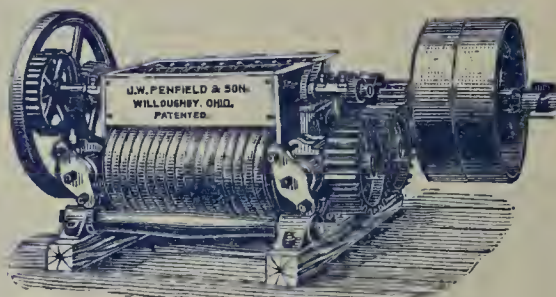
Board Delivery Brick Cutters.



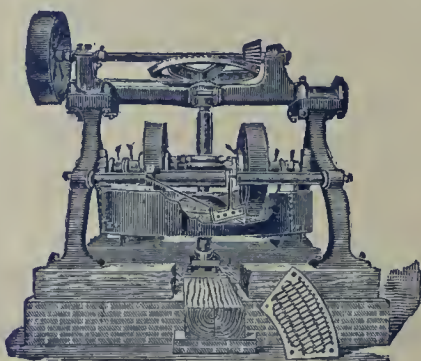
Brick Represses.



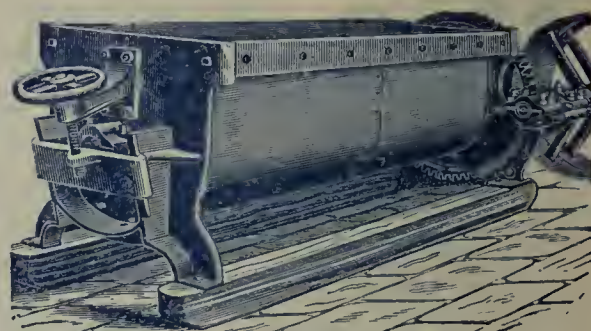
Disintegrators,  
Singly or combined with Crushers or Pug Mills.



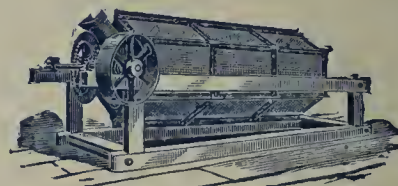
Clay Crushers; Stone Separators.



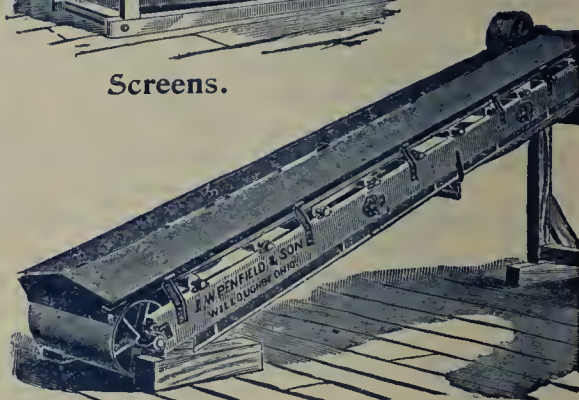
Dry Pans; Wet Pans.



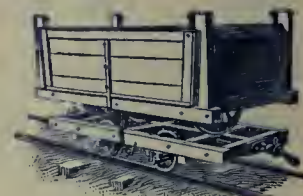
Pug Mills; Granulators.



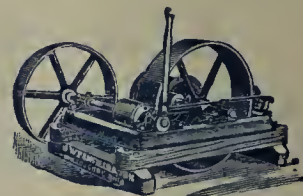
Screens.



Clay Elevators; Conveyors.

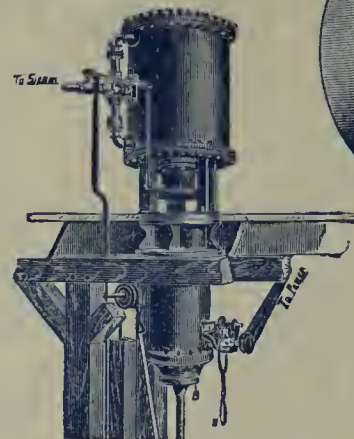
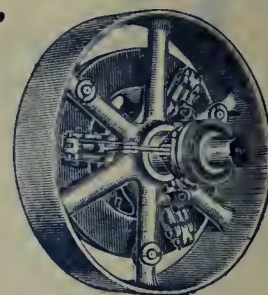


Clay Cars.



Winding Drums.

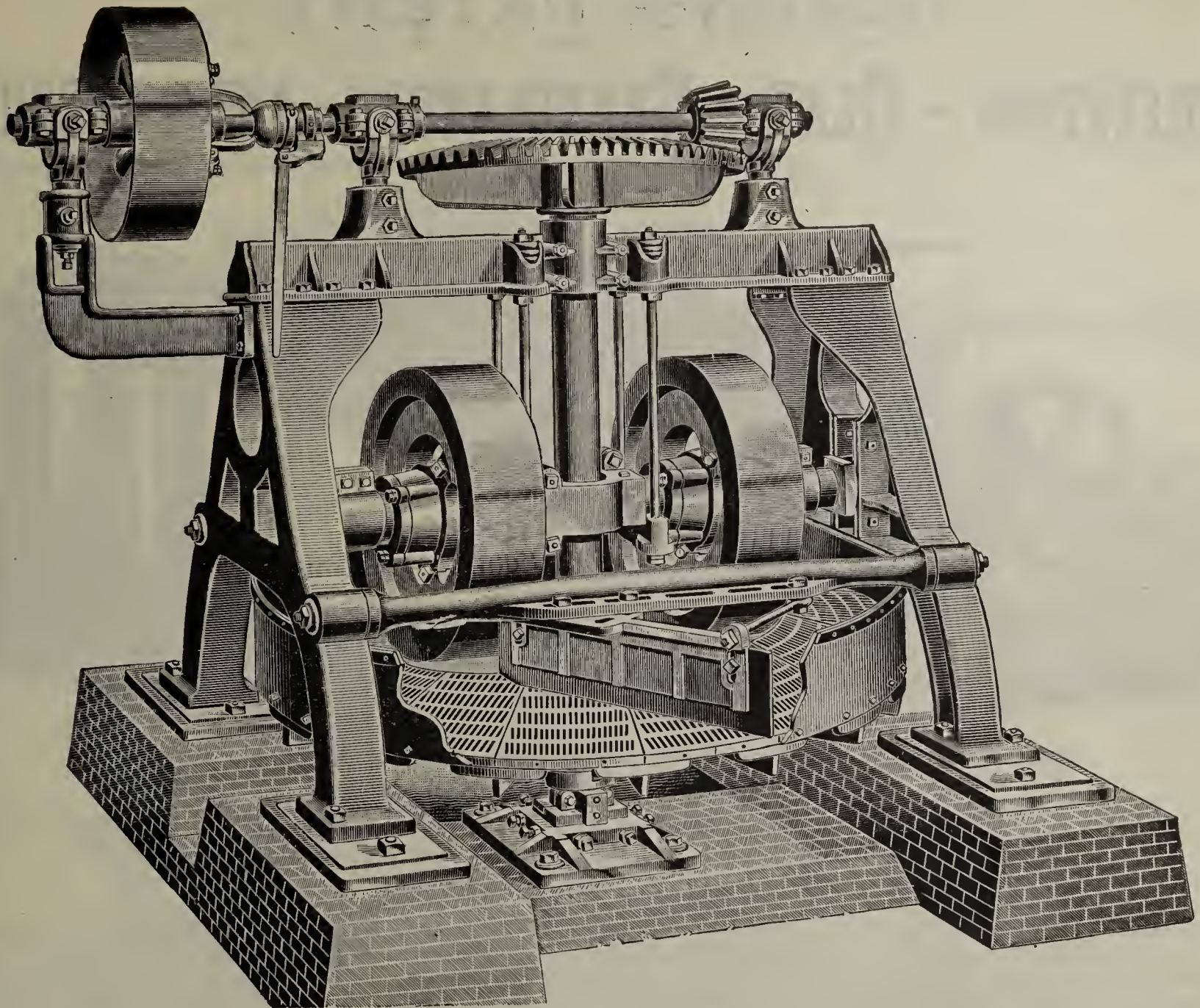
Barrows; Kiln Castings, Clutch Pulleys,  
Sewer Pipe Presses,  
Etc.



Send for Catalogue.

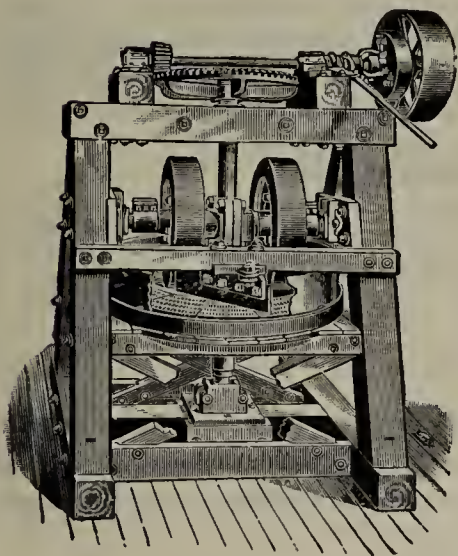
J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A.





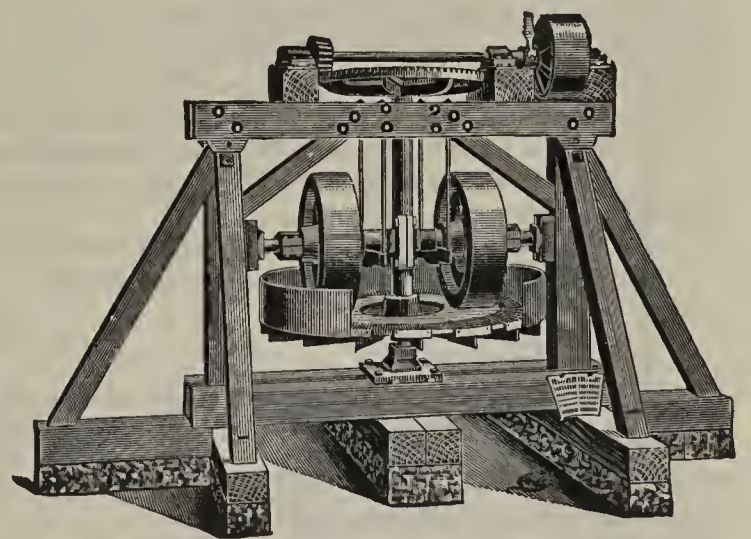
OUR SPECIALTY IS

DRY PANS.



IRON FRAMES,  
WOOD FRAMES.

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All Sizes and Price
to suit
Any Size Plant.
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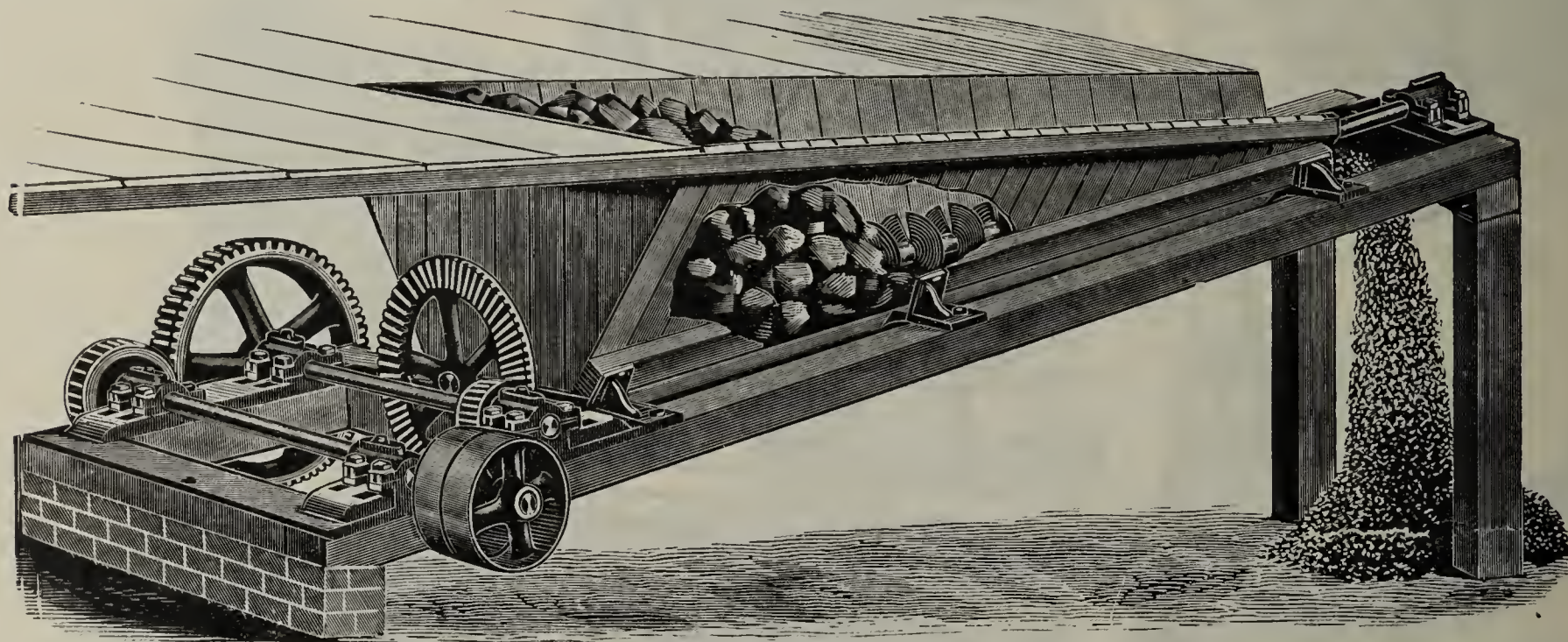


.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

FROST ENGINE CO., Galesburg, Ill.,  
U. S. A.



# EMENS' PATENT PERFECTION - CLAY - GRANULATOR - AND - FEEDER



U. S. Patent No. 360,568. Patented in Canada, England, France, Germany, Austria.

All users of Granulators are cautioned against purchasing machines from parties manufacturing without a license under this patent. All infringers will be promptly prosecuted.

In presenting this machine to the brick manufacturers of the United States and Canada, we have the assurance of supplying a great want—one that has been felt since the introduction of stiff clay machinery for the manufacture of brick and tile. No matter what brick machine manufacturers may say about their machines thoroughly working the ingredients together, all brick and tile manufacturers agree that heretofore only a very limited amount of sand could be used at all, and when used was left in seams by itself, making the brick worse than if no sand were employed. By the use of our new machinery any amount of sand, coal, slack or saw dust required can be used, mixing it evenly and thoroughly through the clay, thus cutting and destroying the laminations in the brick which have been such a source of annoyance to brickmakers and loss to their patrons, by the brick peeling off in flakes or laminated structures. The following are some of its numerous merits:

1. It is simple in construction, easily operated and can be stopped or started without interfering with the running of the brick or tile machinery.
  2. It thoroughly granulates the clay, mixing it evenly with any amount of sand, coal slack or saw dust required.
  3. It saves the labor of from one to six men. The clay, sand, etc., being dumped directly into the feeder hopper, it is then carried forward by the granulating devices in a steady and even volume to the brick machine and when so delivered is in a fine granulated condition. Each little granule of clay being rolled in sand, it is easily taken by the brick machine, and by its continuous feed and fine condition for brick or tile machine to receive, the capacity of the brick machine is increased from 25 to 100 per cent. over the ordinary method of shoveling it into the hopper by hand.
  4. It will thoroughly mix and granulate any kind of clay from the easiest to the hardest working varieties.
  5. There is practically no limit to the range of work. It will feed a crusher or any other clayworking machine to any capacity desired.
  6. It does its work so thoroughly that the brick made by this process are equal to the best hand-moulded brick.
- This machine is sold entirely upon its merits.

## —REFERENCES.—

Anthony Ittner, St. Louis, Mo.; Hatch & Bro., Camden, N. J.; Central Press Brick Co., North Baltimore, Ohio; J. W. Markham, Traverse City, Mich.; Vaneklasen & Son, Zeeland, Mich.; Emens Brick and Tile Co., Holton, Mich.; J. B. Legnard, Thos. Tully, Hayt & Alsip, Illinois Pressed Brick Co., A. D. Bock & Co., Weckler Brick Co., Union Brick Co., Weirheim & Son, Chicago, Ills., and numerous others. Address all orders to

# John Torrent,

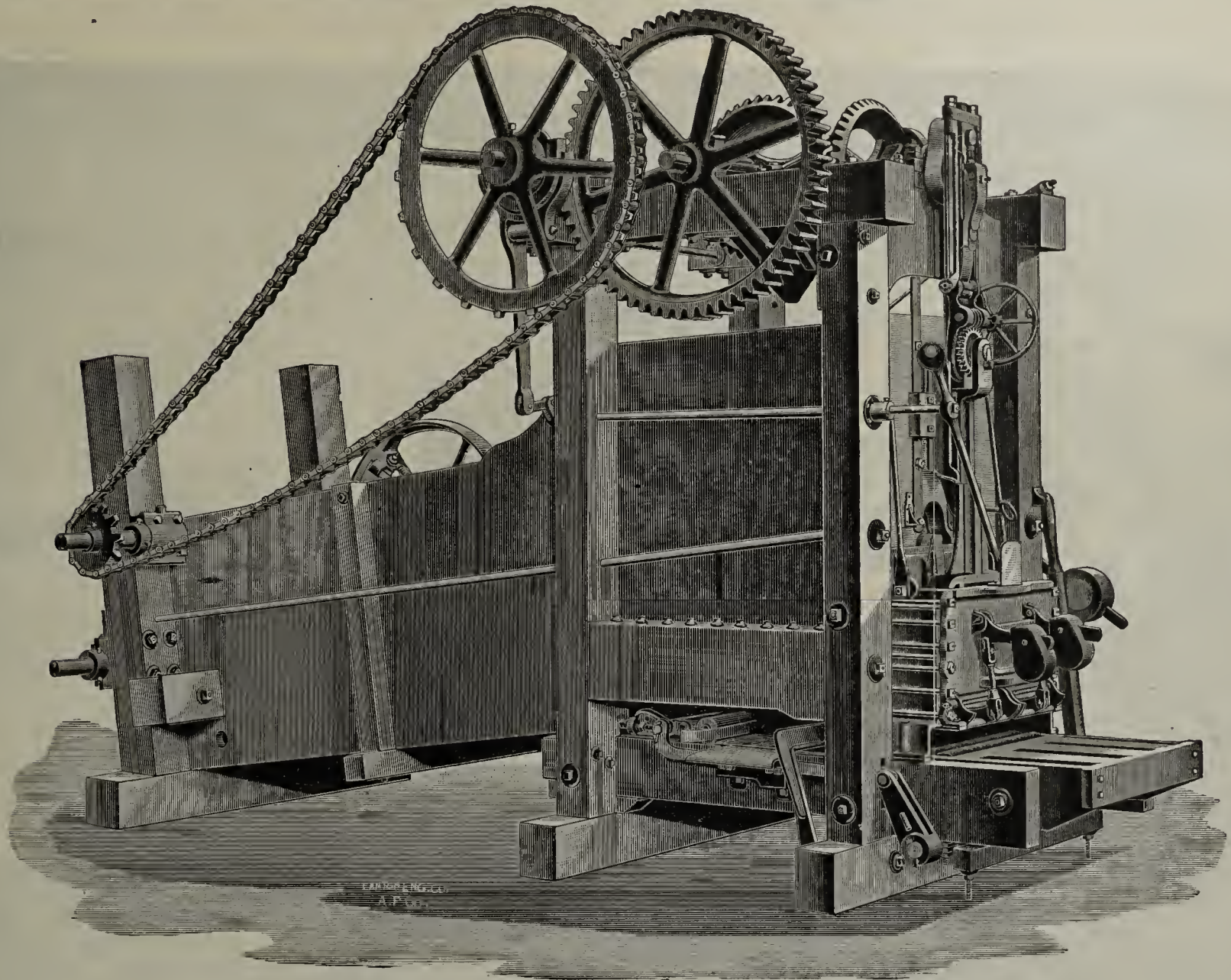
## MUSKEGON, MICH.

Mention Clay-Worker.



# OUR LATEST!

## The "Tiffin" HORIZONTAL BRICK MACHINE



Possesses all the Good Points and  
Patented Special Safety Devices

That have conduced to render our "Tiffin" Vertical Machine so popular with practical Brickmakers.

•❖ PRICES REDUCED. ❖•

Tiffin Horizontal Automatic Brick Machine.....	\$500
" Vertical " " " .....	400
" Horse Power " " " .....	300

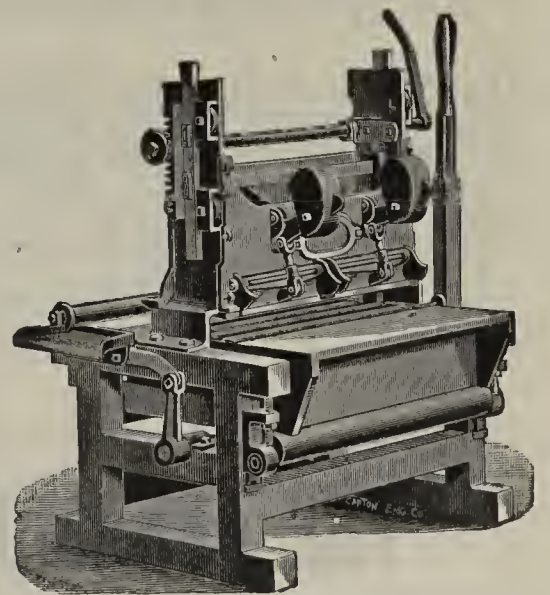
☞ If you have not received a copy of our Illustrated and descriptive Catalogue of Brick Machinery and Brickyard Supplies we will be pleased to mail you one.

## TIFFIN AGRICULTURAL WORKS,

Manufacturers of Steam and Horse Power Automatic Brick Machines, Horizontal Pug Mills, Elevators, Crushers, Tilting Turn Tables, "Old Reliable" Brick Machines, Pug Mills, Trucks, Wheelbarrows, Molds, Etc., Etc.

**TIFFIN, OHIO.**

## The "Old Reliable"

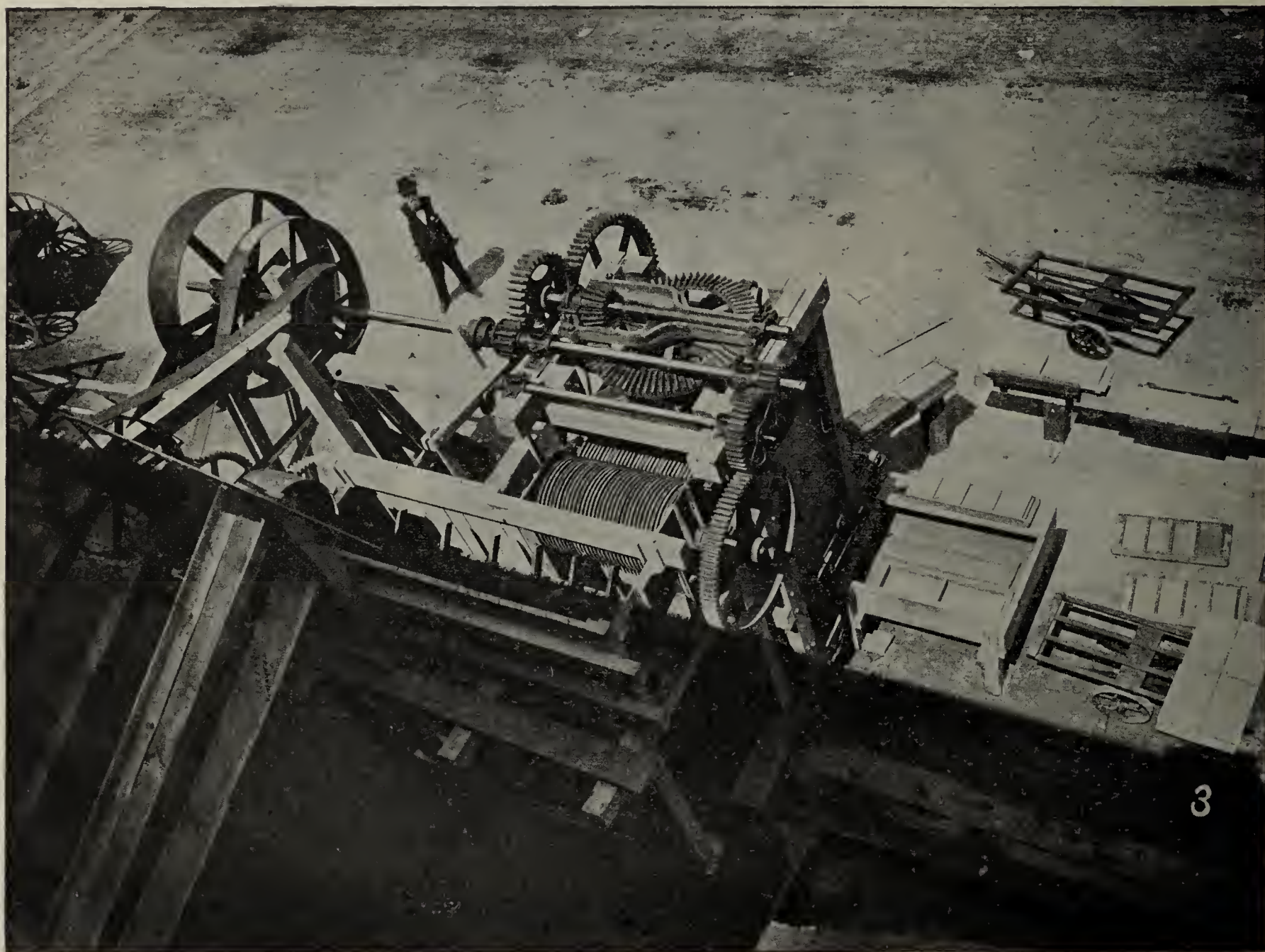


MAINTAINS THE REPUTATION of being the best Machine on the market for use in small yards.



# BRICK-MAKERS,

•➤ Where are We At?



*Strong, Stony, Tenacious Clay cleaned and transformed into first-class Brick.*



*Catalogues, Plans and full information cheerfully furnished on application.*

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## THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

INCORPORATED,

The Pioneer Brick Machine Manufacturers.

LANCASTER, PENN., U. S. A.



# A New Departure in Brick Machinery

## THE HORIZONTAL ANDERSON

OUR latest and most complete combination of Brick Machine, Pug Mill and Disintegrator for the price of one Machine. No out side Plunger with bothersome Gibs and Plates. A Machine that will run for years without requiring any adjustment and never leak. **UNEXCELLED** for **GRINDING** and **PUGGING CAPACITY**; simple in construction and durable.

This Machine is self-contained and requires no other Shafting, Pulleys, Hangers or even Foundation, other than that shown in cut. Manufacturers of Brick by the soft mud process will find it to their interest to investigate this Machine before making their contracts for new Machinery. Write for descriptive circular, prices, etc. We can save you money in the beginning, and make you happy in the end. Capacity equal to any other Machine on the market. We extend a cordial invitation to all prospective purchasers to pay us a visit and allow us to show them the Machine in operation.

INDIANAPOLIS, IND., March 20, 1894.

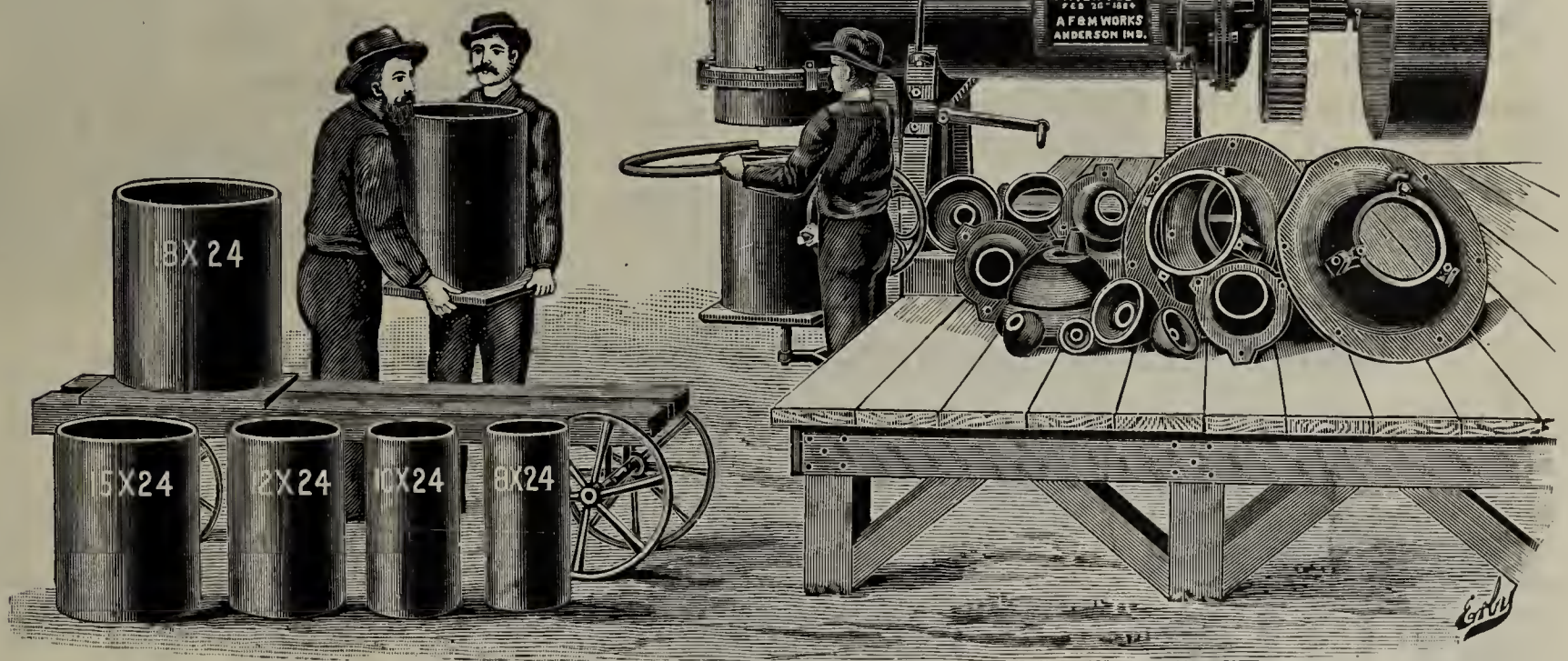
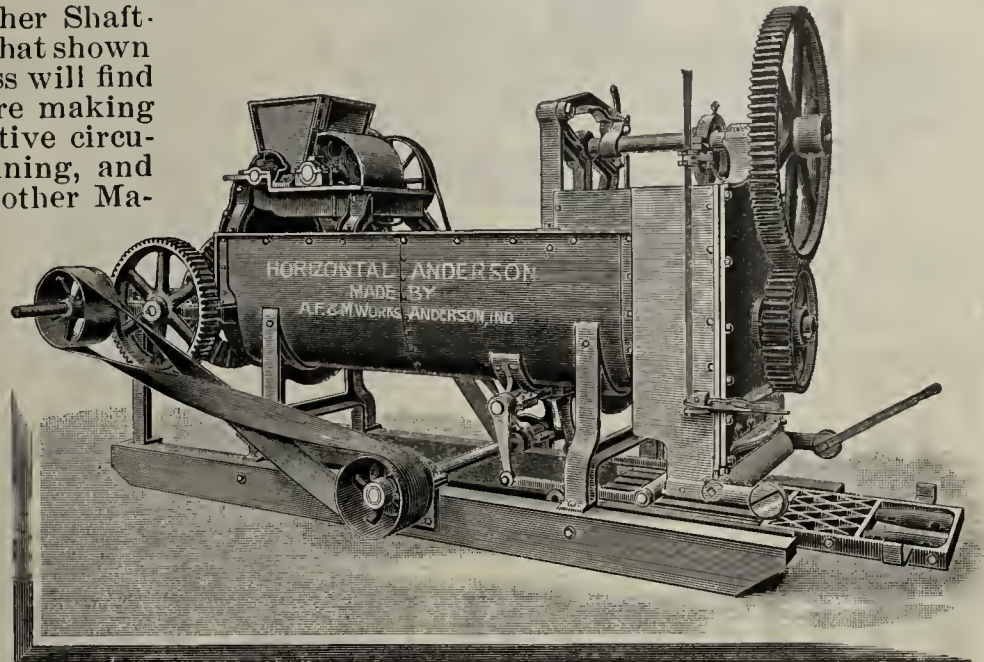
ANDERSON FOUNDRY AND MACHINE WORKS,  
Anderson, Ind.

GENTLEMEN:—It affords us much pleasure to state that the Horizontal Anderson Brick Machine purchased of you last season has given us the best of satisfaction. We have owned and operated eight different Brick Machines previous to this one, and we do not hesitate to pronounce the Horizontal Anderson superior to any and all of them.

We operated the machine during the extremely dry weather of last season and found that no matter how dry and hard the clay was when taken from the bank, the machine thoroughly pulverized and pugged it to the proper consistency for making first-class brick, and at the same time dispose of all stones, of which, unfortunately for us, we have a great many to contend with.

We are willing at all times to show the Horizontal Anderson to our competitors who are in the market for new machinery.

A. BRUNER & CO.,  
Willis Privett, Manager.



## THE GREATEST ON EARTH

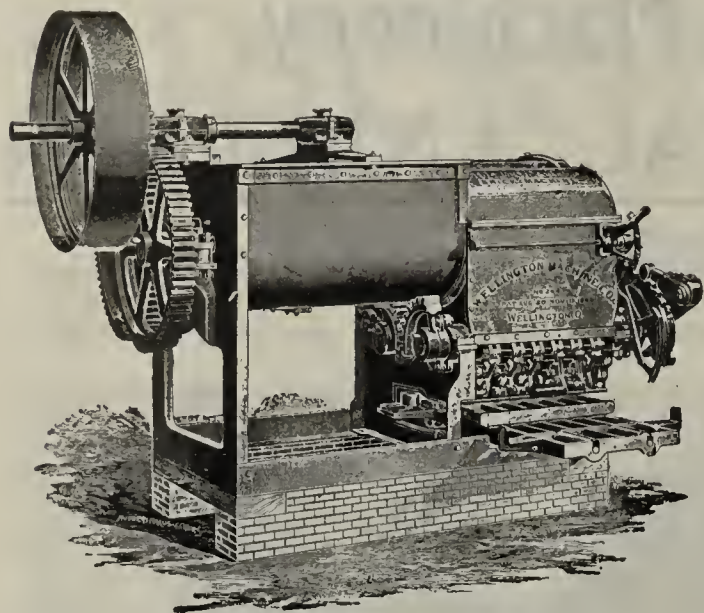
We have imitators but no competitors. The **NEW DEPARTURE** makes all sizes of tile from 3 inches to 24 inches in diameter in a manner that defies competition.

DOWN DELIVERY FOR LARGE TILE.

SIDE DELIVERY FOR SMALL TILE.

THE ANDERSON FOUNDRY & MACHINE WORKS, - - Anderson, Indiana.





## THE "MONARCH" Brick Machine.

**A**LL iron and steel. Takes clay from the bank. Double pug mills. 14 feet. "Up one side and down the other." Most thorough tempering presses in the mud. The greatest idea of all, for all wear, leakage and friction in the press box is entirely done away with. All bearings outside and "stuffed."

Only four gears and none level. The acme of simplicity. Runs with much less power than any other of its class. Four years in use and thoroughly proven. Used by 50 of the very best manufacturers. Send for list and "go and see."

THE MOST ECONOMICAL and LONGEST LIVED MACHINE MADE.

## THE "QUAKER"

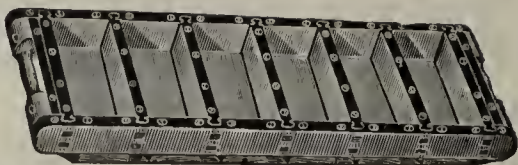
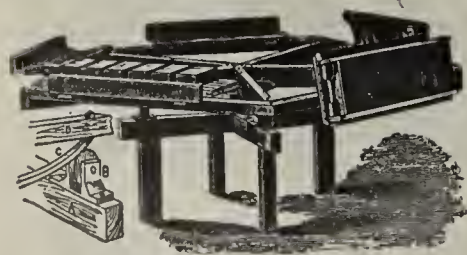
Family of Machines, are the Most Used of Any Single Make of Machine.

### The "New Model Quaker" Horse-Power Machine.

Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



### Two Sizes of Steam Power "Quaker" Machines.



(FOUNDERS AND MACHINISTS.)

Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

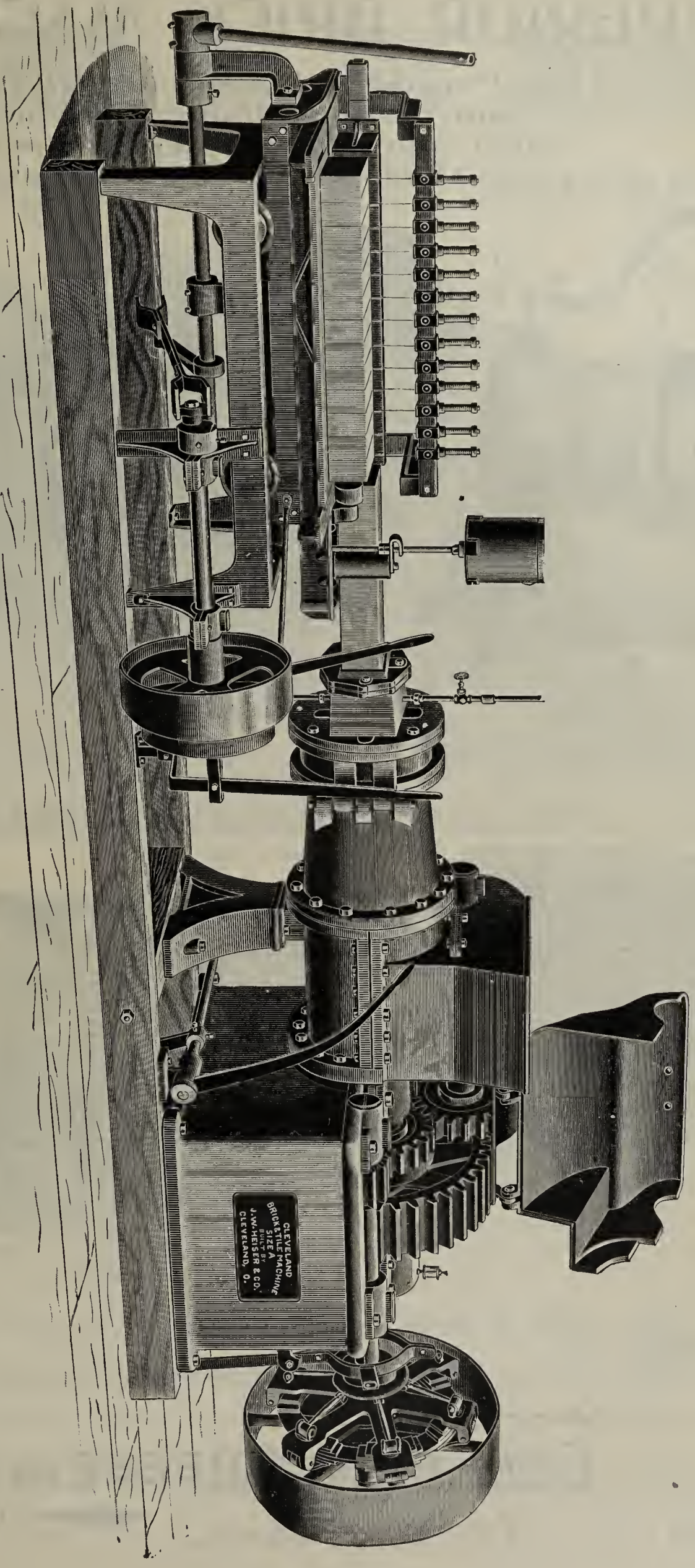
Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

**The Wellington Machine Co.**

*Wellington, Ohio.*



# The "CLEVELAND" CLAY WORKING MACHINERY.



Size "A" Machine with Patent Board Delivery Power Cutting Table. Capacity from 25,000 to 40,000 Brick per day.

ALL OF OUR MACHINERY IS BALL AND PIN BEARING AND....  
GUARANTEED FOR ONE YEAR AGAINST WEAR OR BREAKAGE.

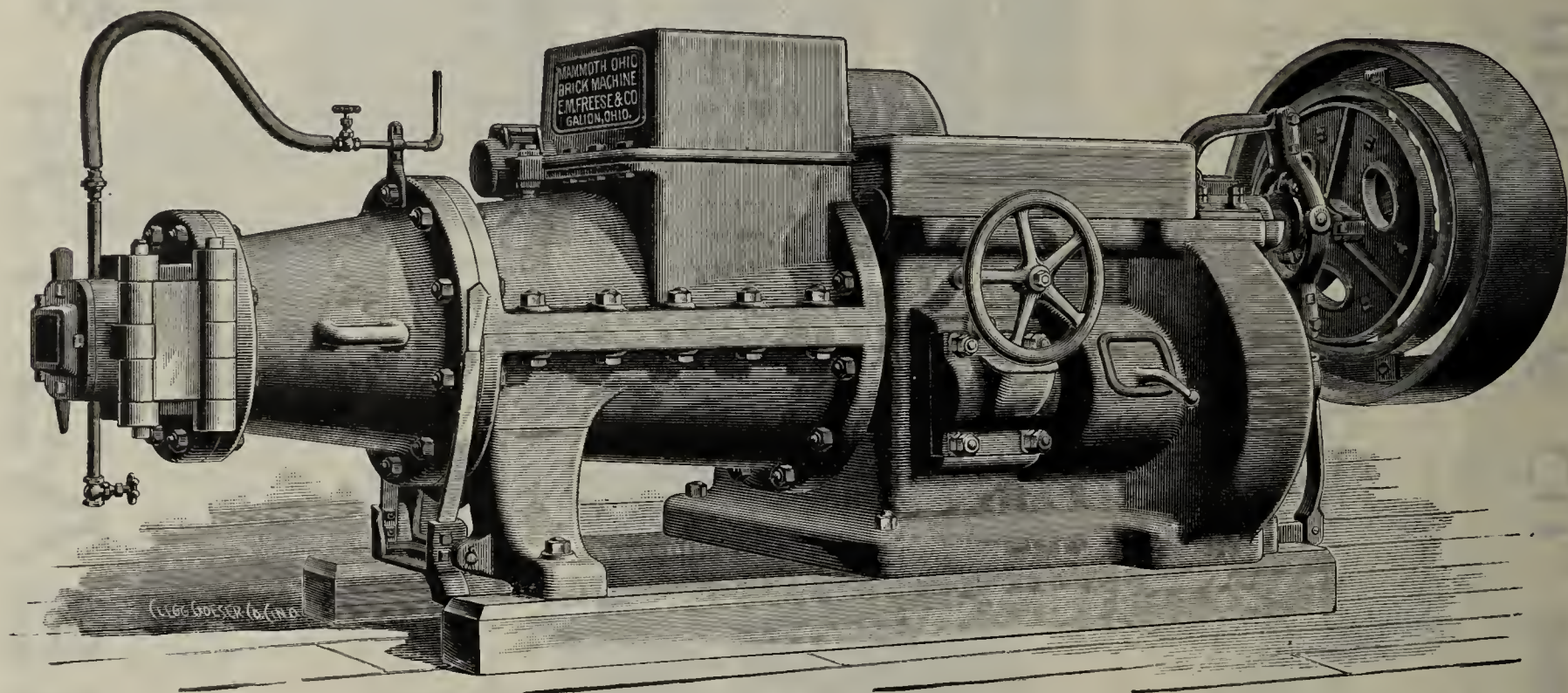
If you want superior machinery, improve your product, save money and have a balance on the right hand side of your Ledger, write to us for Catalogue and description of our machinery.

**J. W. HEISER & CO.,** Manufacturers of CLAYWORKING MACHINERY, Cleveland, Ohio.



# SUPERIOR BRICK MACHINERY.

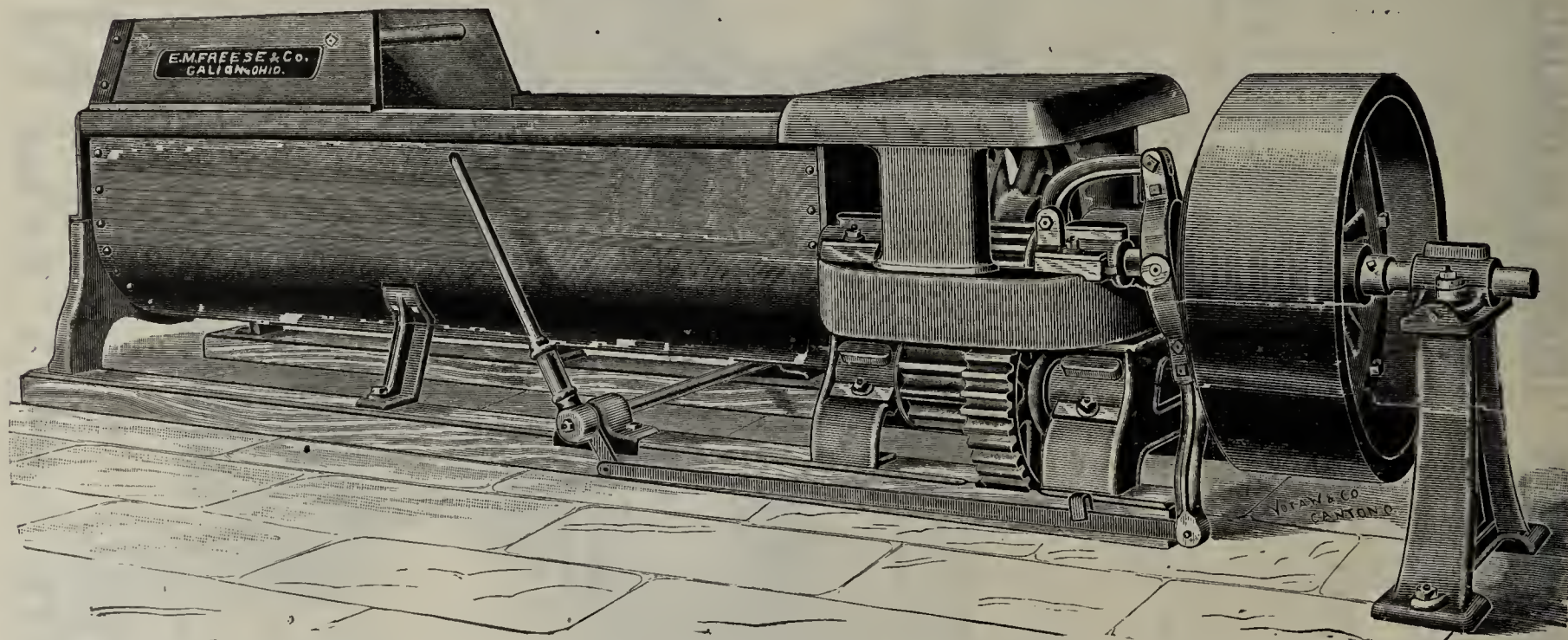
*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

## PUG MILLS THAT PUG THE CLAY.



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

IT WILL PAY~~~~~

ADDRESS **E. M. FREESE & CO.,**

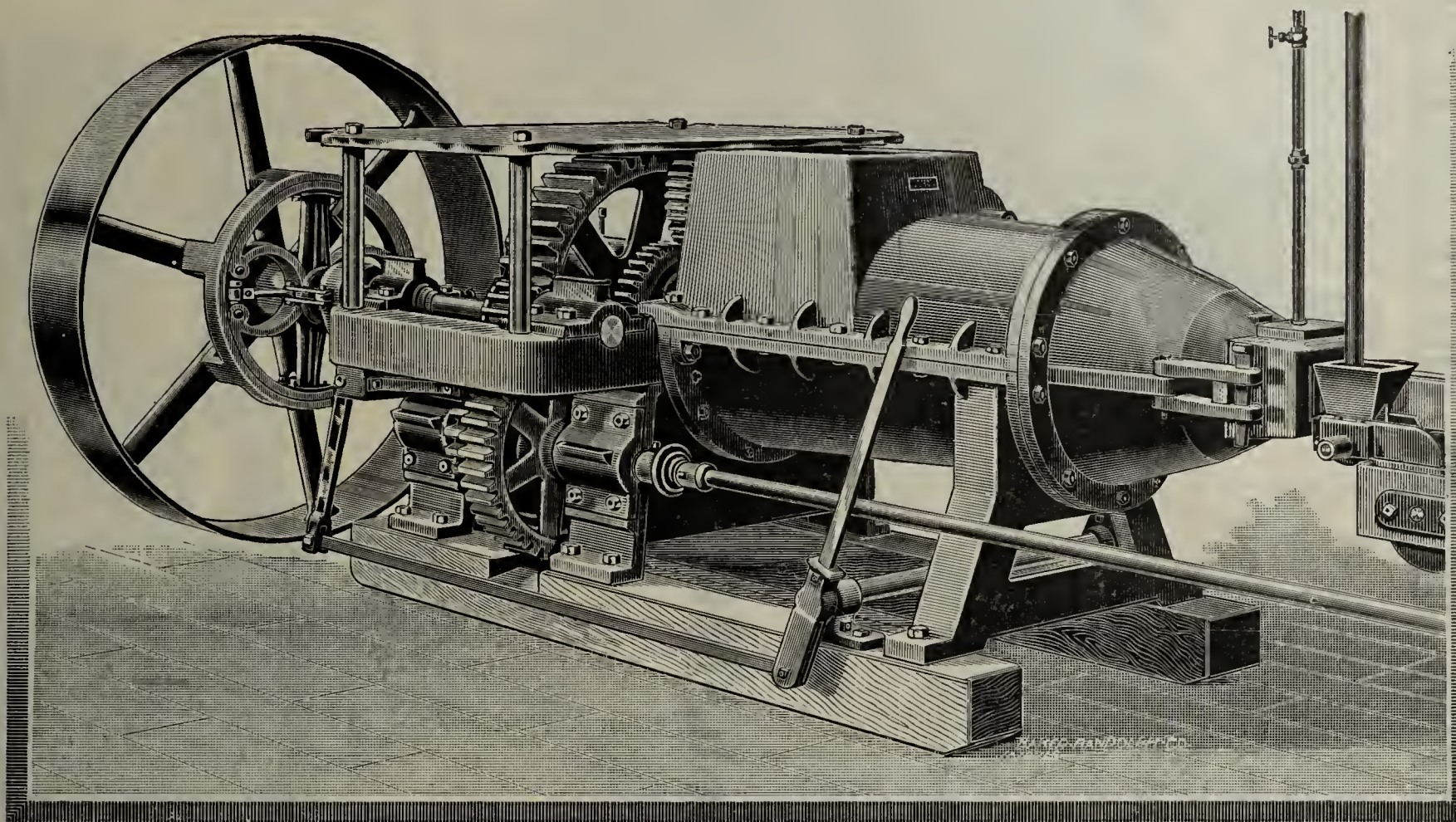
**GALION, OHIO.**



# IMPROVED BRICK AND TILE MACHINERY,

MANUFACTURED BY

THE DECATUR LEADER MFG. CO.



Auger Brick Machine.

WHAT THEY THINK OF US AT HOME. . . .

—OFFICE OF—

## The Tuttle Brick Company.

DECATUR, ILL., March 26, 1894.

THE DECATUR LEADER MFG. CO., City:

GENTLEMEN—The outfit of Brick machinery made by you for us gives entire satisfaction. We understand your automatic cutter is a recent design, and we would say that it deserves especial mention for its simplicity and perfect working.

Yours truly,

THE TUTTLE BRICK CO.,

JOHN DILLER, Manager.

Our line is complete. Send for printed matter.

THE DECATUR LEADER MFG. CO.,

Decatur, Ill., U. S. A.

[Mention the Clay-Worker.]



# NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

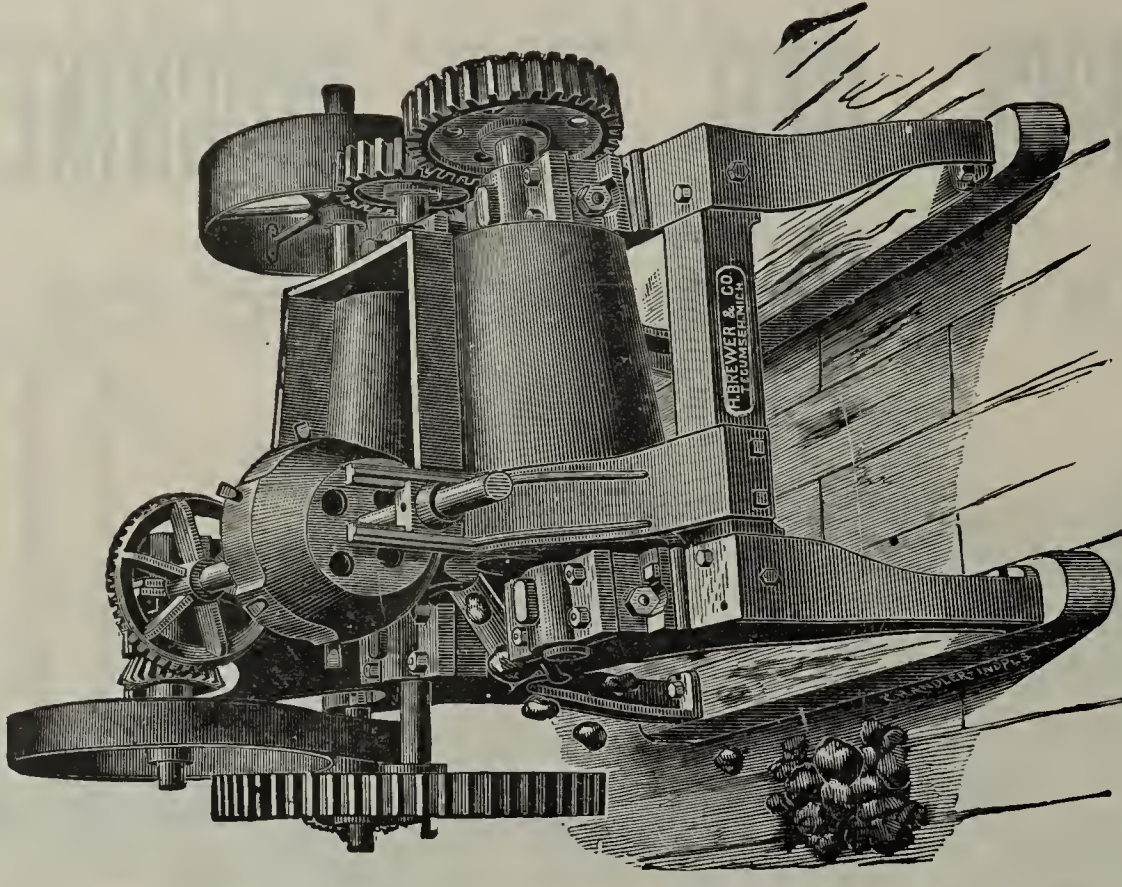
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

## H. BREWER & CO.,

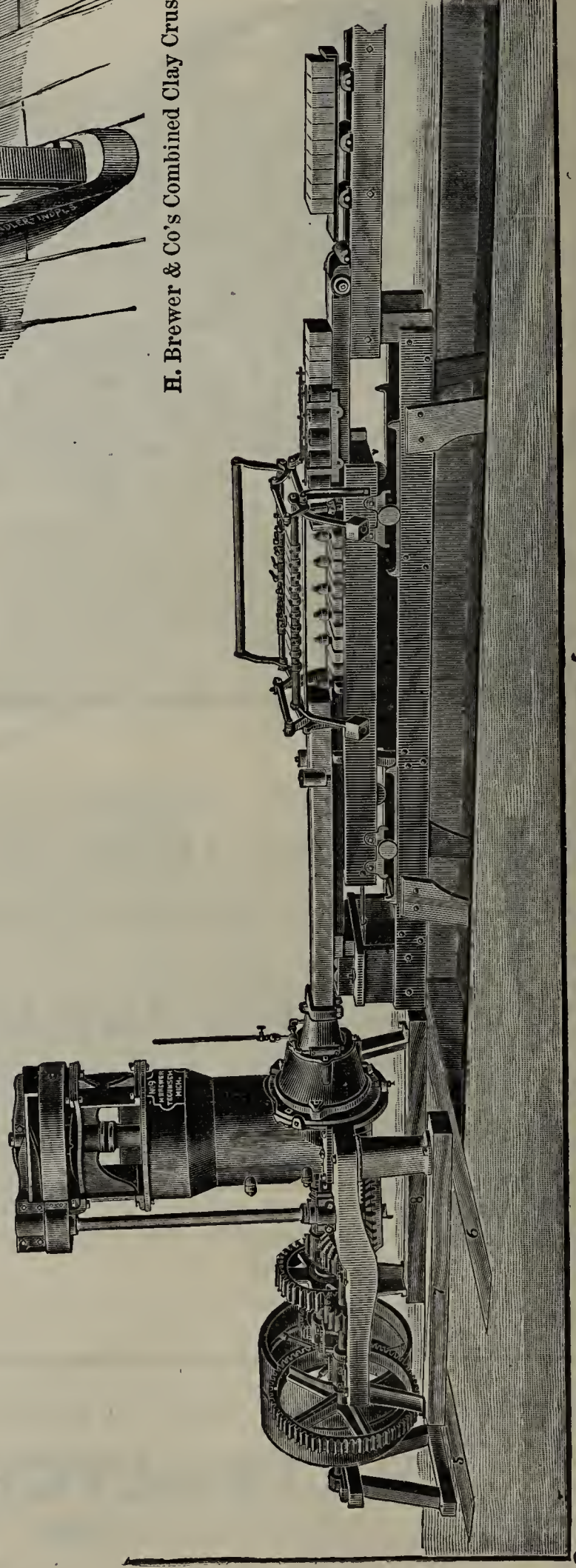
## Tecumseh, Mich.

[Mention the Clay-Worker.]



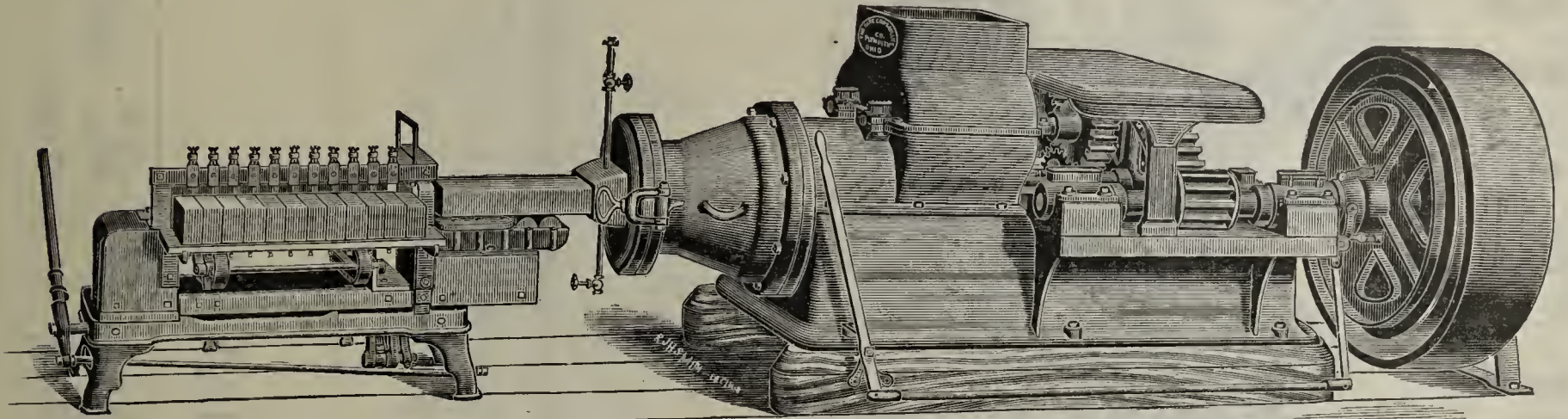
H. Brewer & Co's Combined Clay Crusher and Stone Separator.

The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



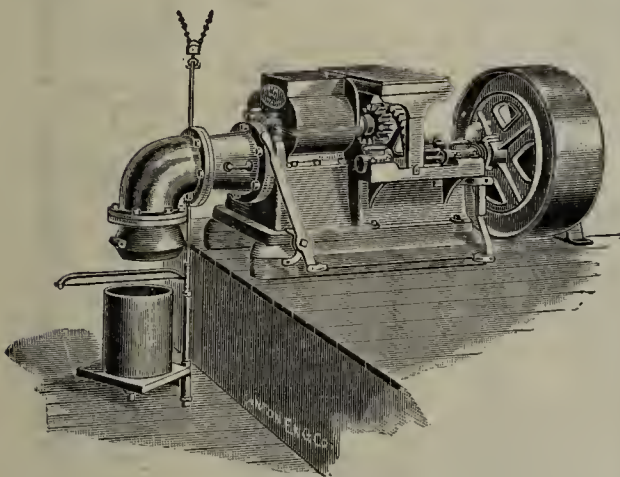


# "PLYMOUTH" BRICK AND TILE MACHINES



"A" Machine, with Board Delivery Cutting Table.

COMPLETE, RELIABLE,  
STRONG, DURABLE,  
INCOMPARABLE.



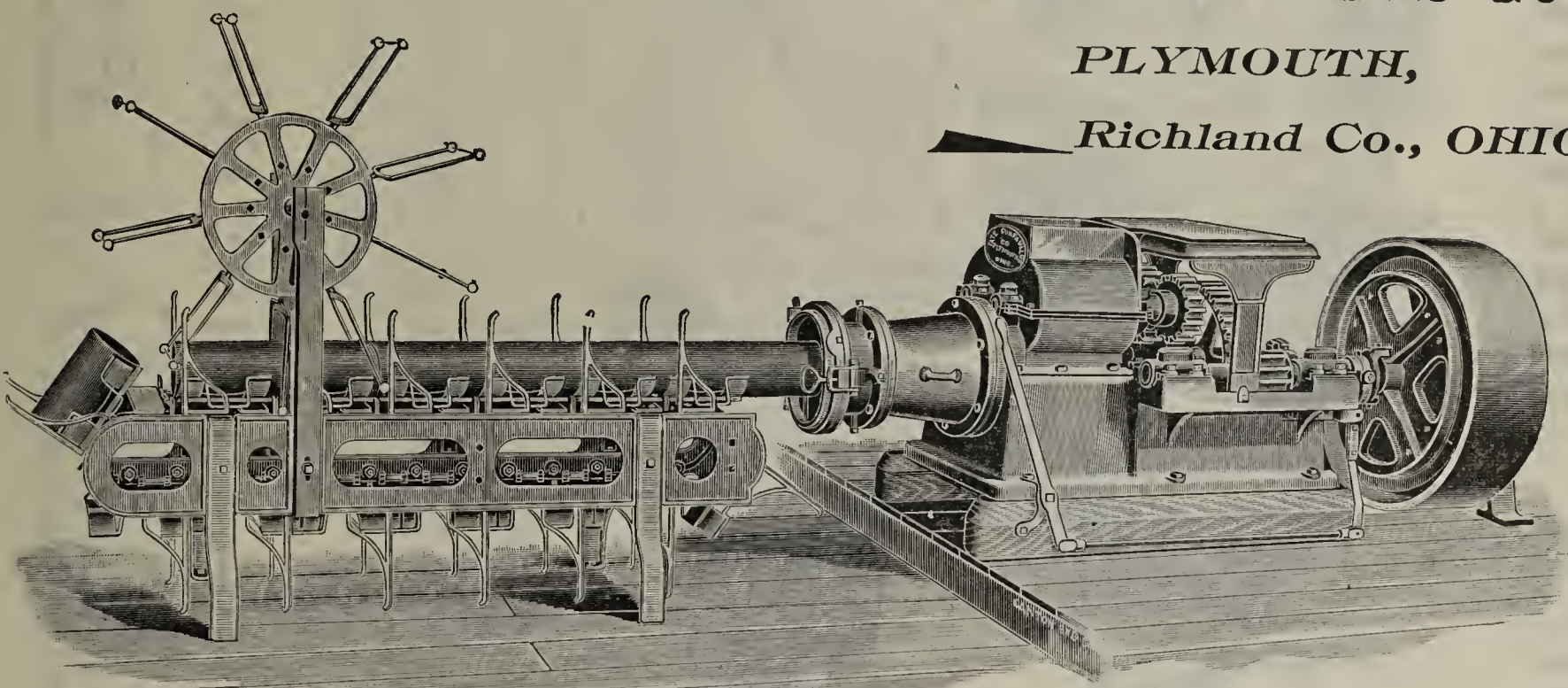
"D" Machine. With Elbow Attachment for Delivering Large Tile on End.

Send for Catalogue and Estimates On Entire Outfits

## THE FATE-GUNSAULLUS CO.,

PLYMOUTH,

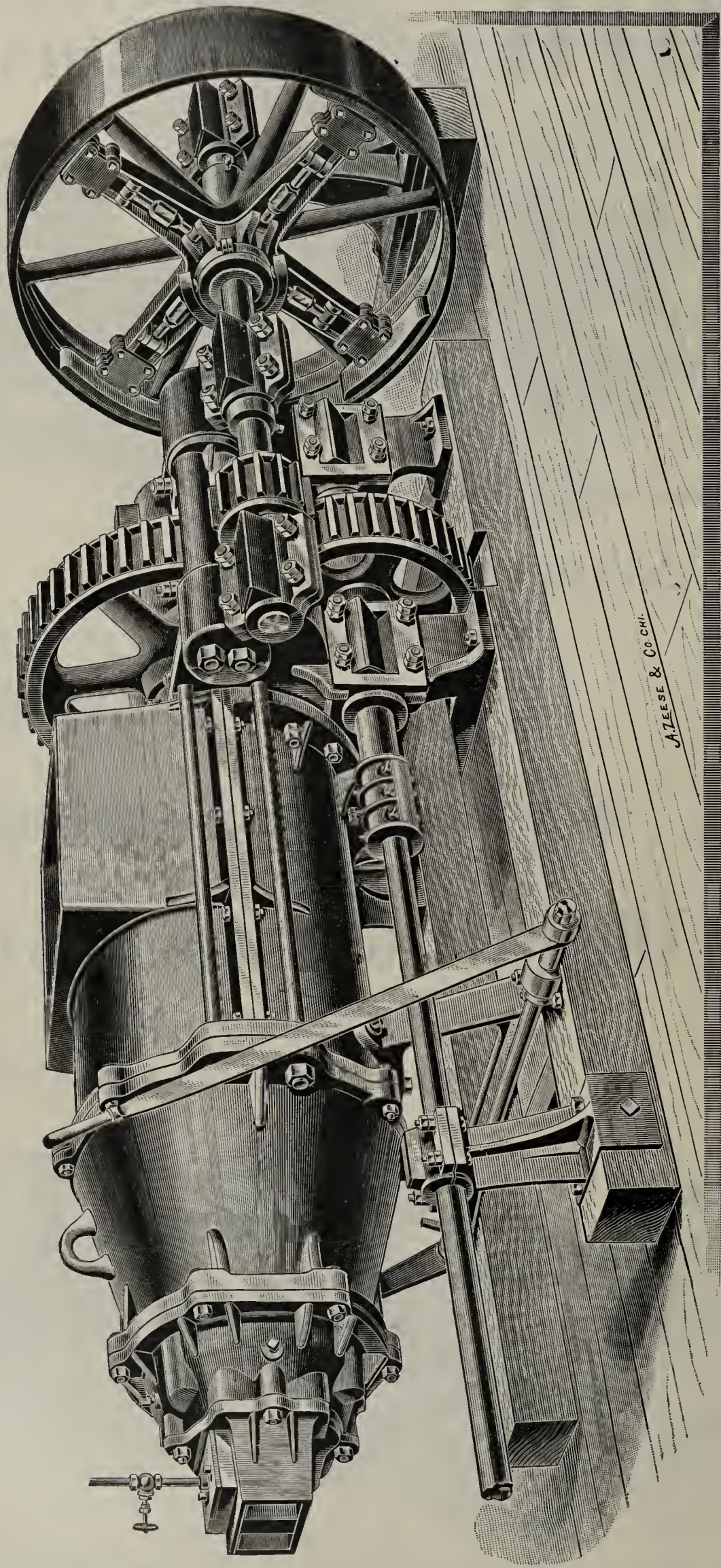
Richland Co., OHIO.



"D" Machine, with Automatic Cutting Table. For cutting tile from  $2\frac{1}{2}$  to 8 inches; also building blocks.



# Brick Machinery with a REPUTATION



*Our No. 1 BUCYRUS GIANT BRICK MACHINE.*

We construct our machinery on indisputable, practical, and scientific principles, consequently it withstands the most rigid and critical tests given it in every day work.

Our machinery has an enviable reputation for unequalled efficiency. When you purchase, be very sure you buy the best. We lead while others follow.

## THE FREY-SHECKLER COMPANY,

MANUFACTURERS OF A

Complete Line of Clay  
Working Machinery.

BUILDERS OF

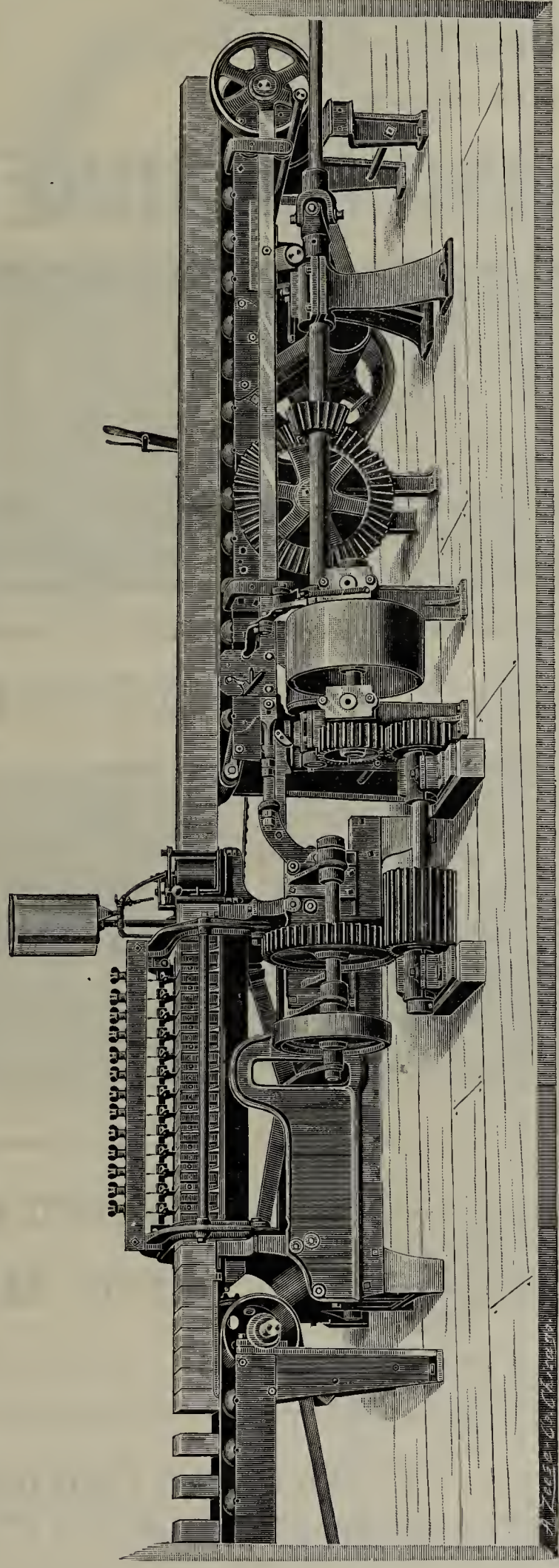
The Bucyrus Steam  
Tunnel Dryer.

BUCYRUS, OHIO, U. S. A.

— Send for 1894 Machinery and Dryer Catalogues. —



# A HOWLING SUCCESS —



THE BUCYRUS SIDE CUT AUTOMATIC TABLE.

*The only device of its kind on the Market.  
Now in the most successful operation on TEN first-class yards.*

*Every brick cut perfectly true. No bricks with feathery edges.*

*Simple in construction. Rapid and effective in its work.*

*Every Brickmaker has wished for it. Now we have it.  
If you see it in operation you will buy it. IT CAN'T BE BEATEN.*

Do not fail to write to us or call upon us.

We can prove what we say.

THE FREY-SHECKLER CO.,

Manufacturers of a Complete Line of Clayworking Machinery and Builders of the BUCYRUS STEAM TUNNEL DRIER,

BUCYRUS, OHIO, U. S. A.

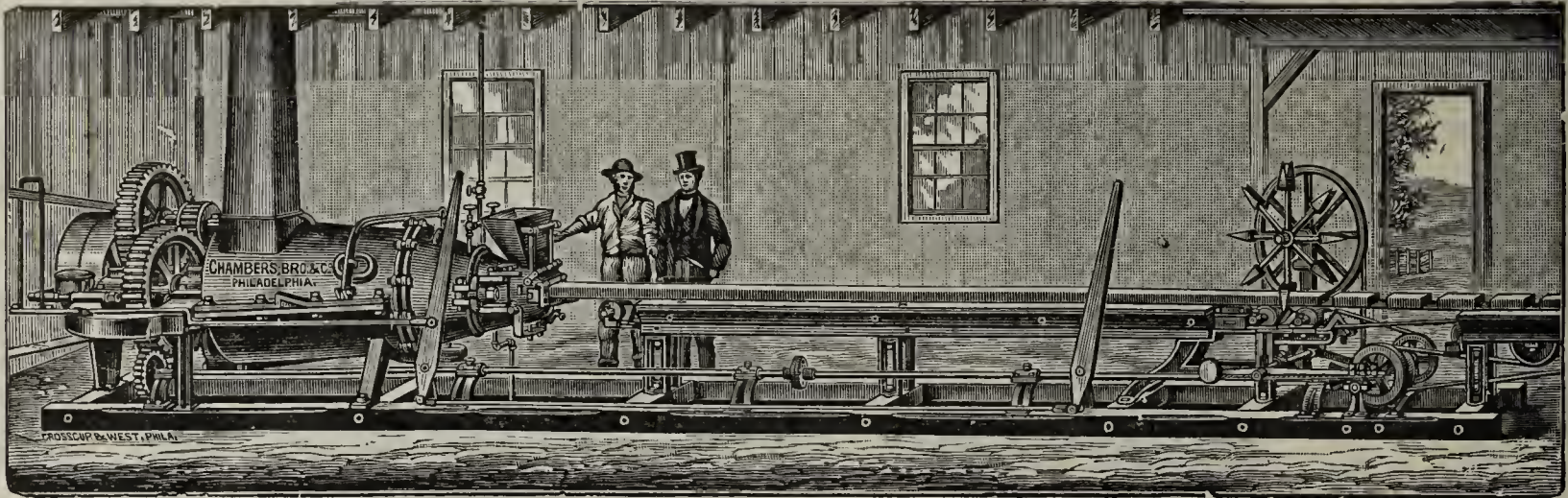


# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

## IMPROVED BRICKMAKING MACHINERY.



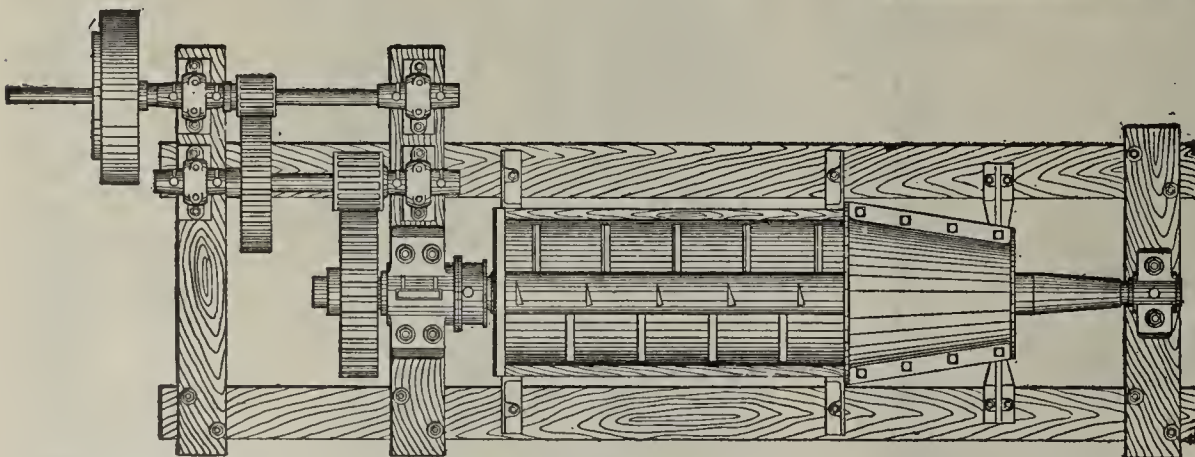
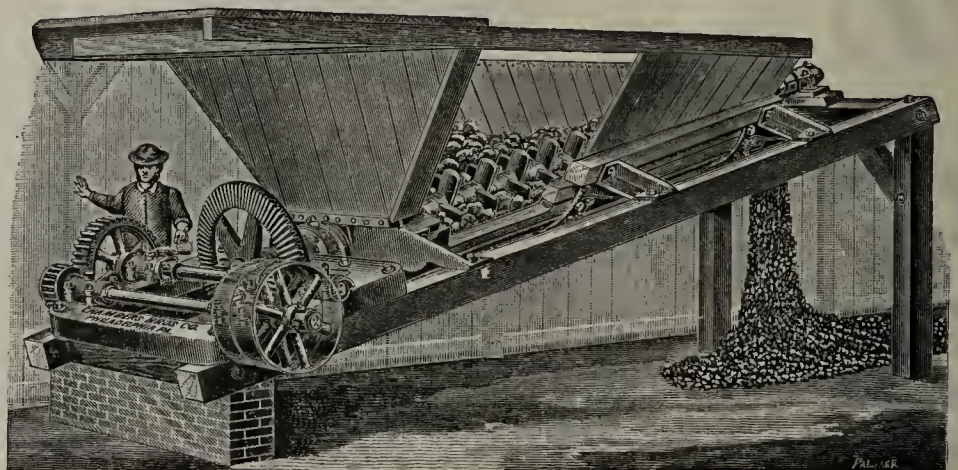
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,  
CLAY ELEVATORS.

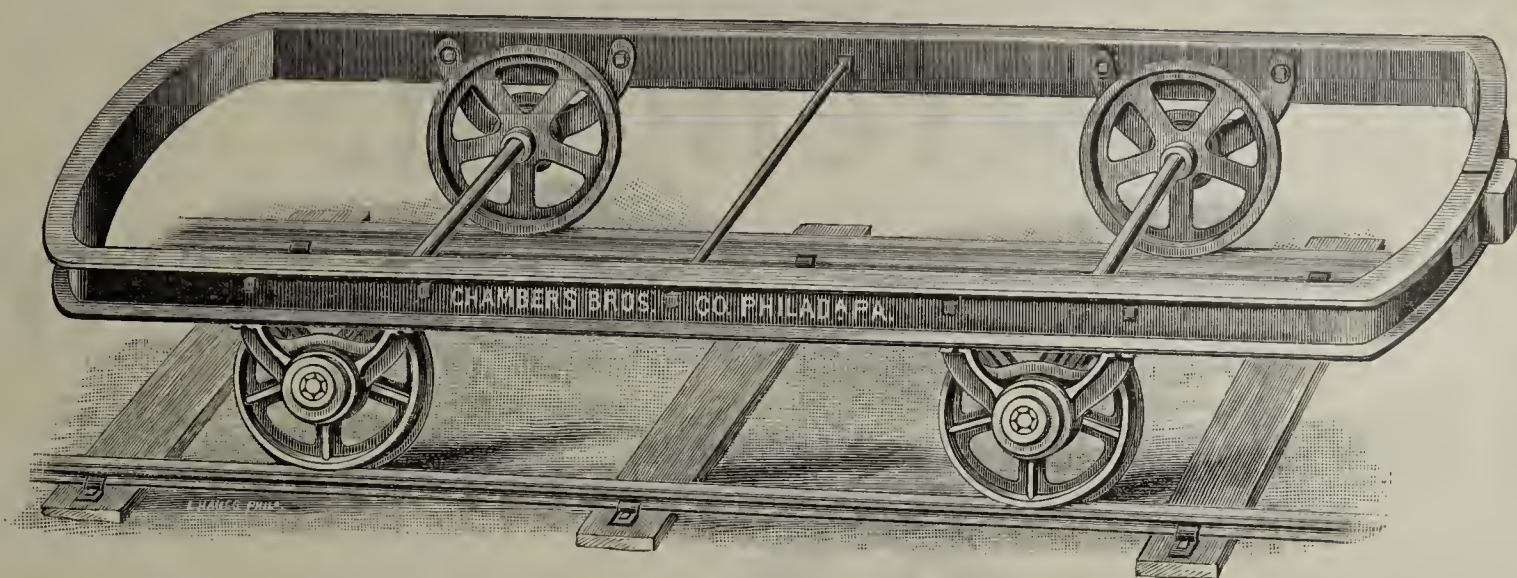
KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



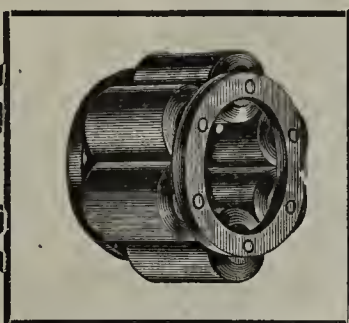
# ❖ DRYER CARS. ❖



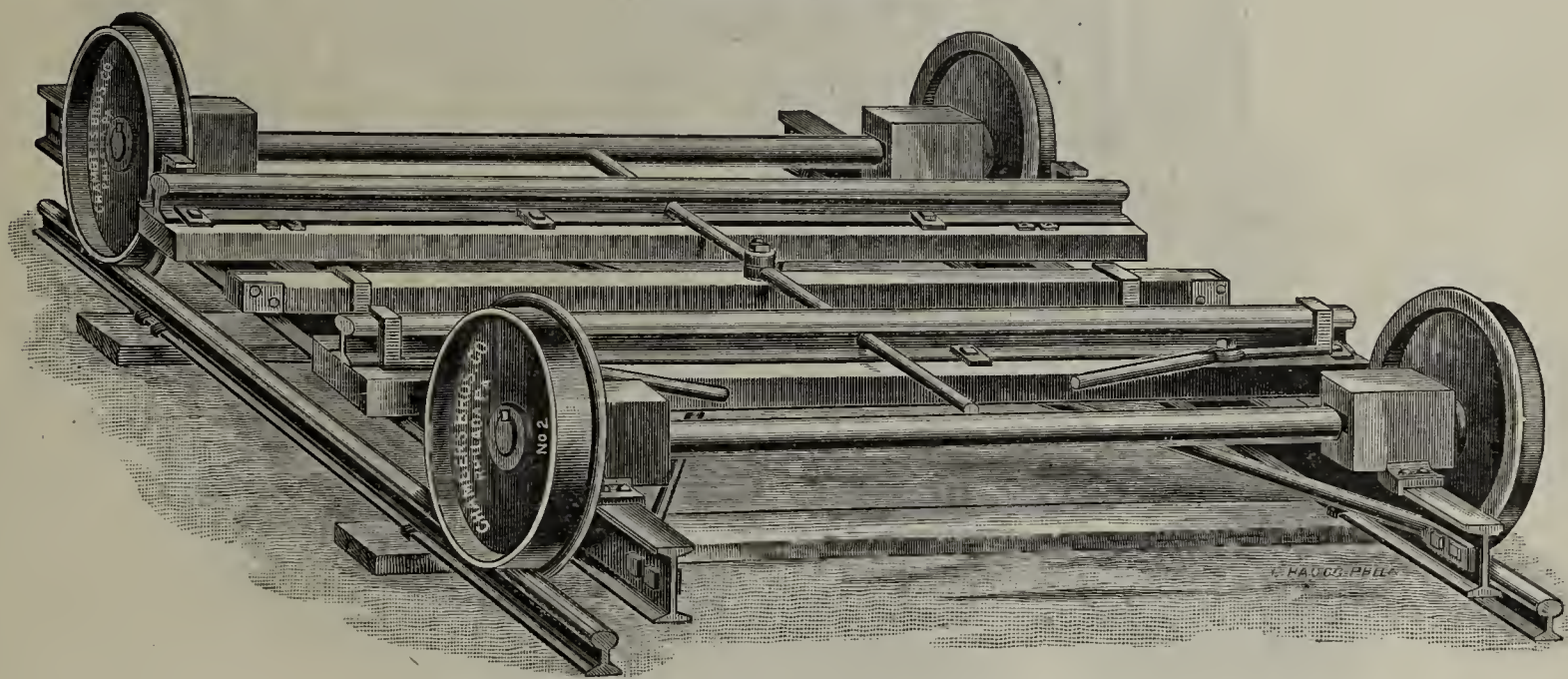
This STEEL CHANNEL FRAME CAR is Without an Equal.

We are prepared to make it of different dimensions, and of gauge to suit customers requirements. The channel section is much stiffer than angle, and being in one piece there are no weakening joints as where cross rails and bumpers are bolted to side frames.

The Anti-friction Cage Roller



Bearing used on our Cars.



WROUGHT IRON BEAM TRANSFER CARS.

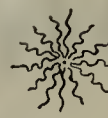
We guarantee these to give satisfaction.

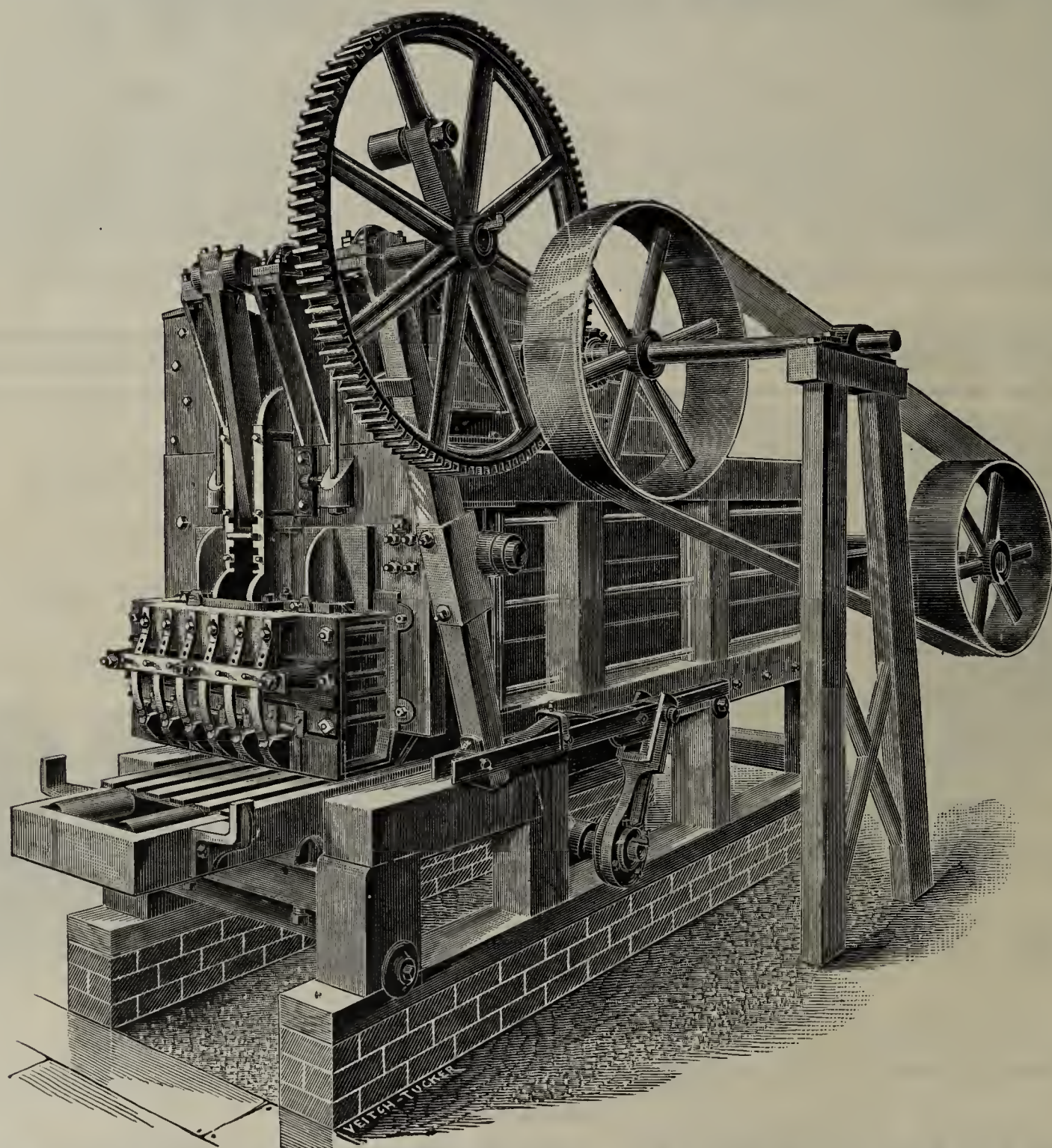
## CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

❖ PHILADELPHIA, PENN. ❖



Simplicity,    
Strength,  
Durability,  
Are Prominent Features. 



The **UNEQUALED STRENGTH** and **POWER** of our "New Haven" Brick Machine is fully recognized wherever known, and the **increasing sales** prove its **Popularity**.

You can obtain information promptly by addressing

**The McLAGON FOUNDRY CO., New Haven, Conn.**



# Your Destination.

Follow the example of the Collins Brick Company and you will find just what you are looking for ; and if the Big Wonder is not suitable to your conditions, look over the files of your CLAY-WORKER and see what we have offered you from time to time on the inside cover page.

OFFICE OF.....

**Collins Brick Co.,**

56 PEARL STREET

GRAND RAPIDS, MICH., May 23, 1894.

THE WALLACE MFG. CO.,

FRANKFORT, IND.

GENTLEMEN:—Enclosed find balance due on Big Wonder Brick Machine and Cunningham's Automatic Cutting Table. We have given it a thorough test on the hardest clay we have and are satisfied that it is just what we have been looking for.

Yours truly,

COLLINS BRICK CO.

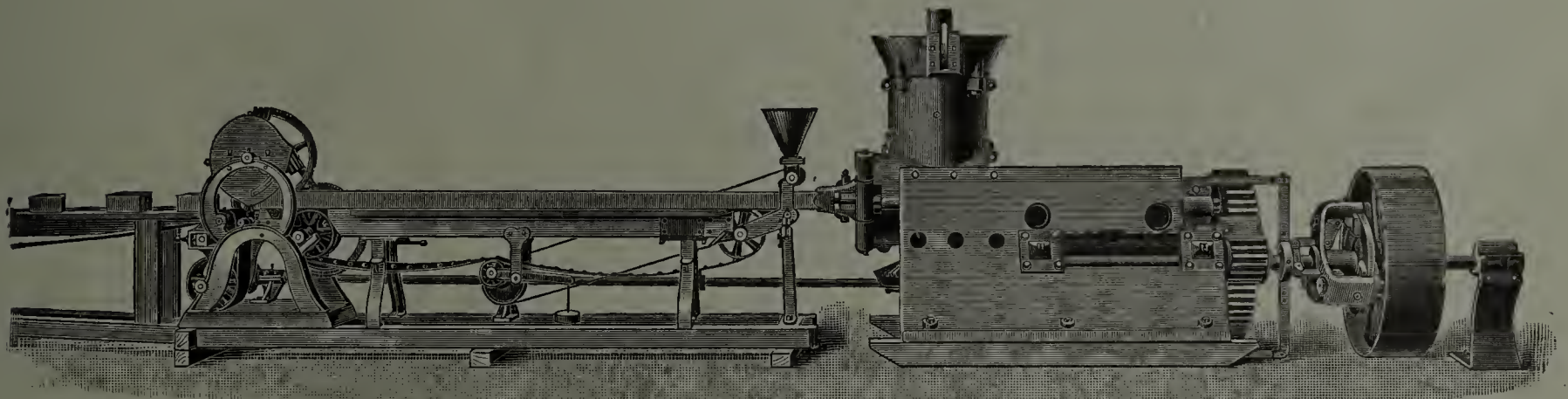


Illustration of Big Wonder with Cunningham's Automatic Cutting Table

Capacity 50,000 to 75,000 brick per day.

"We also manufacture the Little Wonder Brick and Tile Machine and a full line of Pug Mills, Clay Crushers and Stone Separators, Hoisting Drums, Friction Clutch Pulleys, Wheel Barrows and other brick and tile yard appliances.

## The Wallace Manufacturing Co.,

Send for Illustrated Catalogue.

FRANKFORT, IND.



The LATEST IMPROVED



Brick Dryer.

## THE IRON-CLAD

*Still Maintains It's Superiority Over All Others.*

## WHY ?

*Because It Is Founded Upon Nature's System*

• • • • AND • • • •

Is kept abreast of the times by close observation and developments, met by practical inventions, reducing the cost of construction, the time required, and cost of drying to such an extent, that other systems are being displaced all over the country, by the Iron-Clad.

... SECRETARY'S OFFICE ...

**Milwaukee Brick and Cement Co.**

SUITE 1013 PABST BUILDING.

Telephone 1620.

MILWAUKEE, WIS., July 6, 1894.

WOLFF DRYER Co.,  
CHICAGO, ILL.

GENTLEMEN:—Early in the year 1893 we received propositions from a number of builders of brick dryers to set up on our plant a brick dryer with a capacity of at least 66,000 soft mud brick a day. We first accepted a proposition made for a Hot Blast Dryer and found that the performance of their contract fell far below their promises, and we were compelled to discard the same entirely. We then called upon you to place your apparatus on our plant and found that it gives very good satisfaction and is apparently well able to perform the guarantee you gave for the same.

Yours respectfully,

MILWAUKEE BRICK & CEMENT CO.

Per F. C. ESCHWEILER, Sec'y.

Information, Estimates, Catalogues fully furnished.

**WOLFF DRYER CO.,** 358 Dearborn St. Room 304, **Chicago, Ill.**





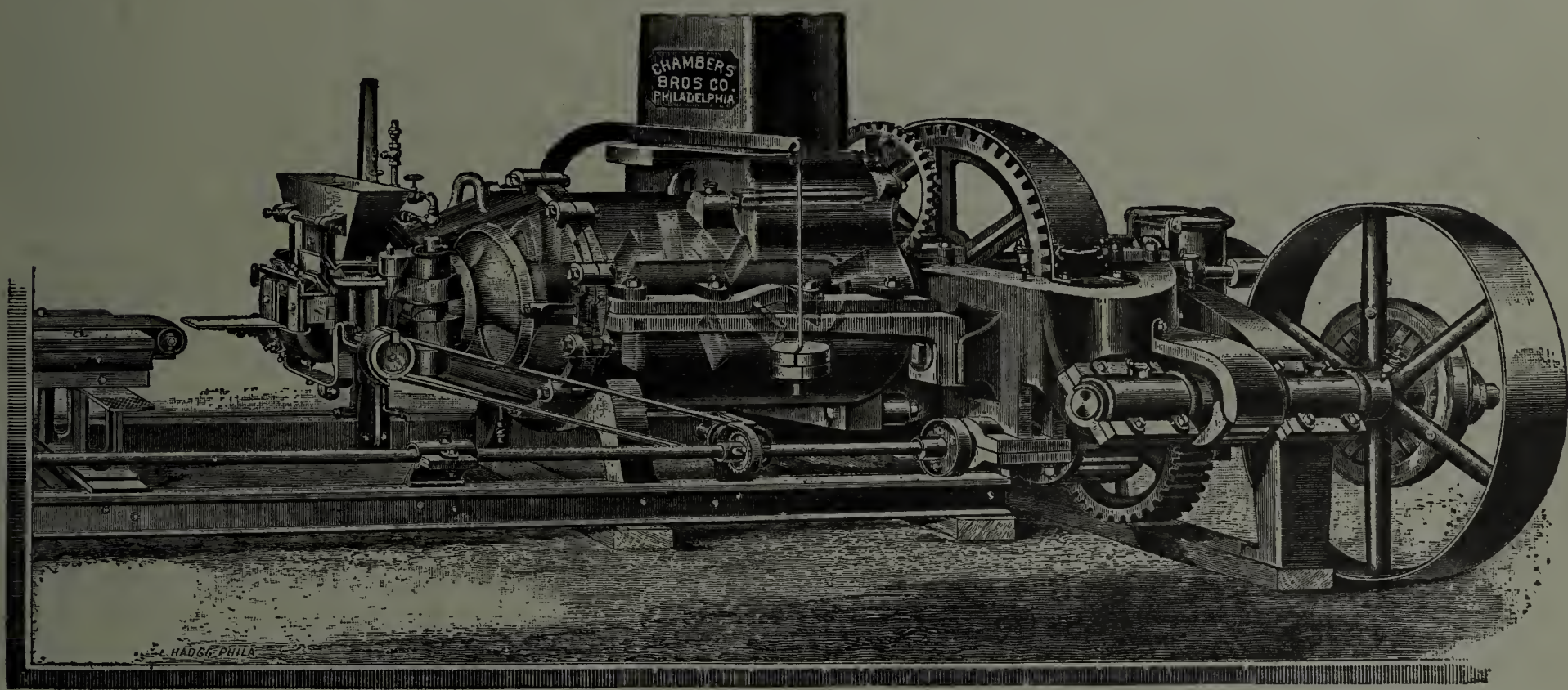
THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXII, No. 2.

INDIANAPOLIS, IND., AUGUST, 1894.

\$2.00 a Year in Advance.

# Brick Making Machinery,



## Chambers Brothers Company,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,

J. E. EASTES, Chicago Agent,  
203 South Canal Street.

PHILADELPHIA, PA.

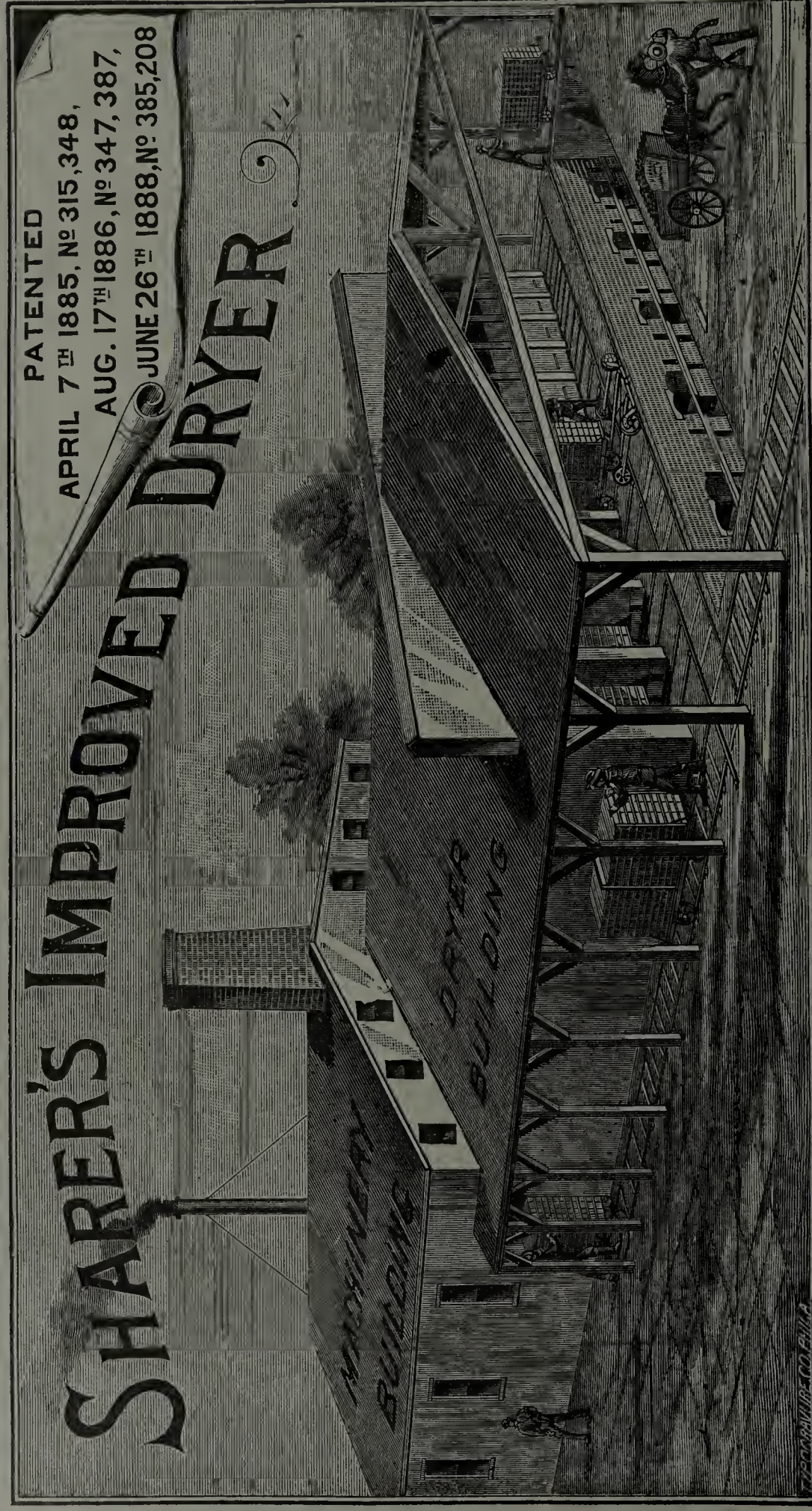
See ads. on pages 200 and 201.



# THE SHARER DRYER AND CONSTRUCTION CO.,

BRICK MANUFACTURING EXPERTS.  
CONSTRUCTING ENGINEERS. \* CONTRACTORS AND BUILDERS.  
COMPLETE PLANTS A SPECIALTY.

Builders of All Kinds of Dryers and Kilns for Dry Clay and  
Burning any and all Kinds of Clay Products.



Owners of SHARER'S IMPROVED DRYER;  
SHARER'S IMPROVED CALORIFIC KILN.

Manufacturers of Cars, Transfer Cars, Turn Tables, Furnace Castings and Complete Dryer and Kiln Equipments.

.....Dealers in All Kinds of Clayworking Machinery, Engines, Boilers, Shafting, Pulleys, Etc.  
New plants built and equipped complete in every particular. Old plants remodeled and modernized. Clays tested and analyzed. Plans and estimates furnished.  
Information costs you nothing. Send for Catalogue "C."

## SHARER DRYER & CONSTRUCTION CO.,

TORONTO OFFICE: 71 Adelaide, East, Toronto, Ont., Canada,  
HUGH CAMERON, Manager.

Rooms 506 and 507, The Mutual Life Building,  
N. W. Cor. 10th and Chestnut Streets,

PHILADELPHIA, PA.



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS

—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

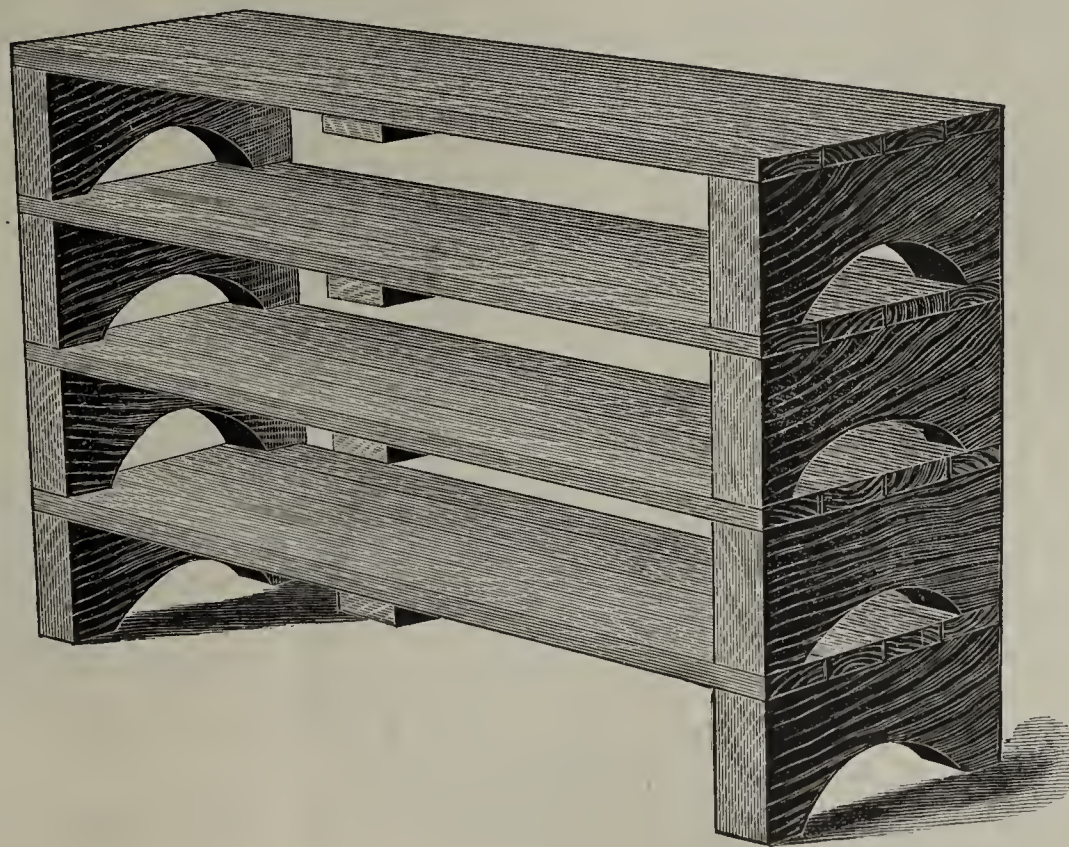
THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

## WOODEN BRICK PALLETS

WOODEN  
BRICK  
PALLETS



STYLE C.

WOODEN  
BRICK  
PALLETS

We manufacture all styles and sizes. Write to us direct for descriptive circulars and prices.

WM. B. MERSHON & CO., = Saginaw, East Side, Mich.



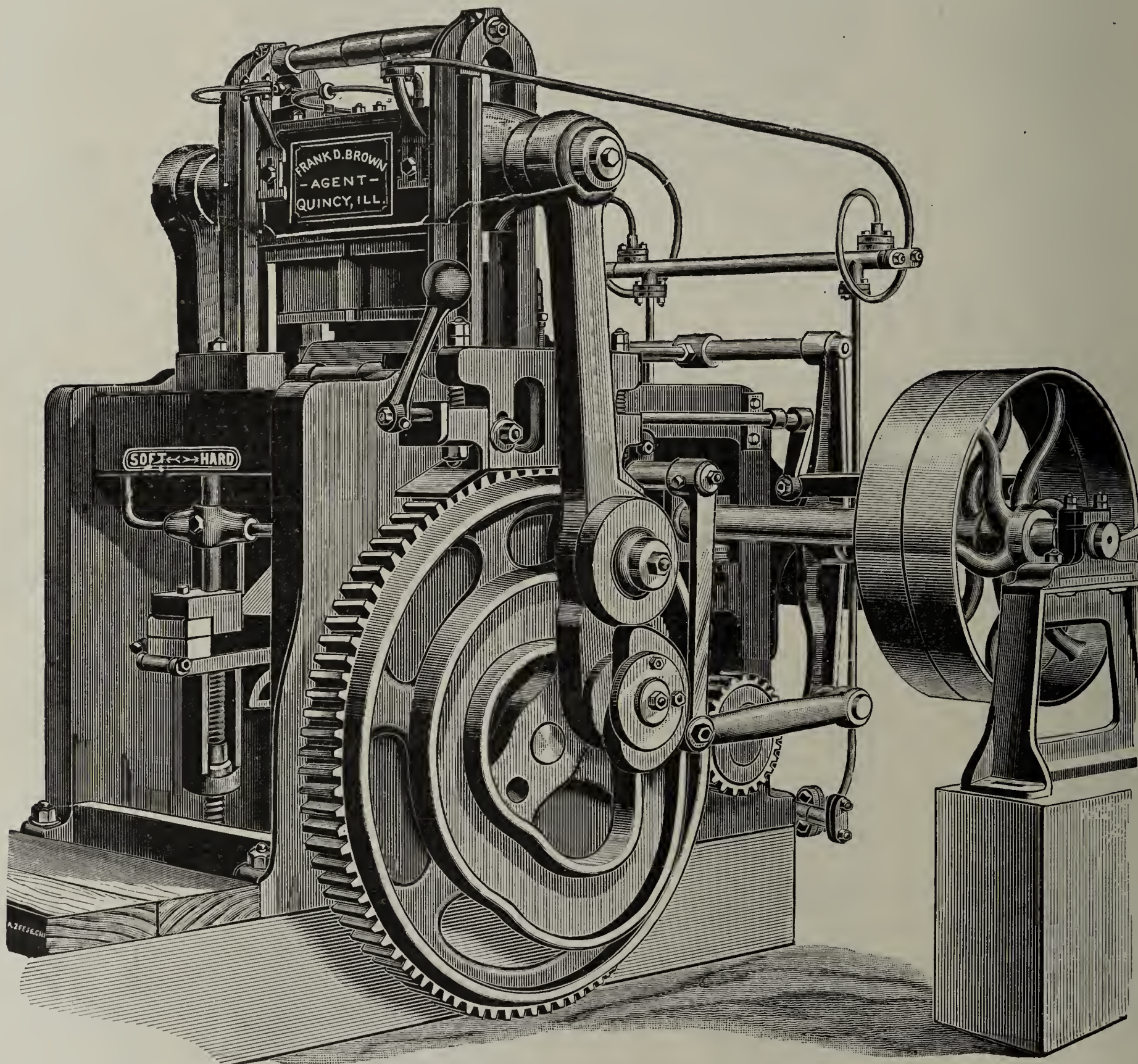
# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

• HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. •

Best, Cheapest and Most Durable Press in the World.

\* ————— One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

**FRANK D. BROWN,** Room 817 Continental Bank Bldg.  
Cor. La Salle & Adams Sts. **Chicago.**



# The Ross-Keller Brick Machine.

## (Triple Pressure)

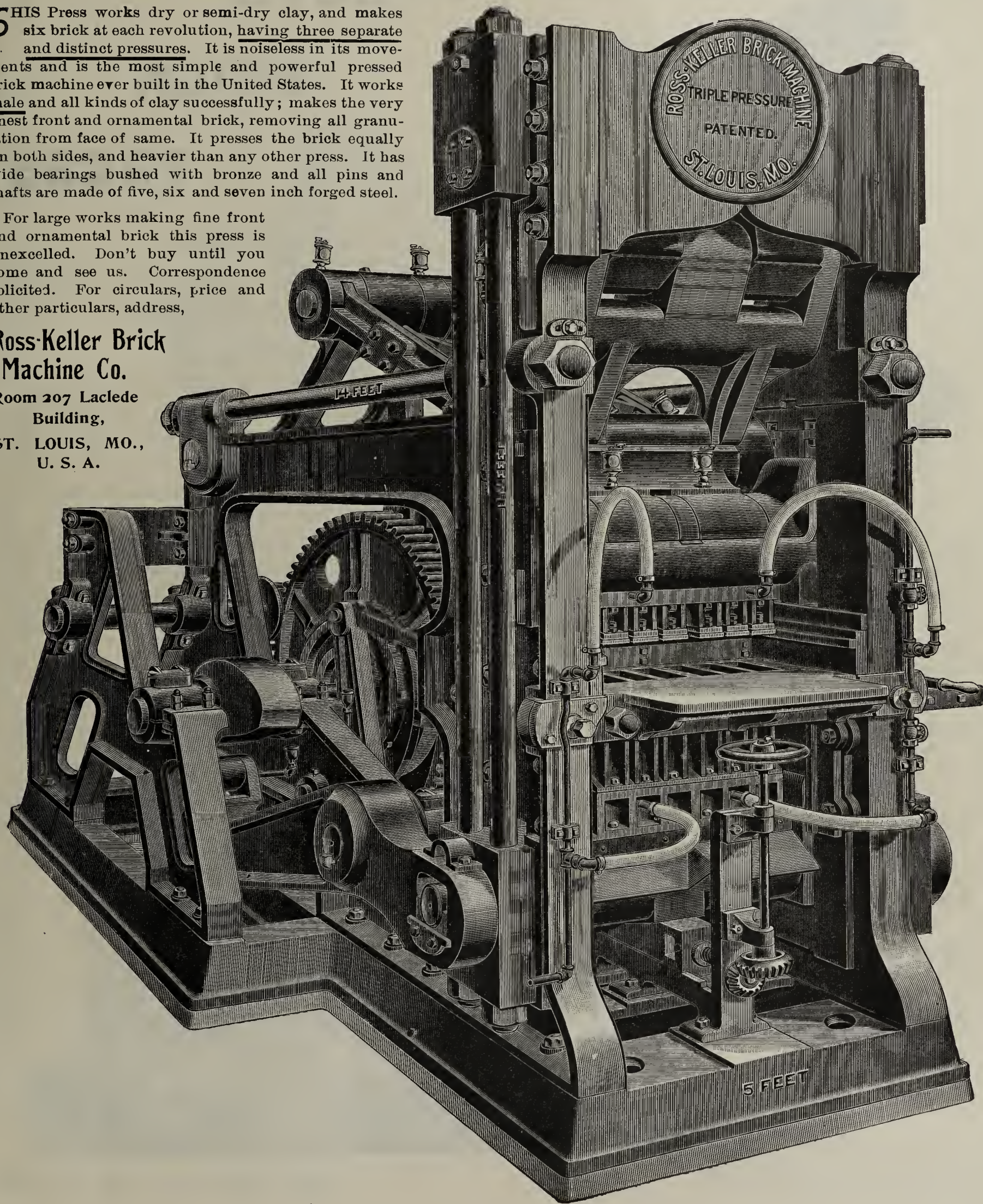
Weight 75,000 Pounds, Capacity 35,000 to 40,000 Brick Per Day.

**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five, six and seven inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address,

**Ross-Keller Brick  
Machine Co.**

Room 207 Laclede  
Building,  
ST. LOUIS, MO.,  
U. S. A.





# Fifty Thousand Dollars

For the **BOYD**

**BRICK**

**PRESS**

A TRUE TALE.

The largest brick plant in the world is  
*The Jarden Brick Co.,*

—OF—

*Philadelphia.*

Not long ago they decided to put in a Dry Clay Plant. They traveled all over the country and inspected the various dry press machines at work. Then they put in a six-mold Boyd Press. They worked it for over seven months, and were so pleased with it

that they bought *five more* six-mold and *one* two-mold, Boyd Presses. They paid for all these presses. They knew what the Boyd Brick Press could do. They knew that no other press could compete with it. So in order to get the sole right to use the Boyd Brick Press in Philadelphia and for 50 miles around, besides the price of the seven presses, they paid us *Fifty Thousand Dollars* (\$50,000).

Their brick is acknowledged by builders to be "without competition" in their part of the country.

Need we say more?

Catalogue on application. Circular giving *fac simile* of medal awarded at the World's Fair to the Boyd Brick Press, free.

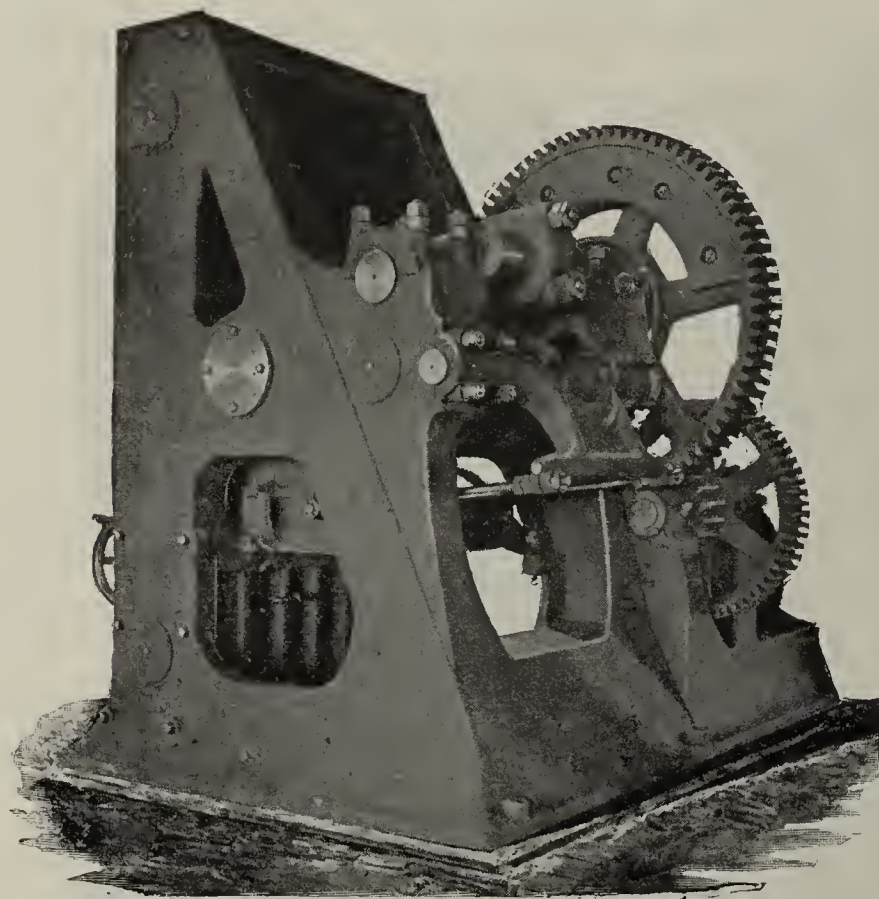
**Chisholm,**

**Boyd**

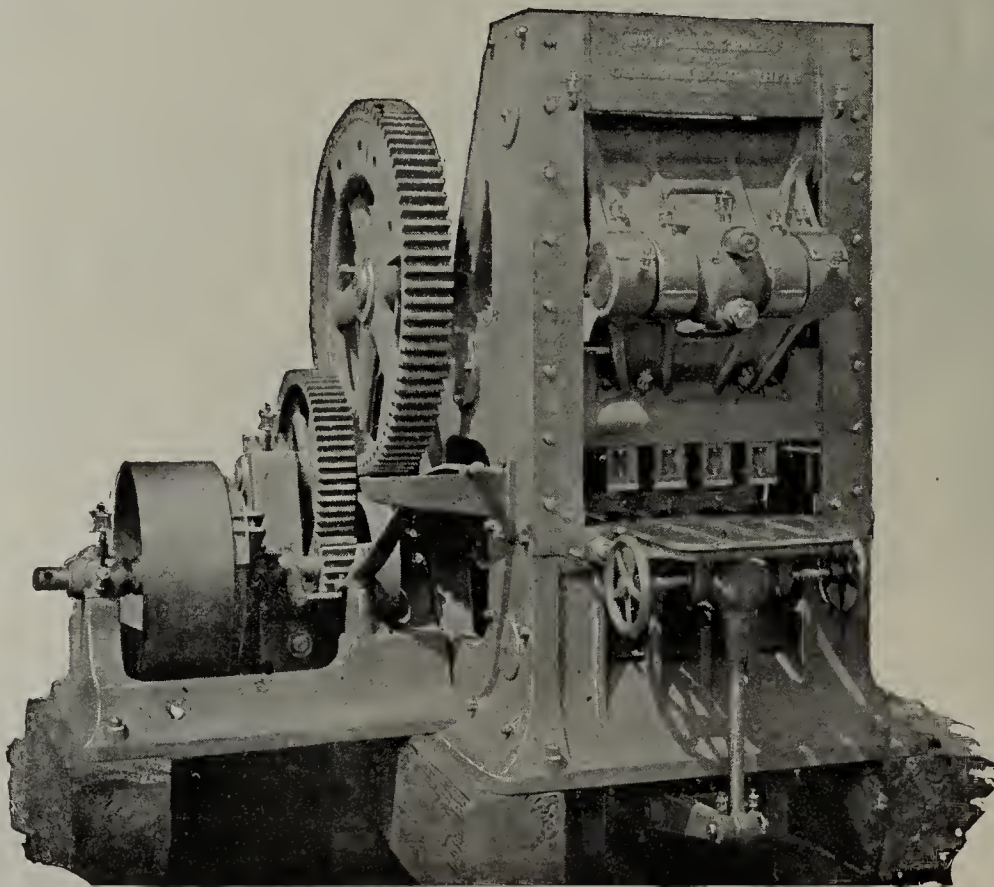
*and*

**White,**

324 Dearborn Street,  
CHICAGO.



FOUR-MOLD MACHINE.  
(REAR VIEW.)

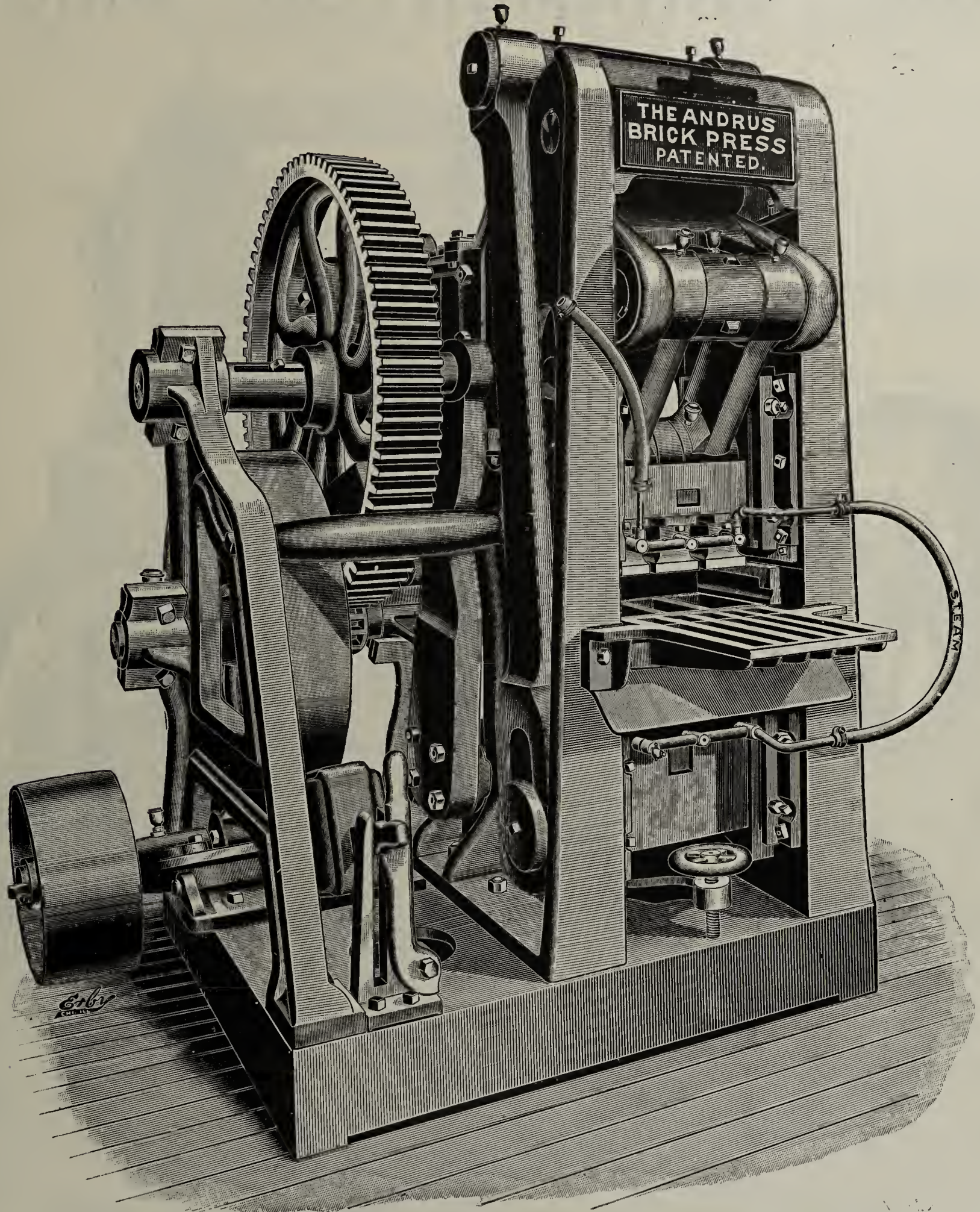


FOUR-MOLD MACHINE.  
(FRONT VIEW.)



# The NEW ANDRUS DOUBLE PRESSURE 3-MOLD BRICK PRESS

Within the Reach of Any Responsible Brick Manufacturer.



Write for new Catalogue of our 3 and 4 mold Presses and new terms to suit the times. Address

**H. O. WHITNEY, General Agent,**  
General Office and Factory, KEOKUK, IOWA,  
**KEOKUK, IOWA.**

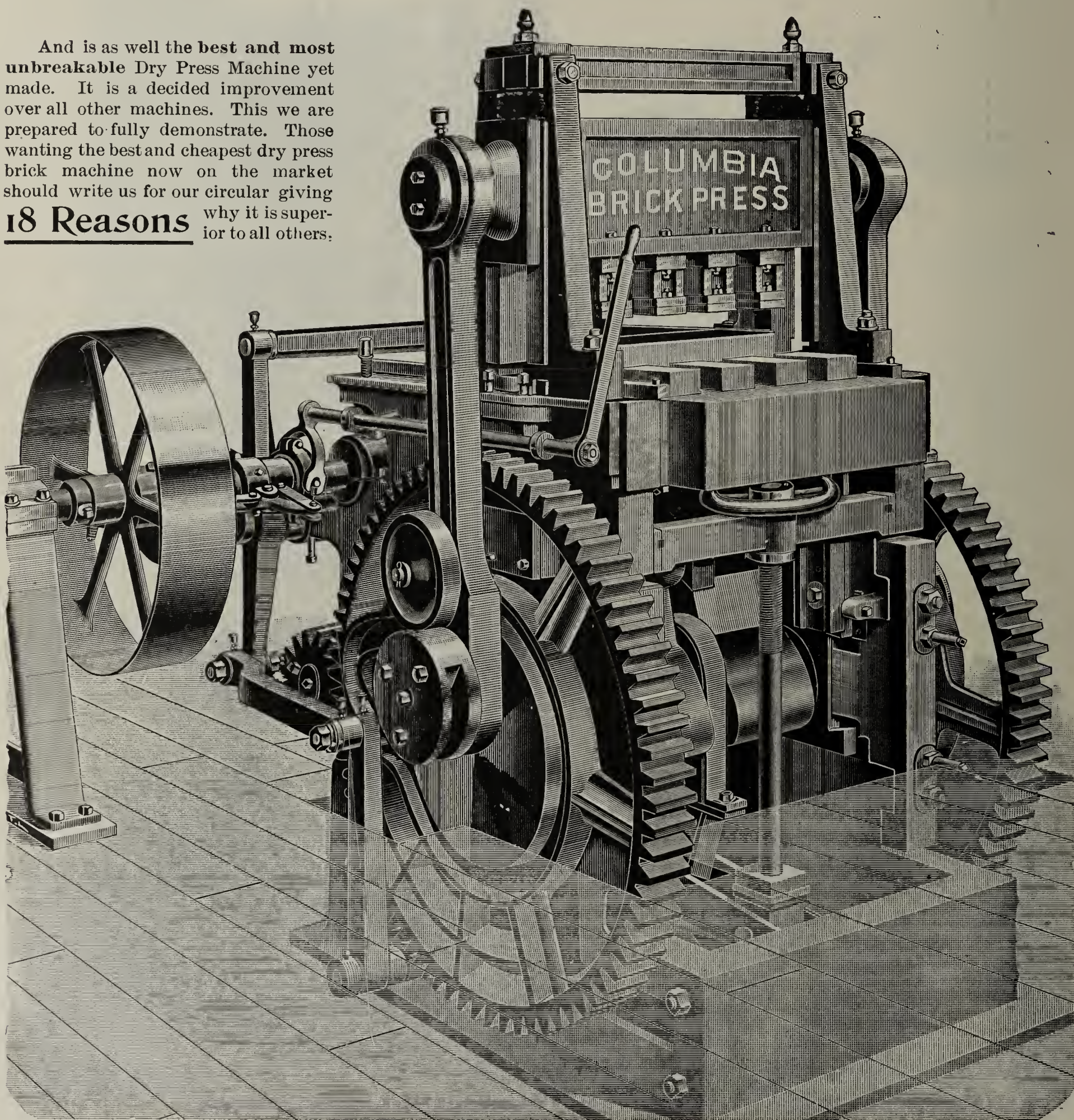


# ❖ THIS ❖ PRESS ❖

IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF

## FINE ORNAMENTAL BRICK

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

### COLUMBIA MANUFACTURING CO.,

Send your clay and we will test it and send you the results....

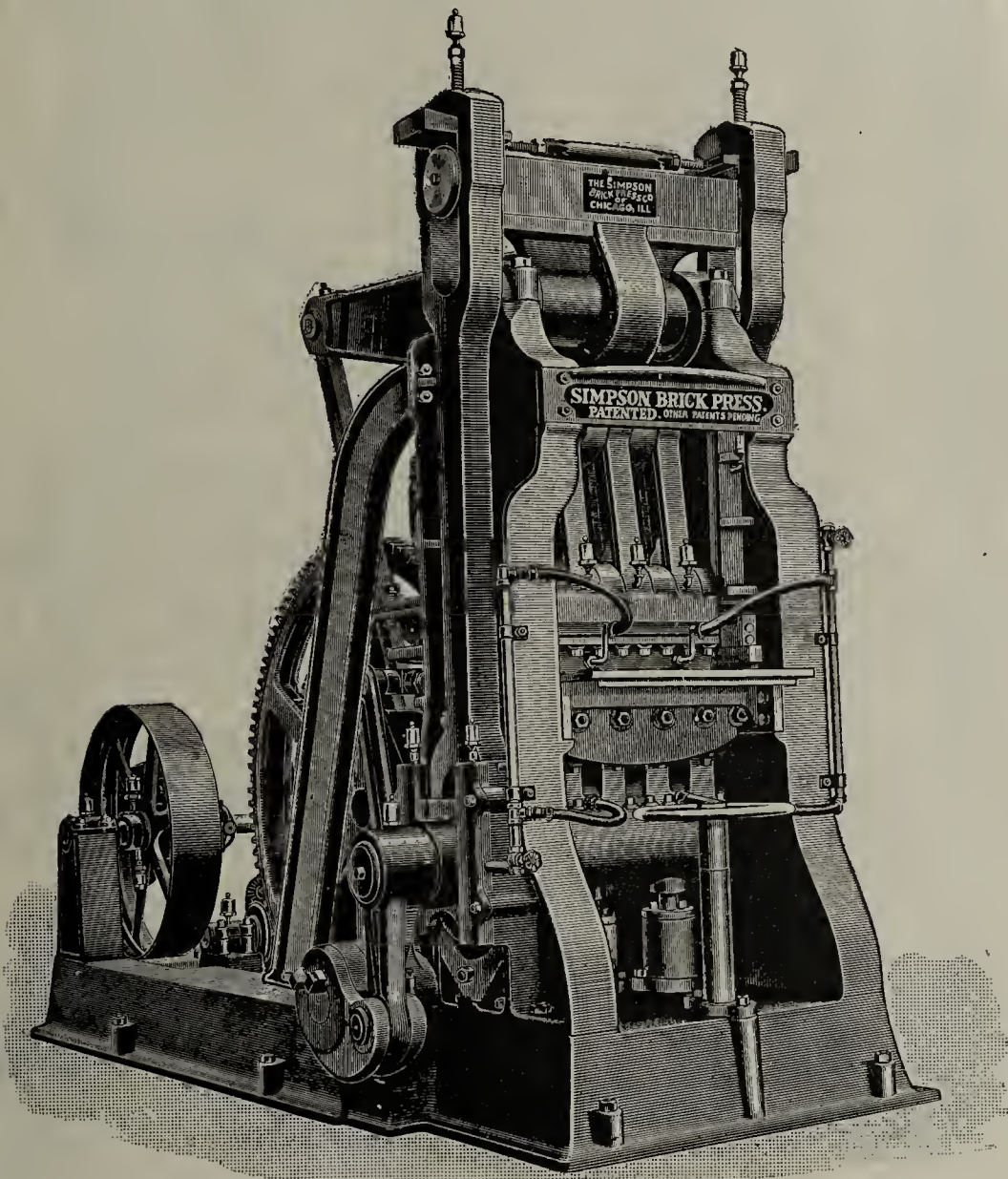
2119 N. Ninth St., ST. LOUIS, MO.



— IT HAS NO COMPETITOR. —

# The Simpson Brick Press

Is THE STANDARD MACHINE of its class.



A poor machine cannot make brick from any kind of material, therefore **purchase the best**, and one that you know is **not an experiment**. The Simpson has been on the market for years and has repeatedly demonstrated its adaptability on all kinds of brickmaking material. Running from the Atlantic to the Pacific, and one and all giving entire satisfaction.

It easily carried off highest honors at the

## World's Columbian Exposition

And was the **only** machine of its class to receive favorable mention by the **Official Judge** on brick machinery.

We will construct complete plants of any capacity and send machinery for trial to responsible parties. Send for descriptive matter.

## The Simpson Brick Press Co.,

AGENTS FOR CANADA,  
Waterous Engine Works Co., Brantford, Ontario.

Chamber of Commerce, CHICAGO, ILL.



# U. S. BRICK PRESS

Perfect in Mechanical Construction.

Least Cost For Repairs.

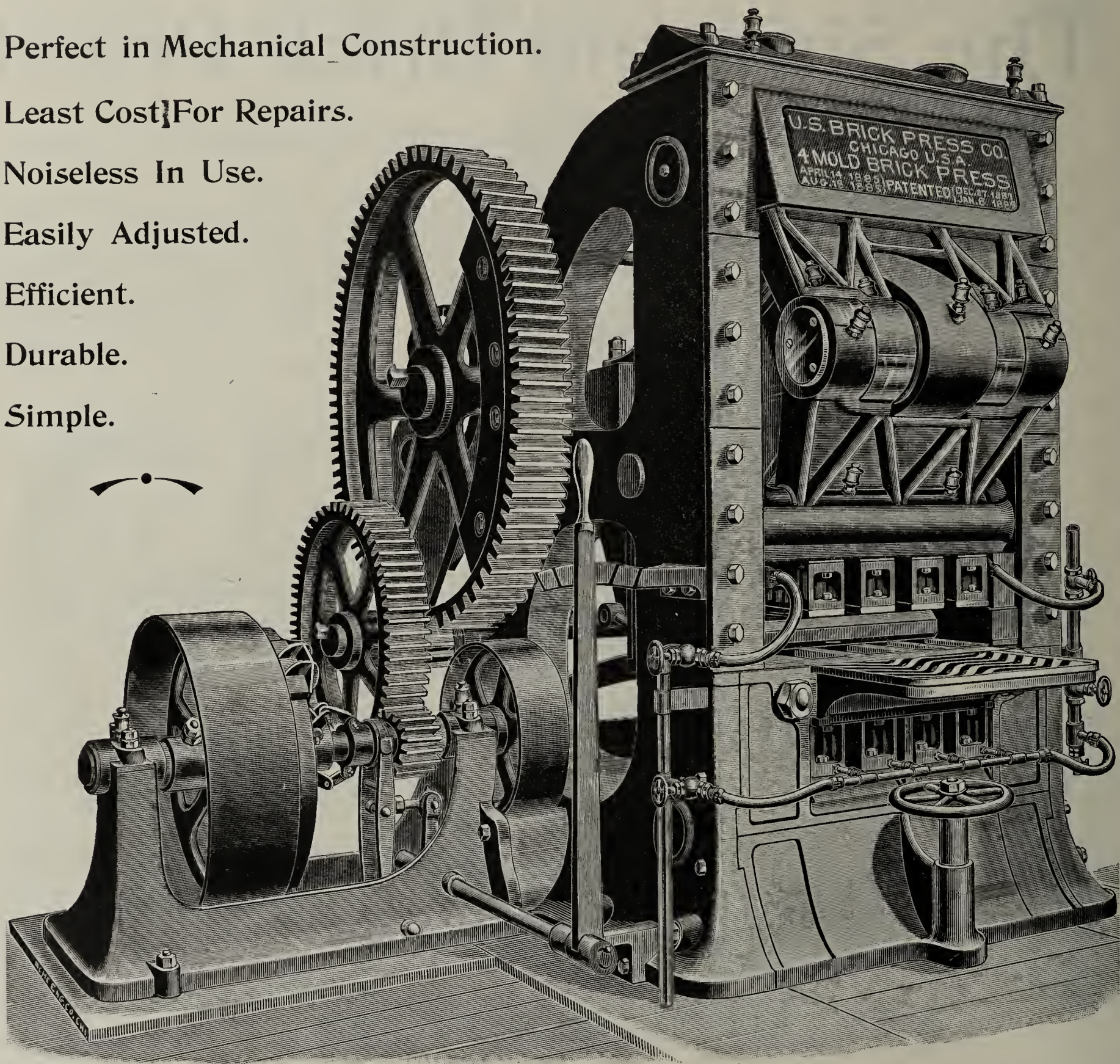
Noiseless In Use.

Easily Adjusted.

Efficient.

Durable.

Simple.



The U. S. Brick Press embodies all the requirements demanded by Pressed Brick Manufacturers, and its record is proof conclusive of its perfection as a Pressed Brick-maker. Write for new descriptive sheets.

UNITED STATES BRICK PRESS WORKS,

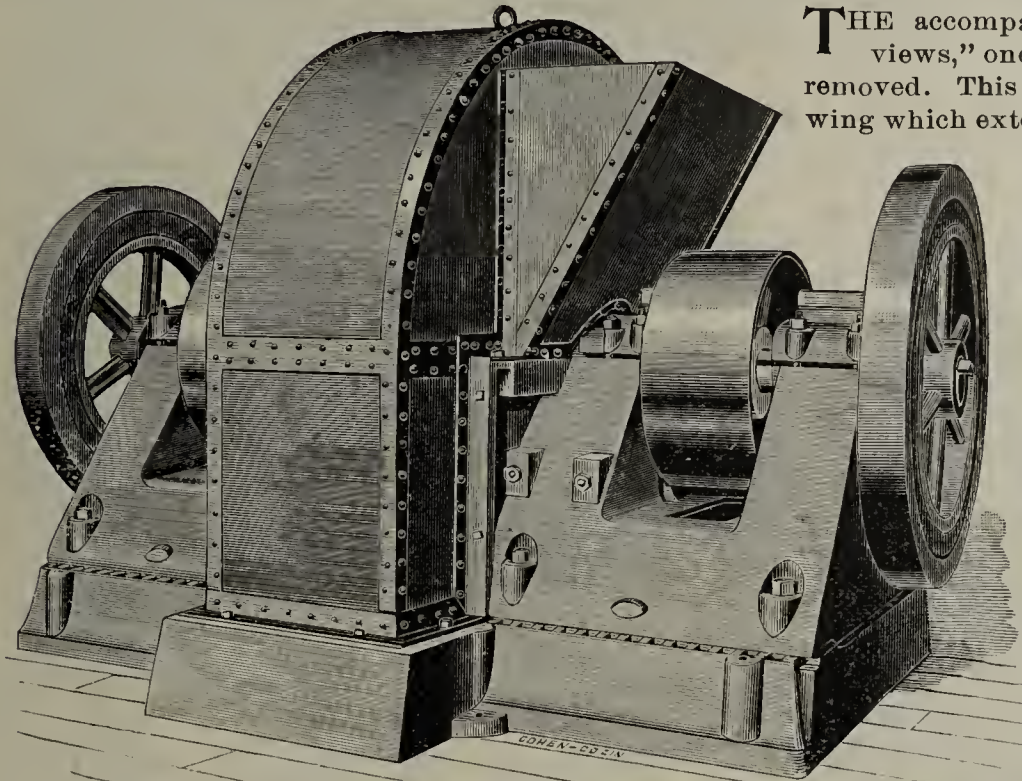
OSWALD KUTSCHE, Proprietor,

OFFICE AND TESTING ROOMS:  
72 West Washington Street.

CHICAGO, ILL.

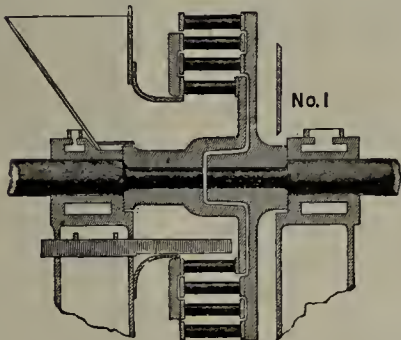


# Stedman's Improved Clay Disintegrators



PATENTED APRIL 10, 1894. Nos. 518,010, 518,011.

Figure 1. This is the old plan of cage construction. While these cages do good work, there are certain mechanical faults in their construction that require excessive power to operate them, and the capacity is diminished. The four rings of cage pins are the same length, and this construction necessitates a recess in



the castings to receive the ring of the opposite cage. The friction of the ground product between this ring and cage casting requires surplus power. The pins, or bars, all being the same length, there is no chance for the material to spread and clear itself, as it works

outwardly in the cages, and if the feeding is irregular, it constantly chokes the cages and checks the speed, so that as good grinding is not accomplished.

Figure 2. The construction of these cages is such that the best possible grinding can be accomplished, with little power and little wear and tear. We have what is called an increased clearance of the cages. (That is, they approach a conical construction from the center of the shaft to the circumference of the outside cage.) The inside row of pins is shorter than the second row, and the third and fourth rows increase in length over the second. By this construction there is no recess between the ring of one cage and the casting of the other, any material that works behind the rings being immediately thrown outwardly into the cage beyond, for it has a free discharge, and the centrifugal force it receives will not permit it to lodge between the ring and casting. This increased clearance allows the material, as it is fed to the cages, to spread and free itself, for it gives an increased grinding surface as the material works outwardly. You can feed the material as irregular or fast as you desire and it will not choke or clog the mill.

Parties who are familiar with the mechanical construction of Cage Disintegrators will understand and appreciate the merits of this valuable improvement. This cut also shows the construction of our journal bearings. The arrangement for oiling is the best and the journals are constructed dust tight, so that there will never be any danger of heated bearings.

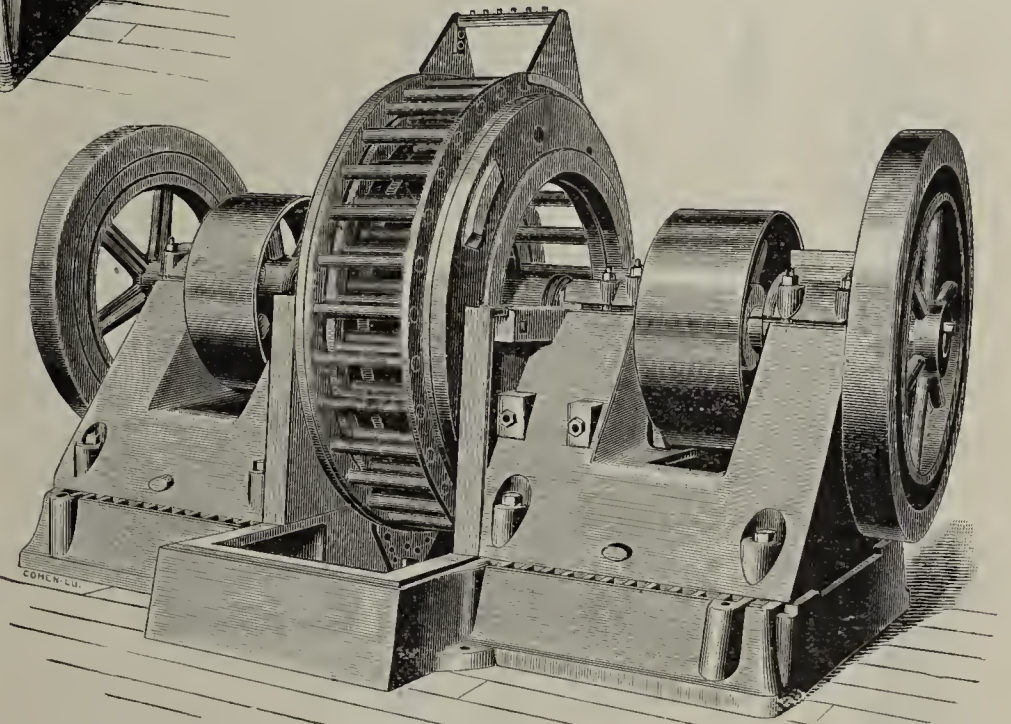
We can design these Improved Clearance Cages to fit the framework of any other make of Disintegrators, and will be pleased to correspond with any one who appreciates the value of this improvement, with a view of placing it on his Disintegrators.

Remember, with our Improved Clearance Cages you can do much more work with much less power, and greatly reduce the wear and tear.

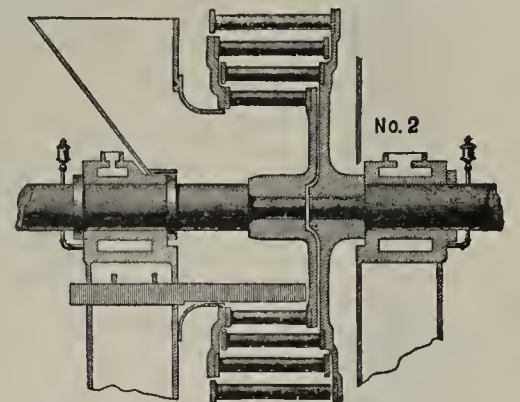
For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

THE accompanying cuts show our Improved Disintegrator, "two views," one with the casing over the cages, the other with the casing removed. This casing, which fits around the cages, has an extension wing which extends clear down to the base plate, so when you remove it from over the cages, they are presented in full view, and it is an easy matter, when slid apart, to reach the interior parts. Fastened to the outside revolving cage are two scrapers; the cross-bars of these scrapers extend some six or eight inches beyond the revolving cages, and revolve close to the iron casing that fits around the cages. This always insures a space of 6" to 8" between the cages and casing for a free discharge, and the action of these scrapers makes it impossible to clog in grinding damp clay. This is the most simple and practical method to overcome clogging in grinding damp clay, and brickmakers who have had experience with this class of Cage Clay Disintegrators will appreciate the value of this patented improvement. See cut below.

Improved Scraper.



PATENT APPLIED FOR.



**STEDMAN'S MACHINE WORKS, - - 110 Third Street, AURORA, IND.**



# — AN EXPLANATION OF — COLD FACTS!

## Draw Your Own Conclusions.

**I**N the discussion of kilns in the N. B. M. A. Convention at Chicago, for special purposes, it was noticeable when an up-draft kiln was referred to, some one would remark that an up-draft kiln would not answer the purpose for the reason that the cold air coming in contact with the bricks in the arches would damage the ware." We wish to call attention of brickmakers to this point,

The bricks in the arches or bottom of our up-draft kilns are as thoroughly protected from cold air, as are the top brick in a down-draft kiln.

So much for this; now we maintain that we can obtain a more uniform degree of heat from top to bottom with an upward draft which is natural, than can be obtained with a downward draft, which is forced and unnatural, and with an arch over an up-draft kiln a larger per cent. of hard building brick can be produced; without an arch two courses only on top are salmon.

Now as to comparative cost of putting in the down and the up-draft kilns.

The average cost of a first class up-draft kiln to hold 200,000 brick, is .....	\$ 1,500
The average cost of a first class down-draft kiln to hold 200,000 brick, is.....	5,000
Saving to the brickmaker in first cost on one kiln.....	3,500
Saving to the brickmaker on three kilns this size, (which are necessary for a small plant).....	10,500

We are ready to verify these estimates.

For the best and cheapest kiln in use to-day for burning building bricks, the "Morrison Up-draft Kiln" with late improvements is unrivaled.

If you have any doubts about it, address

## R. B. MORRISON & CO.,

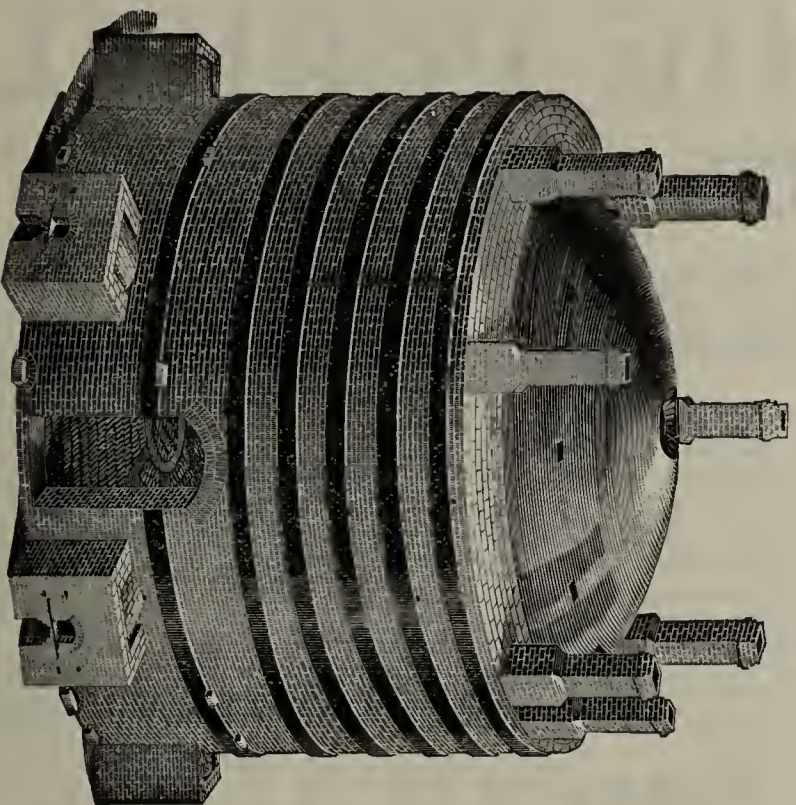
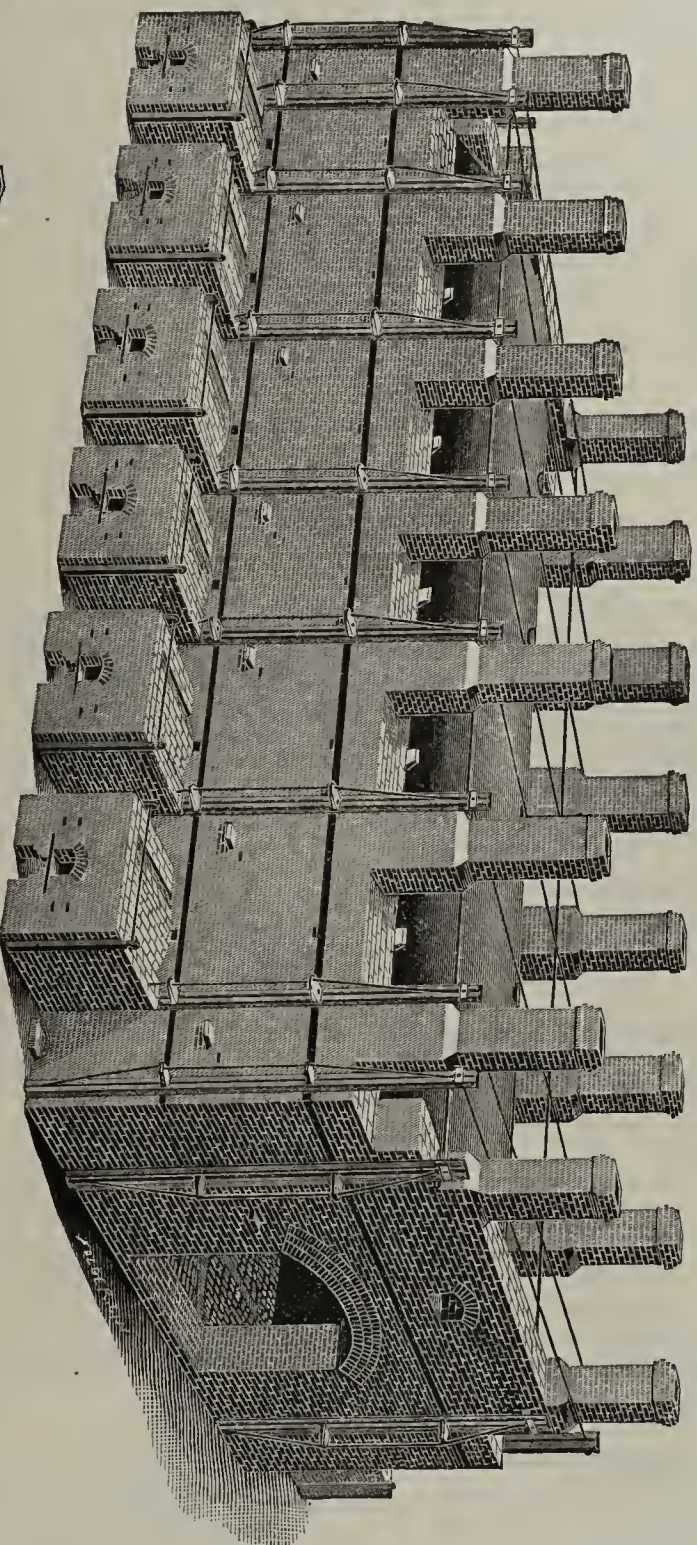
PROPRIETORS,

ROME, GA., U. S. A.

For further proof. —————



# The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings,  
Cincinnati, Ohio.



# THE KILN OF THE PERIOD.

## THE "PERFECT KILN."

*Sercombe's Patent.*

Designed on Economic and "Common Sense" Lines, for Burning Brick, &c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

**T**HIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire. It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Hoffman's are being converted and new ones erected in Austria (the home of Hoffman's); also a number in America.

### NOTE WHAT THE USERS SAY.

100 per cent. Hard Brick, out of which are 70 per cent. Vitri-  
fied, Annealed Tough Pavers.

John A. Wiley, *Pres.*  
Geo. Allen, *Sec.*

W. S. Bleakly, *Treas.*  
W. Cramer, *Gen'l. Man.*

FRANKLIN PAVING BRICK CO.,

March 19, 1894.

To L. HANCOCK, Esq., Metuchen, N. J.

Dear Sir:—In answer to yours of the 13th wanting to know how we are getting along with our kiln, would say that we are improving steadily as our men get to understand our material. You know that our clay is one of the most difficult kind to work that your kiln ever had to contend with, for the reason that there is so small margin between vitrifying and melting. We are now getting 70 per cent. vitrified brick and balance all hard. We expect to do better than this soon. I feel confident we will. A kiln that will burn our clay properly, will burn anything in the shape of brick material. Yours truly,

GEO. ALLEN, Secretary.

From the Russian Agricultural Agency, St. Petersburg.

Herewith we beg to inform you that the erection of the Kiln is finished, and we are very glad to tell you that our customer (Prince Kourakine) is very much satisfied with the kiln after same was duly tried.

We enclose cheque for balance of license fee, etc.

From Mr. H. Burridge, Bedford.

No doubt you will be pleased to hear that I am getting on all right with the Kiln. I have no hesitation in saying that I am pleased with it. It is going well.

From Mr. J. D. Dunlop, Woodstock Works, Belfast.

I am very pleased to be able to inform you that the "Perfect Kiln" is doing well, burning the brick all hard, at a cost of between 7d. and 8d. per 1,000 for coal.

From Messrs. Hawkes & Joberns, Kenilworth.

We shall be happy to let the gentlemen you name see the Kiln. We are quite satisfied with it, and its work.

From the St. Julian's Brick and Tile Co., Ltd., Newport, Mon.

In reply to your letter, my Directors instruct me to say that they are very pleased with your kiln, and will be willing for any intending clients of yours to inspect same.

..... Secretary.

From the Longton Hall Co., Ltd., Stoke.

Our Kiln seems to be working satisfactorily, and we shall not at present require the assistance of one of your men.

From the Exmouth Brick and Tile Co., Ltd.

In reply to your inquiry, my Directors instruct me to say that they are extremely well pleased with the way the Kiln is working. The splendid lot of brick in the yard is a credit to anyone, and no one could reasonably expect better.

..... Secretary.

From the Stramberg Lime Co., Stramberg, Moravia.

After speaking highly of the economy in erection, and the system of flues, they say, "After we have been used to working two Hoffmanns, beside the "Perfect" furnace, then can we truly assure you that we save 20 per cent. burning material in the "Perfect," and attain a more equal heat. We can therefore highly recommend this system, and shall be pleased to answer further enquiries."

From the Rothneusiedler Brick Co., Vienna.

The altered Hoffmann is very easy to work, and we save 15 per cent. of fuel and get the brick more evenly burnt by the "Perfect" system.

References can be given to over Forty first-class firms already.

Agents for Canada, R. H. PYNE & CO., Yonge Street, Toronto.

Agents in United States, L. HANCOCK, Metuchen, N. J.

## SERCOMBE, OSMAN & WARREN,

Mention the CLAY-WORKER

EXMOUTH, DEVON, ENGLAND.



W. H. KELSO, Pres.

F. HASPER, Sec'y

PAUL BOEHNCKE, Treas.

M. C. KELSO, Ass't Sec'y.

MAX A. TH. BOEHNCKE, Gen'l Mgr.

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

.....Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

BOEHNCKE'S

Several other U. S. Pat-  
ents applied for.

UP AND DOWN DRAFT

# Continuous Brick Kiln.

Canada Patent, No. 44,615.

~ DON'T LOSE TIME TO INVESTIGATE. ~

18 Kilns in Operation in  
.....the United States.

Several Kilns in course of  
construction  
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

Beware  
of  
Infringe-  
ments.

## ADVANTAGES OF THE KILN.

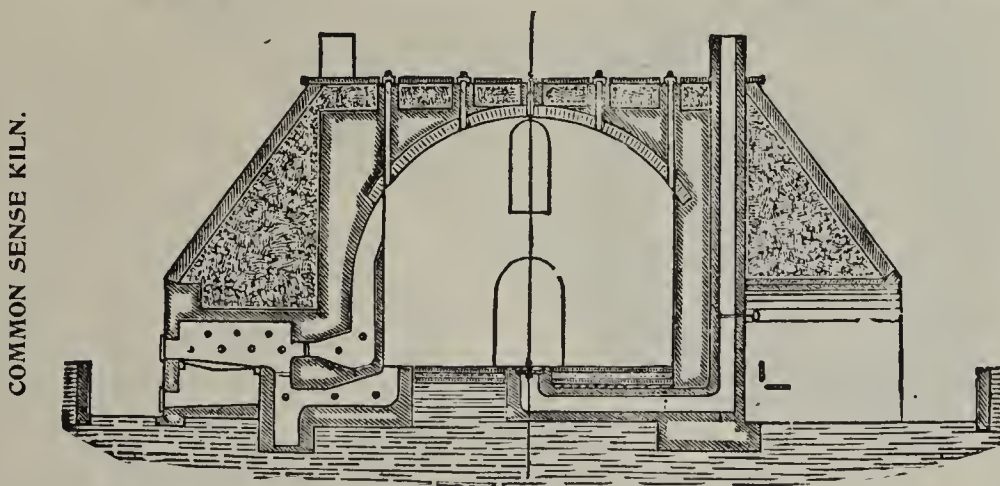
1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of

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Dry Press Brick,  
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Kiln & Drier Co.,

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Centinela, Cal.



COMMON SENSE KILN.

Patent No. 475,433.

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We have also Boehncke's Brick  
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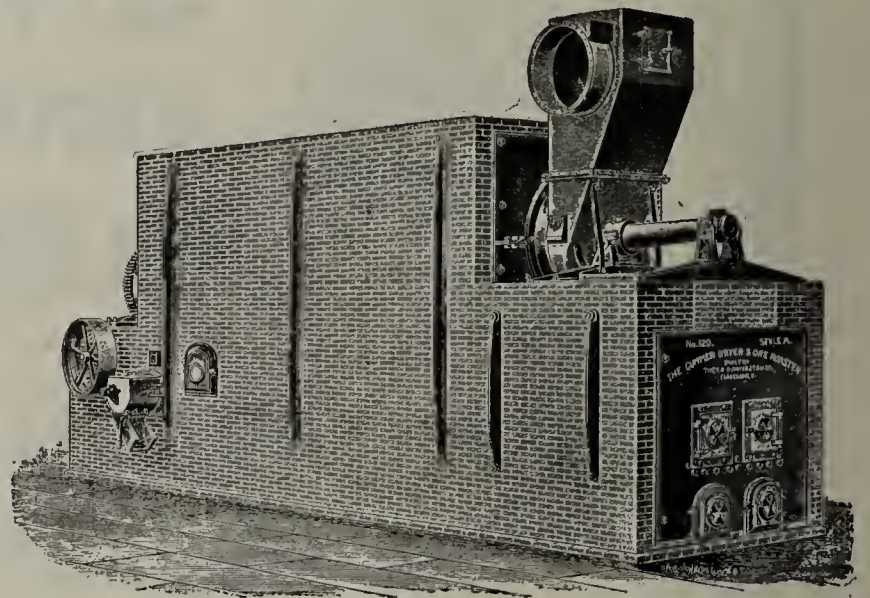
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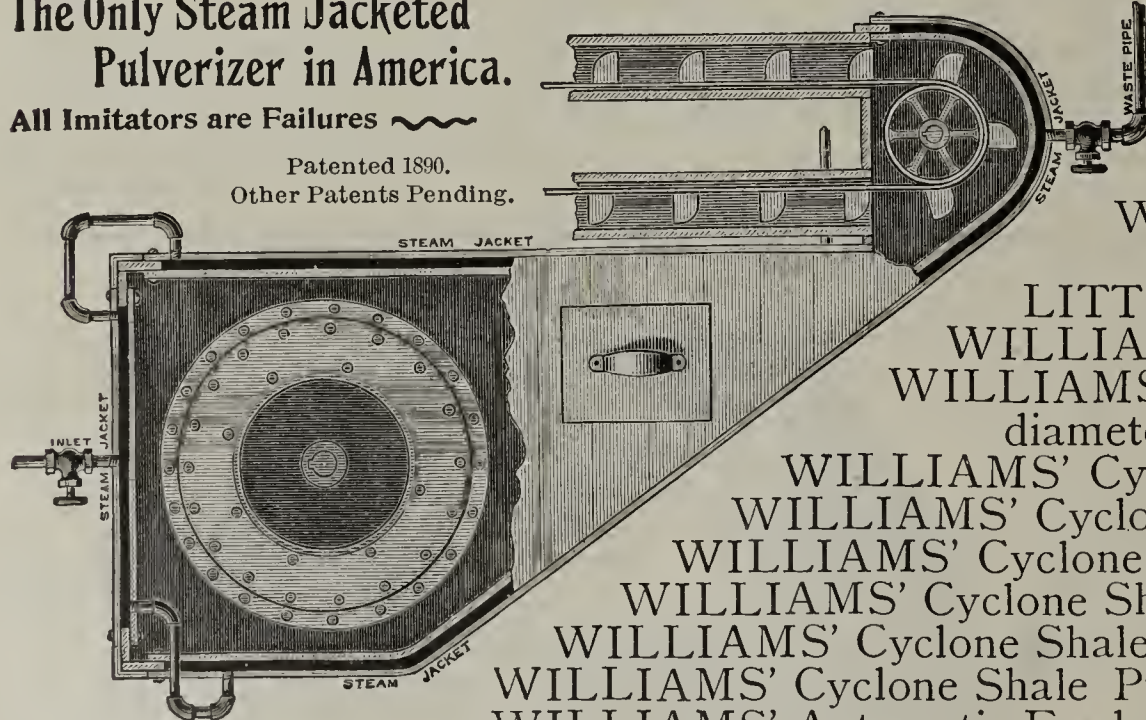
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The Only Steam Jacketed  
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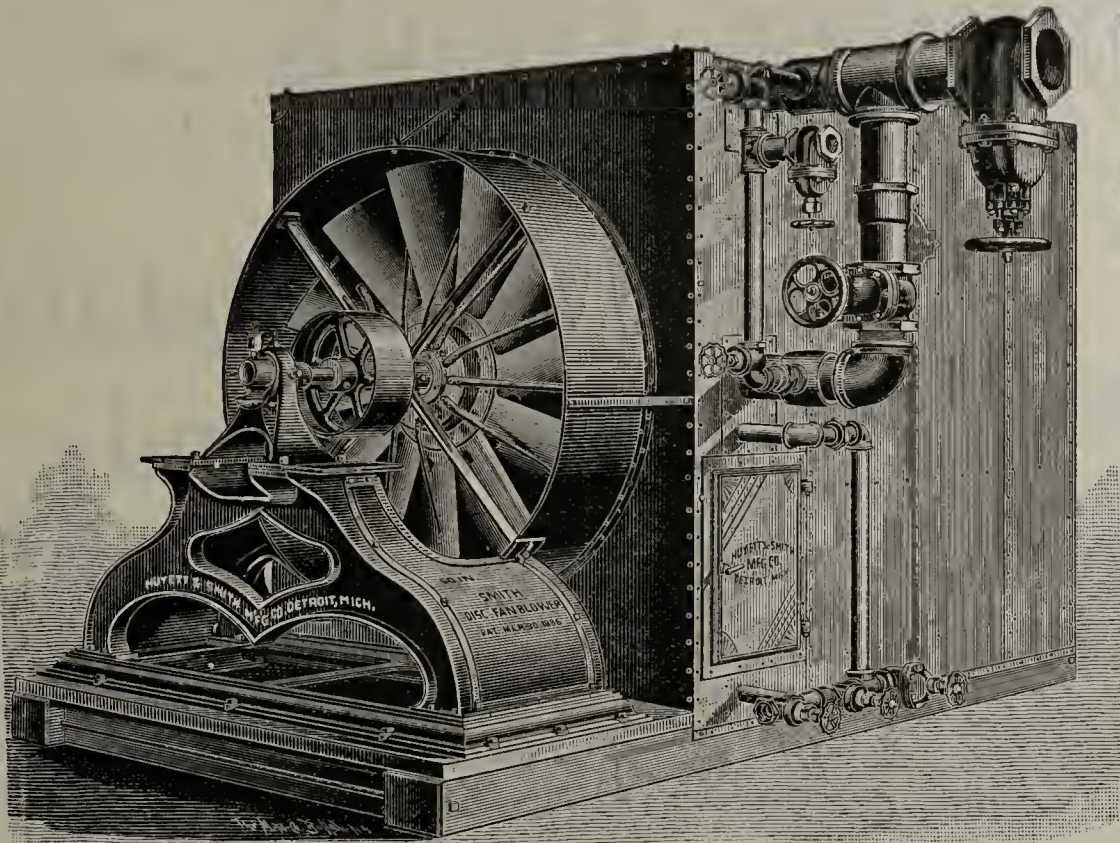
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**Smith Hot Blast** Brick  
Dryer.

We will cheerfully do so.

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We are manufacturers of **BLOWERS**, and can **BLOW** as hard as anyone but prefer to let others do the **BLOWING** in regard to the **MERITS** of our **BRICK DRYER**; the following testimonial letter is but one of a large number we have on file.

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# Speaking About Drying Brick

Are you aware that there are more modern ideas, more novel features, more real meritorious points embodied in



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Its adaptability to clays of different nature, as well as its reliability and uniformity in drying, has made it the **popular** drier of to-day; the result is that, even in these dull times, orders are being received from territory as far East as the Atlantic and as far West as the Pacific.

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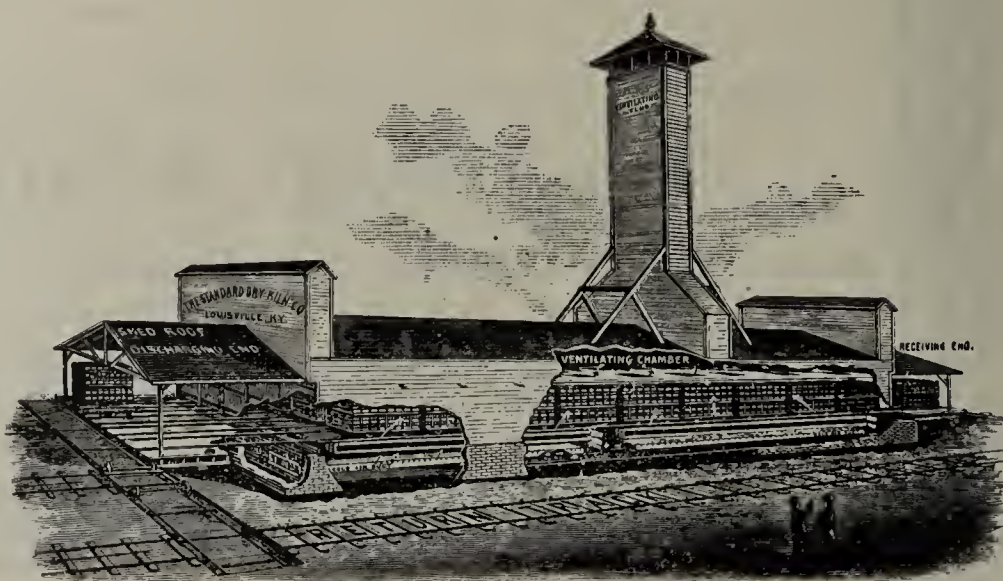
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# THE CLAY-WORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXIII.

INDIANAPOLIS, IND., AUGUST, 1894.

No. 2

Written for the CLAY-WORKER.

## ART IN TERRA COTTA.

WHEN people move into a new country they live in sheds and other buildings of the most temporary character. The saw mill rips out the lumber and it is tumbled together in a way to protect the occupants from the severe effects of the elements. People always go on building in this way for a long time after the necessity for it has passed. Habit is more forceful than reason under such circumstances. The habit of building light, flimsy, temporary structures exists long after the necessity, which originally created them has passed. After a time, though, the thrifty accumulate a small surplus and their buildings show it. Not, however, through the use of substantial material arranged in a permanent manner, but by the addition of what are supposed to be decorative features. The jig saw makes its appearance and horny brackets and the fretful fretwork come into use. This material is expensive, but not durable. The progress of substantial building is slow indeed. In

large cities the tendency is toward better and more substantial structures, because ground is high and security is demanded and paid for by the tenants, but much of the building even in cities is flimsy in character.

We waste a great deal of money on our dwellings by making a part of them what is necessarily both expensive and temporary. The porches are complicated

in design and finish. The external surfaces of all of the woodwork are covered with excrescences which really have no part in good design. With the same expense that is attached to many of our elaborate, temporary frame houses one could build brick structures simple in character, but permanent and artistic. The trouble is that so many of our people have an idea that the restless

method of covering surfaces with so-called ornament is necessary to an artistic result. Nothing could be farther from the truth.

One of the great points in the success of America's greatest architect, Mr. Richardson, was that he used a permanent material. He was not afraid of a broad surface. His brick buildings were very simple and not expensive. The expense attached to his structures was in the quality of the material used and not in the erratic way in which it was handled.

Our country is now passing from the spindle period in mantels with very gratifying results. We give a picture of a very artistic terra cotta mantle in the residence of W. D. Gates, at Hinsdale, a suburb of Chicago. It is notable that when we step from the temporary to the permanent, from the



A TERRA COTTA MANTEL, DESIGNED AND EXECUTED BY THE AMERICAN TERRA COTTA AND CERAMIC COMPANY, CHICAGO.



ugly to the artistic, we naturally and almost universally meet the clay products. This plastic material so permanent when finished lends itself naturally and easily to the hand of the artist. Farthermore, it has come to be a habit to make clay work artistic. The art which has attached itself to the business of working clay into terra cotta has had as much to do with its commercial success as has its stability as a building material. The terra cotta mantel is beautiful; it is permanent, and its manufacture must, for that reason, be a permanent commercial success. It is well for all to understand that art can only progress at this time through commercial lines. The idea that art should be considered as something too sacred and too high to move in these sordid channels is silly, and one who undertakes to move through other channels is butting his head against a brick wall. The sure thing for business in clay work is its connection with art. The sure thing for art is its connection with business.

Written for the CLAY-WORKER.

#### THE VILLAGE BRICKYARD.



SOME of our market our own bricks as a complete house? is a subject that has engaged the earnest attention of the craft for many years. My neighbor across the way, for instance, whenever his slate is full and no more room to credit his customers, forthwith builds a row of houses to which his customers contribute according to the amount of their indebtedness and he tells me confidentially that, although the owner of eighty houses, he never yet sold a house for as much as it cost him—gets stuck every time.

An old-timer in the near-by city of Philadelphia sold me a house last year for the mortgage I held against it, throwing away his second mortgage and volunteered the explanation that although a brickmaker of fifty years' experience he never expected to go into another building operation or row.

The cause of such a condition of affairs is the anxiety to do a large trade with the underlying thought that such is the road to wealth.

THE ROYAL ROAD TO WEALTH IS TO DO A SAFE TRADE.

Every week a stranger comes into my yard with a "get rich quick" scheme—"Now just pay me ten cents a week and

if you are sick you shall have a benefit of \$4 per week, and at the end of two years you shall have the grand sum of \$100 in gold," and hundreds in our town actually believe such promises. A couple of years ago I forbid such a party doing business at my yard and raised a disturbance, had an interview with his lawyer and the Company's head manager for interfering with inalienable right of working-people buying such insurance as they pleased. But that agent was unfortunate, within ten days we had him in jail for stealing the neighbors' chickens.

The way to do all kinds of business is, as I have so often explained before, to use your brains. Labor is a continual drug on every market; but the men who have brains to sell, the men who make two blades of grass grow where one grew yesterday are not only in demand, but the demand is so great that such men command their own price. How happy these United States would be to-day if we had these brainy men at work in sufficient numbers to provide places for all the unemployed, who are around our doors, waiting for the brains to grow, that shall give them, who only have hands, the opportunity to earn their daily bread.

All men have equal rights before the law; but there the equality of men stops. In every century the men who are worthy of remembrance in all the world, are counted on the fingers of the hand: one Washington, one Lincoln, one Grant, one Edison, even one Pullman. Nature or God is not wasteful of such first quality material, but only perfects such fruit when the condition of the human race imperatively demands and is ready to accept such a leader.

Here is a field for our unwisely led union laborers. Let them in place of destroying value, produce at whatever cost five "Edisons" and the work for this generation will be at hand.

Until these leaders are produced, the Village Brickmaker, in answer to Senator Voorhees, has suggested the following remedy for hard times:

"My remedy would be to close every port by a prohibitory tariff on everything that we now produce or that by a bounty we can learn to produce; such prohibition to include undesirable immigrants."

"The true remedy for hard times is for every man and woman to save five per cent. of their income every day and every year; and a good place to begin

is on tobacco and liquors; and a safe channel for saving is through the building associations with local management."

Got a little away from putting brains into houses this time, but will try next time, now that the foundation is laid to run up a wall worth the money.

THE VILLAGE BRICKMAKER.

#### KIND OF BRICK SUITABLE FOR PAVERS.

IN constructing a brick pavement, the kind of brick used is a matter of the utmost importance, as one pavement laid with imperfect, porous and soft brick will do more harm to the brick paving interests than a dozen well laid, durable pavements will counterbalance. The brick should be of such density as to be practically impervious to water, and consequently not subject to the action of frost. A brick that will absorb water to any considerable extent is unfit for paving, from the fact that the water which it will absorb in wet weather will, in winter, freeze, causing rapid disintegration. A good paving brick should also possess toughness and tenacity to such a degree that the edges will not break off, nor the surface of the brick wear rapidly when exposed to heavy traffic. A tough vitrified brick is by far the best form of paving material, combining imperviousness to water with great strength and durability. A common hard brick is liable to be burned hardest at the surface, and when this is worn through will be subject to much more rapid and irregular wear, but a properly vitrified brick will possess the same degree of hardness throughout, and the wear will be uniform and practically imperceptible.

SIZE AND FORM OF PAVING BRICK.

This is a matter upon which different opinions are prevalent. The majority of paving brick manufacturers, however, agree that rounding or bevelled corners are preferable to sharp corners, being less liable to be broken off, and affording a foot-hold for horses. The use of brick the size of that ordinarily used for building, offers some advantages from the fact that should the pavement need repairs at any time it would be easier to secure brick of the proper size, and further from the fact that any brick not burned hard enough for paving can be readily disposed of for building purposes. This is an important consideration to most brickmakers, as in this way they can dispose of their entire product.—*British Clayworker.*



Written for the CLAY-WORKER.

## ENAMELING BRICK.

Number 6.



None of my earlier articles I stated that I proposed to treat only of the slip and glaze single fire process, as it was the only process in which I considered myself thoroughly posted.

It has since been suggested that as my experimental work has been quite varied, I might be able to give some hints in other directions which might be valuable to some, whose clay or method of manufacture is not suited to that process.

It is needless to say that it is impossible to go into this matter exhaustively, as the schemes and combinations are almost endless.

Taking the clay enameling problem as a whole we might, divide it legitimately into three great heads, dependent upon the condition of the clay when enameled, viz, 1, Enameling on wet clay; 2, Enameling on dry clay; 3, Enameling on burned clay. I here use the term enameling in its broad sense, covering any method used to hide the body color of brick and produce a glassy or lustrous face.

The first two methods are of course single fire methods, the third is a double fire method. There are besides many combinations, one of them I have pointed out in my articles on slipping and glazing, where the slipping was done while the brick was wet and the glazing after it was dry, in the same way slipping might be done when brick is either wet or dry and the glazing done after the brick is burned.

There are also three divisions, which might be considered distinct, that are dependent upon the method used for hiding the body; 1, Slipping and glazing, in which the slip only is depended upon to hide the body; 2, Light slipping and semi-enameling in which the slip aids, in hiding the body as well as the semi-enamel. 3, Enameling proper, in which the enamel or opaque glaze is alone depended upon for hiding purposes.

There are also three general methods of preparing slips glazes and enamels. 1, Out of raw or unfritted materials; 2,

partially out of raw materials and partially out of fritted materials; 3, Entirely out of fritted materials.

With three methods dependent on physical condition of material to be enameled, three different methods of enameling and three methods of preparing the materials with which to enamel, I make it, that there are twenty-seven main roads open to the enameler, besides many side tracks. There are a few general rules that can be laid down as guides to choice. Brick made by the dry or semi-dry process, are, as far as I have discovered, only capable of being enameled after being burned, and for the



HENRY R. GRIFFEN, ("Artemus") Manufacturer Enameled Brick, PHOENIXVILLE, PENN.

reason that they do not admit of being wetted in their unburned condition. Consequently any one working them in that condition will have to resort to some process wherein slips, enamels or glazes are used in an almost or absolutely dry condition. This latter is a region in the experimental field upon which I have never entered and while there are great possibilities in it, I will have to drop their consideration for obvious reasons.

In enameling dry pressed brick, after being first burned we have the three methods; slip and glaze, slip and semi-enamel or enamel. Enameling proper is the easiest method but the most expensive. Slip and semi-enamel is next in point of difficulty but less expensive

than enameling proper. Slip and glaze is very difficult, but when gotten right the cheapest method.

With the plastic processes, be it hand made soft mud or stiff mud, all the plans are open to us but our choice will be quickly regulated either by the clay or method of preparation.

If the clay is one that iron specks before it burns sufficiently hard, or by the time it is burned sufficiently hard, we will find it about impossible to use the single fire process, because the iron specks will be almost certain to show through the enameled face. In this case we try slipping it only, either wet or dry and if the iron specks do not show through the slip, or only show slightly, we re-slip and glaze or slip and semi-enamel or enamel after it is burned, our slipping in the green condition is pretty sure to have done some good, and if we cannot succeed in covering the iron afterwards by one of the three methods we have to abandon its use.

Some clays have a much greater tendency to blister than others; some methods of making produce a tendency to blister when the brick are dipped while wet; in either of these cases slipping and glazing dry would be indicated. Allow me to state however, that slipping and glazing dry is difficult, or at least I have so found it, for it is hard to put the slip on thick enough to hide the body and have it stick, but a thin coat of slip with an enamel or semi-enamel over it, is quite practicable upon dry clay. In case your clay blisters when dipped wet, and cracks when dipped dry, you are

forced into a double fire process.

In regard to method of preparing slips, enamels and glazes I will state generally, that with wet clays, raw materials are best, with dry clays some fritt might be used, also with burned clays or in the latter case all fritt may be used if desired. Fritt should be avoided as much as possible on account of expense.

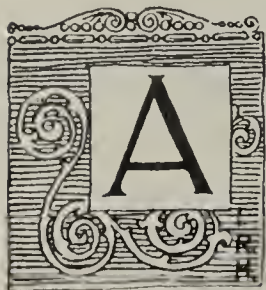
I believe I have indicated the principal plans that may be adopted, I have already said that an attempt to discuss each individual instance would lead to an almost endless article, and I have already encroached too much upon your time and patience.

HENRY R. GRIFFEN,  
Phoenixville, Pa.



Written for the CLAY-WORKER.

### DUTCH BRICK WORK.

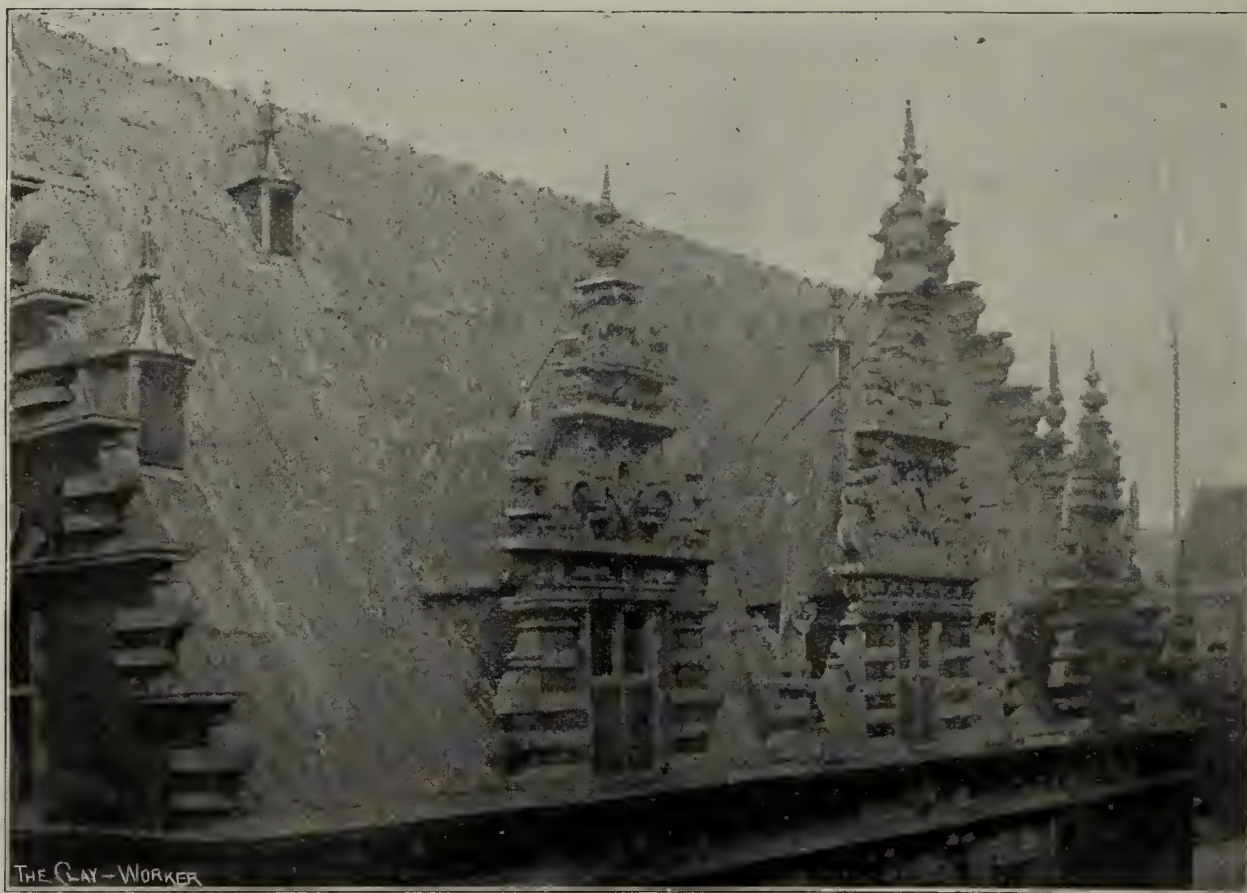


ART in Holland is perennial. At the World's Fair more Dutch pictures were sold than those of any other nation. Their architecture has never been bad, and always fairly good. To the casual observer, it would appear strange that there should be anything in Holland to develop a love of the picturesque. The country is flat; there are few trees; and as far as the outlines go, there is nothing in nature to suggest the picturesque. There are low level plains, canals, marshes, dikes, the rivers and the arms of the sea, but never anything abrupt undulating and in that way picturesque. But Holland has an atmosphere, it has color in the air which lends beauty to the ordinary objects and the common landscape. A marsh with grass and water and a few cows may be the motive for a Dutch masterpiece. The rich color which comes with its moist atmosphere and its mellow sky lends beauty to everything. This condition is as much of a help to the architecture as it is to the natural object. The surfaces of the Dutch buildings are flat. There are for the most part no great projections, the walls are thin and hence the openings do not render deep shadows possible. The string courses are relatively flat, yet the buildings do not suffer from it owing to the peculiar atmospheric effects which we in this country could not expect to secure through the same expenditure of material and labor. These natural beauties, or rather those secured by natural means, has had a great deal to do with the development of the Dutch art, both in painting and architecture.

We illustrate two views of the market house at Haarlem. It was built during the latter part of the sixteenth century and stands to-day one of the artistic structures of that region. The first illustration gives a portion of the side and rear view, showing the elaborate dormers, the lead roof and the manner of decorating the gables.

The second and larger plate shows the front of this remarkable building.

I have already spoken of the atmosphere of Holland, the way in which it lends beauty to its simple landscapes and its buildings, which are constructed in a way that would not show strong shadows in this country. The Holland artist may have said to himself "We are



DORMERS OF HAARLEM MARKET.

without the undulating landscape, we are without a picturesqueness which comes from ruggedness and variety in outline, and thus if we obtain that effect we must secure it by artificial means." The result would indicate that this was in the mind of the Dutch artists who had to do their building. There are not many places in the world where the architecture is as picturesque, though as said before, there is the quality of the atmosphere which helps to such results. One who is very acute in such matters recently said, "I believe that we might import and reconstruct, if possible, any number of these Dutch buildings and not secure the satisfaction in looking at them which is to be found in their own

country. Under our bright sunshine the clear light and the often cloudless sky, there would be a failure where we find success under other conditions." Certainly it requires very nice discrimination to adequately profit from the study of the works of the foreign artists. In copying their work we are apt to make a relative failure, in that the copy is not as good as the original.

The handling of the plain surfaces of brick work on this building is of striking interest. LOUIS H. GIBSON.

### ANCIENT VS. MODERN BRICKMAKING

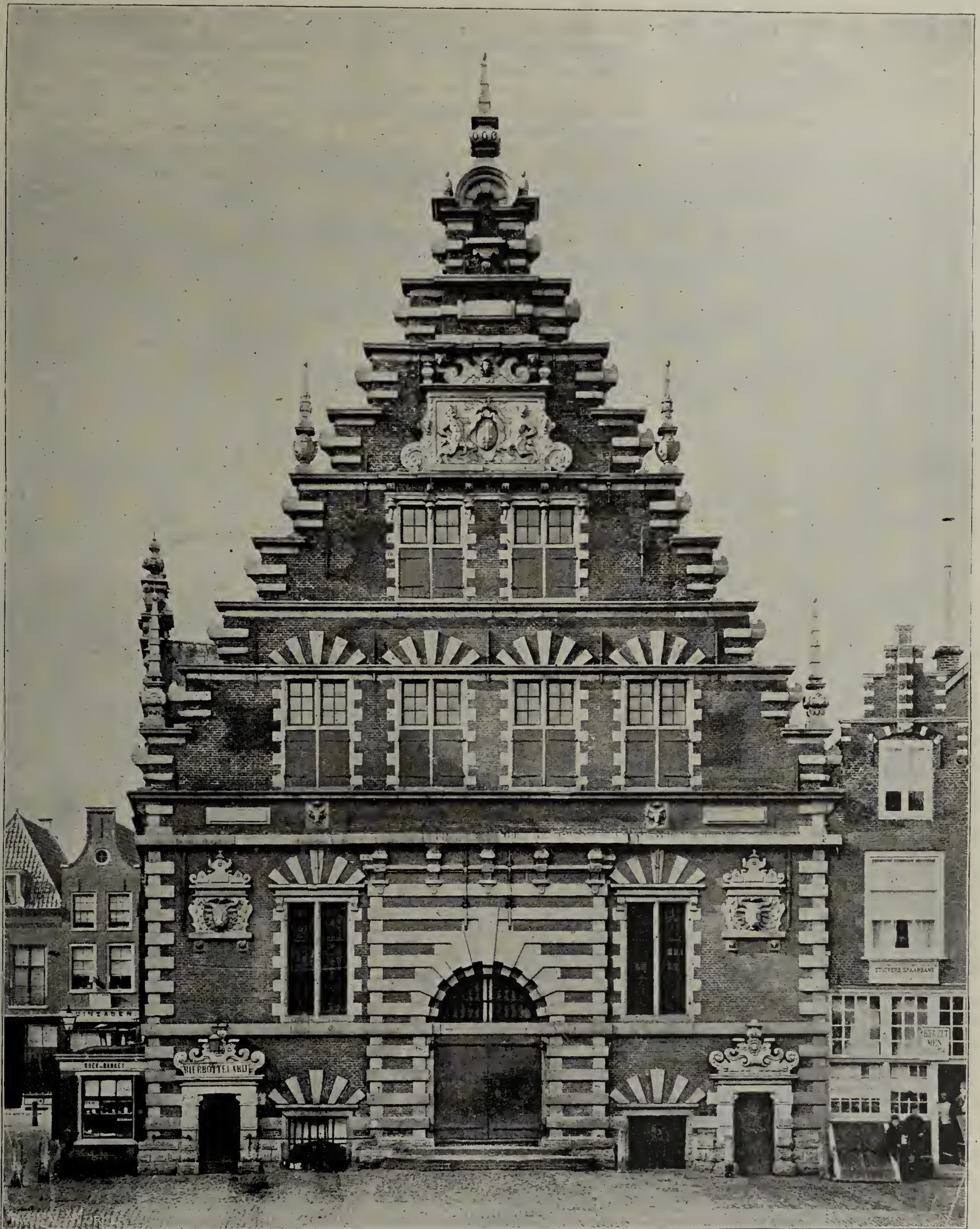
"WHEN I look at the great blocks of brick buildings towering skyward in our cities," said M. E. French, of Washington, recently to a reporter of the *St. Louis Globe-Democrat*, "I cannot help contrasting our American conveniences with those I saw in Egypt. To be sure it is a good many years ago that I was there, and perhaps they have improved somewhat since then. I will just cite the one industry of brick-making. I stood one day watching some men at work building a tomb. It was made of crude brick, and the men paused in their work to make the brick as

they went along. This was done by preparing a bed to hold water, into which they threw mud and sprinkled over it large quantities of cut straw. This they trod into the mud with their feet, and when the whole was thoroughly mixed, they scooped out large lumps, which, with their hands, they dexterously shaped into bricks, and placed in the sun to dry. At another place I watched two men at the same kind of work, only they held in their hands a rude mould into which they thrust the mud, and then instantly shook out the brick and left it to dry."

### THE WORST OF BORES.

The bore the wise man least prefers,  
The bore most full of vapor,  
Is he who counsels editors  
On how to run a paper.— *Printers' Ink*.





DUTCH BRICK WORK—FRONT OF HAARLEM MARKET.



## THE WORLD OF KERAMICS.

Similarity of Form in Pottery Found in the Ruins of Persia, Egypt, and Pre-Historic America—How to Keep the Secret of a Glaze—The women of This Continent Were Potters and Painters Before the Arrival of Viking Ship or Caravel.

## Fifth Paper.

**I**NDIA, the Mother of Nations, gave us the tile, and the hereditary village potter. From the Himalayas to Persia and Egypt, were but halting places, in the onward march of people working out its destiny. To-day in Mexico, you can take your sherbet from the snow-capped peaks on the plains, before going to the railway in the morning, lunch in the orange groves at noon, and be in the jungle with the American

tiger after supper, in the terra caliente.

When metallic lustre was first made, it took longer to get down from the Hill Country.

Faience a reflet (metallic lustre) is usually on a white ground with designs in azure blue, paste hard, designs bold and freely drawn. *The color not blended with the glaze.*

Persia's earthenware degenerated as it is to-day, is not unlike this, and I have seen a whole mantel of tiles brought from Mexico in 1882 which shows "The art of the Moors," as the daily press calls with, an hereditary glaze on them. Then there is the stanniferous earthenware of "The Arabs of the 14th century," made by "Musselman families," of the Sunni Sect—whose tenets about graven and painted images are more rigid than those of the Shiah. *In the ruins of Rhages, unglazed red clay pear-shaped pots are found like those of Egypt, and Prehistoric America.*

And now before leaving this point I wish you could all have seen an exhibit made in the French Section of the World's Fair. It was a German name

Muller. Could you have but gone there and stood in the aisle as on sacred ground. There was no necessity for a sign as there was in the convent of La Rabida, "Take off your hats." Men did it involuntarily, and women stopped chattering, for it was neither function or fiesta. It was time to think, *not of the past, but the present!*

All of you have bowed down to Sevres, Meissen and Berlin, Worcester, etc., etc. But before the exhibit of Muller of Paris, you could see what could be done with fire brick clay, drain tile clay, brick clay! For Muller pere made all these things, and Muller fils, makes something else! There were no little rosettes stuck on—no two hair work. Could you but all have seen those marvelous glazes, seen what could be done with glaze and body. Here in America are just such things, and your Ceramic Industrial Artists were denied admission to the Fine Art Department of the World's Fair, Chinamen being medaled therein. Unless native talent is assisted, it will ever be as it is in Yucatan, with memories of a great past, and a present copy



BAPTISMAL BOWL, SHOWING EFFECT OF SPANISH THOUGHT ON MODERN AMERICAN DECORATION.



of something else from somewhere—Germany or Japan.

Could every American clayworker have gone to that Muller exhibit, have had Mr. Low of Chelsea, Mass., a man who has done something for tile work in America, go with you and be bored with you, or had the gentlemanly

the cold of America? There is a tile in existence made in 1308, a reflet metallique that marked the centre of the Mehrab, the place on which the eyes of generations have looked during prayer. The knific inscription is "God who hears and sees! There is no God but God! The victory comes from God!"

piece of clay, containing the whole thought of the design, or the design covering many pieces of clay. Gateways of cities, walls of large buildings are found in this latter treatment in India, Persia, Spain, and Mexico to-day.

Oxide of tin was "the lost art" doubtless of Hispano-Mauresque Pottery; it



EMIL MULLER & CO'S EXHIBIT AT THE WORLD'S FAIR.

Frenchman in charge let you touch the glaze, soft as a child's cheek, softer than satin, and the body rough, coarse, hard and resistless as time or fate, then have gone home and thought what is meant by Ceramics.

For architectural work this glaze has resisted the frosts of Siberia, why not

A prayer and a belief common to us all, one which filled the hearts of the light-haired race, that made the pottery and dwelt in the caves of Prehistoric Utah, as well as to us all throughout the world.

In tile work you will find in the past, two thoughts. The brick or single

is found on Babylonian and Assyrian brick, lying hidden in remote localities for centuries. Its use may have been learned by the Arabs, for its next appearance is upon fragments of tiling apparently of their manufacture, or under, at least, their influence. How the knowledge of this enamel travelled.



When and where it was first used, and to what extent applied, is still of doubtful and of uncertain date. Now and then on ruined Arab sites it appears, and then blooms in all its glory in the Moorish potteries of Spain.

Baron Davillier writes in his work on Pottery that he can find nothing reasonably to be ascribed to a date anterior to the 14th century. Two hundred years after the expulsion of the Saracens from Spain?

In Valencia *anterior to its conquest by Jayme I of Aragon in 1239* potteries had been long established, and the Moorish potters protected by special edict.

You must bear in mind that there were two periods of Mohammedan rule in Spain, the first on the expulsion of the Gothic Monarchy by the Arabs, and the establishment of the Caliphate at Cordova, in the 8th century. Of the products of this early period we know but little, but presumably they can be classified with the silicious glazes of the Orient. The second period is after a short interval of five centuries, 1235, when the Moors founded the Kingdom of Granada, having driven out the Arabs. Then come the wares whose form and thought have affected all South and Central America, the Hispano Mauresque tiles of the Alhambra, dating 1300, Alhambra Vase 1320, and all the tin-glazed ware of the Moorish origin, until the period of the conquest of the country by Ferdinand and Isabella. The pottery then became Spanish in thought, Columbus and the Caravels bringing pottery to this continent at the very height of its glory in Spain. For from the time of the accession to the throne of Granada, pottery declined, as Christianity conquered.

You will therefore note that the advent of the Moorish Potters in America was at a period when their art, the Hispano-Mauresque, was at its height of glory. Many of these potters came with that restless, wandering spirit of race, inherent in them, others through religious intolerance.

The oxide of tin remained in Spain, its intelligent leaders and workmen driven out under the Inquisition. The Bodegas remained, the Bottegas came to this Continent.

From these connecting links and not "the lost Atlantis idea," may be perhaps traced the objects, marvellous as they are, often found by those who visit the little out of the way potteries of Central and South America.

There was one story told in the pottery part of the Exposition of Orizaba in Mexico, in 1882; that a zouave induced a Mexican potter's daughter to follow him to France on his return. The secret of a glaze went with her. False to faith and people, she betrayed it to her lover, and a well known ware, with a reflet was the result, only one man knew the secret, *he met with an accident*, and the secret of the glaze is still with the girl's people, like herself again. *Ou revient toujours, a'ses premiers amours.*

So you see that under the heading "What I know about glazes," you cannot find out all you want to know in a book, the laboratory is the place for that, and even the Alchemists failed to make gold out of copper. The gold hatchets the natives traded to the Spaniards on their arrival, had not the right ring on closer investigation. It was the first, but not the only time that "los nativos," were not "the gringos" they were taken to be, and how about their potters, and their pottery?

Yucatan, Peru, Guatemala, Costa Rica, The Mound Builders to Lake Superior on the North, all tell their story.

American women were potters and painters, before Viking ship or Caravel touched these shores. That fact is undisputed, verified each time the graves of their dead are disturbed, and the mounds give place to the corn fields.

RICHARD G. FRACKELTON.

Written for the CLAY-WORKER

### HINTS ON BRICKMAKING.

No. 90.

BY R. BRICK.

#### HOW MAY WE INCREASE CONSUMPTION?



**D**URING prosperous times we discuss the question, how can we make bricks good enough, and fast enough to supply the demand, methods of handling and preparing clay, processes of drying, burning and loading bricks.

The question of how we shall dispose of the output receives but little attention. During the present year, however, selling the product is and has been the absorbing thought with a very large majority of brickmakers. It is quite probable that in the past we have neglected the point to our cost. We see articles advocating the use of iron and

steel as a building material and putting forth claims to substantiate its superiority. Those interested in limestone, sandstone, marble or granite, offer their arguments in favor of these materials. It behooves brickmakers to be aggressive along this line, that people who wish to build may become familiar with the many advantages of burned clay as building material over any or all other materials.

How best to accomplish this end is a rather difficult problem to decide. There are two objects to be attained. First, to get the facts and figures demonstrating the superiority of brick in proper shape. Second, to place these facts before, not architects and builders, but before the people who pay for the houses and buildings, and live in them after they are completed.

The N. B. M. A. should give this matter their attention, have some papers bearing on the various phases of this subject prepared by competent persons read before the convention, then compiled and arranged in proper form. Then any brickmaker could order as many copies as desired and distribute them where they would do him most good. This would educate consumers to study carefully the merits of clay as a building material.

A little thought on this subject will make it clear to every brickmaker that education on this line is needed to help the brickmaker. There are many popular fallacies to meet and puncture. Most people connect the idea of a brick house with dampness and disease. They will say a brick house is damp and unhealthy. It is costly and is not capable of ornamentation and artistic finish, and will call attention to some particular house built from "measly" mouse colored bricks that have the appearance of having been moulded in a wooden shoe, and burned on the plains of Shinar. It is built in a basin, the surrounding grounds rising gently in all directions from its foundations, and ornamented with festoons of moss up to the window sills of the first floor; trees and shrubbery shut out every ray of life giving sunshine and make it a fit abode for toads and lizards.

We want to take these people to a home built of modern front bricks, laid in white or red mortar, trimmed with stone or terra cotta, and ornamental brick, set like a gem in the midst of a well kept lawn, surrounded by trees at a respectful distance, leaving space for



a flood of sunshine and fresh air to cleanse and purify the walls. Substantial yet beautiful, a complete finish without paint or varnish. A home to shelter future generations. Its walls are built hollow and well ventilated, as dry as a house of wood, with only a tithe of danger from fire.

We want to put these facts before the people. We might fill the columns of clay journals, building trades papers and journals devoted to architecture, but we would still fail to reach those directly interested. This is not only true of dwelling houses, but there are many other uses for brick instead of stone or iron, for culverts and tunnels, bridge piers and abutments, arched bridges, vaults, etc.

The wholesale use of lumber in building means the destruction of forests, which is a positive injury to the country, and robs coming generations of their birthright, and impoverishes the country, while the mining of clay does no injury except to displace so much soil but which can be restored again. The clay deposits are inexhaustable, and to be found in every section of the country, so that the manufacture of clay products enriches the country without doing it any harm or encroaching upon the rights of our descendants.

Another valuable point to consider in clay as a building material, should the structure be destroyed by fire: Of all material used in building, brick only can be utilized to rebuild. Iron, steel, and stone of any kind, is left in such a condition as to be practically useless, while wood is consumed. There is nothing new in all this to builders and architects, but few, if any, of these facts are placed before consumers of our product or the product of those in other lines.

The influence of our National Association is being felt in every part of the republic. Every section is represented in its membership, and its proceedings are distributed in many ways throughout the land. It is already bearing fruit. If it will give proper attention to the subject of increasing consumption of brick, brickmakers everywhere will be benefited.

A correspondent in the July number of the CLAY-WORKER, while a little "fractional," makes some good points on brickmakers living in wood or stone houses, which is a lamentable fact, which the writer has referred to in former articles. Even in building our plants we

use wood where brick would be as cheap, and, infinitely better we even put in wood sewers, and, as the correspondent referred to above says, build our offices of wood, while he makes a desperate effort to do his duty and gets up an "alf and alf" house, and promises next time to go the whole "razor back." I hope his fiery protest will bring out further discussion of this subject, and that the editor of the CLAY-WORKER will be guarded in the use of adjectives when he writes up a brick plant with a wooden office in the foreground.

Now that we have a training school for clayworkers, that will be in practical operation in September of this year, we can give our attention to opening new fields for the use of bricks. My friend, the "Village Brickmaker," argues learnedly against technical and scientific education in one sentence, and tells us he will send his boy to a school of architecture to learn to build and manage men. In the next sentence he is only

that they are now confident that no more advertising is needed.

Next year some other firm will have secured a still bigger trade and store by advertising, and our friends of to-day will be forgotten. Then they will begin to advertise again; and learn, when too late, that it takes a long time to get up steam when the fire has been once allowed to go out.—*Printers' Ink.*

### BRICKYARD SKETCHES.

A GREAT CLAY CENTER.



OHIO is indeed a great state. Great in the intelligence and enterprise of her people and great in her vast natural resources, chief among which is her extensive and varied clay deposits. Almost every known branch of clay work is successfully carried on within her borders. Her supremacy in the



BRICK YARD SKETCHES—THE AKRON FIRE BRICK AND SEWER PIPE CO'S. WORKS.

theoretically opposed to higher education. Practically, he is with us; he is only preparing to gracefully accept the logic of events, and will ere long have one of his bright boys under the guidance of Prof. Orton, at Columbus.

By the way, Prof. Orton, how young must we be to gain admittance, is there hope for a back number?

Out in Lincoln, Neb., there is a firm of smart business men, who advertised so liberally last year that they have been compelled to move into a larger and more commodious store. Since their change trade has increased so fast

clayworking industries is emphasized by the establishment of a special school for clayworkers at the Ohio State University, a full account of which was given in the July CLAY-WORKER.

There are relatively few points in the state where clay is not easily accessible in quantity to justify the establishment of brick yards, tile factories or potteries and at very many places there is a wealth of raw material sufficient to supply every demand for many generations to come.

Perhaps one of the best known clay centers in the country is Akron, for who does not know of Akron sewer pipe,



Akron tile and Akron fire brick? For many years these wares have been generally recognized as the standard of value for comparison and have found markets in well nigh every portion of the country. Now her vitrified pressed brick and pavers are rapidly gaining high rank.

The writer recently spent a few hours

in the wall they present a very attractive appearance much resembling fine stone work.

Mr. Allison's works are located in a little ravine at the edge of town and at the time of our visit was "out of sight" being hidden almost by great piles of sewer pipe covering several acres, the product of a neighboring factory.

Returning to Cleveland we took a fresh start and by easy stages, if an electric car ride of four miles and a three mile drive over very rough roads behind a shadowy

grade pressed and ornamental brick and the plant was well equipped for that purpose, two of Simpson's dry presses and other necessary machinery being put in. They had hardly gotten well underway, however, before the financial collapse set in presaging dull times in the building lines and as there were marked signs of a large and growing demand for shale pavers in Cleveland, they promptly turned their attention to that line and for the past year have been making repressed pavers exclusively. Their entire product going into the streets of Cleveland and the roads leading thereto.

#### BRICK PAVED COUNTRY ROADS.

The idea of paving country roads with brick may seem a little wild to some of our readers but it is a feasible scheme that is being practically illustrated by Cuyahoga Co., which proposes to spend \$80,000 or more each year in the permanent improvement of her roads with vitrified pavers. There were several miles laid last year and as many more will be put down this year, as the results are very satisfactory. A driveway of brick eight feet wide (single layer) is laid in



in Akron, which is little more than an hour's ride from Cleveland, but found all the clayworking establishments idle, partly because of the dull times but mainly because of a fuel famine, the result of the coal miners strike.

A visit to the factory of the



AKRON FIRE BRICK CO., Developed a congested condition, the dry rooms and kilns being filled with green ware ready for the fire. Our old time friend and correspondent B. M. Allison, secretary of the company still has charge of the works and for some time past has devoted much attention to a new and improved form of building block, which was illustrated on page 676 of the June CLAY-WORKER. It is made of fire clay and is first formed by hand and then repressed by an immense power press especially designed and constructed by Mr. Allison for the production of these blocks. The blocks are consequently uniform in size and shape are very heavy and strong adapting them for foundation purposes as well as for the superstructure. The edges of the blocks are chamfered and when laid

nag, may be so termed, we reached the works of the CLEVELAND VITRIFIED PRESSED BRICK CO.

Here we found our good and amiable friend W. D. Richardson actively directing affairs. The erection of

this plant was begun in the fall of '92 but little progress was made till the next year when work was resumed under the supervision of Mr. Richardson, who had formerly run the Central Pressed Brick Co's works at North Baltimore, O. It was the intention at first to make only high



BRICKYARD SKETCHES — (1) TRESTLE FROM WORKS TO CLAY BANK; (2) A PORTION OF THE CLAY BANK; (3) THE SOUTH PARK TILE WORKS.

sand on a broken stone foundation, making a solid, permanent roadway over which the heaviest loads may be hauled the year round.

The brick works are located three miles from the city in a beautiful valley through which winds the Ohio Canal, a



peaceful stream, down which the brick are floated in small barges to the city. Several hundred feet back from the bank of the canal rise two great hills at the base of which lies the factory. A long trestle has been built up between these hills down which the clay is run in cars attached to each end of a wire cable 700 feet in length, the loaded car pulling up the empty one. For pressed brick the clay is stored under an immense shed where it is allowed to "cure" for a month or more, and then again moved on to the dry pans and machines; but for the pavers the clay goes from the car direct to the crushers where it

The clay burns a beautiful dark red and vitrifies to an exceedingly hard, dense body. Whenever the market justifies they can resume the manufacture of front brick to good advantage as their clay is of an excellent quality and virtually unlimited in quantity, for the two great hills are seemingly all clay excepting about two feet of soil at the surface. Beneath this is five feet of common clay, then about twenty-five feet of shale, next a twelve foot vein of independent bluc stone that is used for flags, sills, etc., and then shale again to a depth of more than a thousand feet. At one point a well was sunk through

the summit of the highest hill where all who pass may see. It is a pretty frame cottage, that was built especially for Mr. Richardson by the company. The foundation and chimneys are of brick.

#### A SMALL TILE FACTORY.

On our way back to the city we passed the factory of the South Park Tile Co., but they were not running, the coal famine having reached them. A glance over the works told of a neatly kept, well managed little plant. The clay is hauled considerable distance in carts and dumped or shoveled into a storage shed, from which it is wheeled to a



BRICK YARD SKETCHES — WORKS OF THE CLEVELAND VITRIFIED PRESSED BRICK CO.—From a Photograph taken during the Winter.

is reduced to a powder and then conveyed to a Stevenson & Co.'s pug mill, where water is added and the mass thoroughly tempered and fed into a huge "Plymouth" brick machine from the shops of the Fate-Gunsallus Co., which easily turns out more brick than they are now prepared to handle. They are cut 10 or 12 at a time by a hand power board delivery device and passed on to a Raymond Automatic repress, thence to cars. The green brick measure 8 9-16 x 4 5-32 x 2 17-32, and shrink when burned to 8½ x 4¼ x 2½. The brick are dried in 24 hours in an Iron Clad tunnel dryer, from which they go to square down-draft kilns of which they have four (one Griswold and three Eudaly) and are building two more. They also have two round (Meyenberg) muffle kilns that have been discarded as impractical for their use.

over thirteen hundred feet of this shale. So Brother Richardson is not likely to be out of a job very soon for want of raw material.

#### THAT "PECULIAR FEATURE."

The plant as a whole is well arranged and equipped and is a credit to its builders, but there is one peculiar feature that we fear to mention lest we incite the ire of those critical sticklers for consistency, "R. Brick" and "The Village Brickmaker." However it is too conspicuous a feature to be overlooked, indeed from its pretty, turret like observatory one may not only overlook the entire plant but the whole surrounding country as well; and a charming view it is of fertile valleys and winding streams that lose themselves in the distance behind wooded hills. It is the home of Mr. Richardson and is perched upon

Frey-Sheckler auger machine as needed. They make 2½ to 8-inch tile and a few hollow blocks to supply the local demand. These are dried on a steam heated slated floor and burned in Pike's New Discovery Kilns.

In the course of a pleasant chat about matters connected with his own plant Mr. Richardson commended very highly the work done by the J. M. Ervin Special Machine Co., of Cleveland, who he says has furnished him with a very superior grade of brick mold liners and other repairs, all made in a thorough workmanlike manner and of the very best material, the forms and molds for ornamental brick especially being well high perfect in every respect. This is high praise from a worthy source for Mr. Richardson is a gentleman, a scholar and a thorough brickmaker if he does live in a frame house.



Written for the CLAY-WORKER.

THE CLAYWORKING INDUSTRIES  
OF OHIO.

## Eighth Paper.

BY EDWARD ORTON, JR., E. M.



THE manufacture of brick from prepared clay is accomplished at present by four general processes: 1st, by hand moulding, 2nd, by soft mud machinery, 3rd, by stiff mud machinery, and 4th, by dry press machinery. As has been stated elsewhere, the paving brick industry is a new one, and has not yet thoroughly passed the experimental stage, and consequently it will happen that bricks are offered to contractors for paving purposes which have been made by any of these purposes. The characteristics of the product of each process are distinct, and each has its good points, but already the vast majority of paving brick are being made by the use of stiff mud machinery, and the prospects are that no other processes will be used to any extent for this branch of brickmaking.

*Hand moulded bricks* are usually somewhat irregular in shape and are generally porous and open in structure, owing to the large amount of water used in their tempering; the labor of moulding brick by hand is severe and it is necessary to spare the men as much as possible by making the clays soft. Other than porosity, no structural faults can be found with hand moulded brick, no laminations, cracks or cleavages, resulting from the arrangement of the particles of clay can be found. The clays are usually poorly prepared, being very seldom ground either dry or wet, and this fact becomes apparent in the brick by the presence of pebbles, etc.

The hand moulded material has, however, more than any other, one quality which is of great value in a paving brick. Its temper being so soft, allows the most complete amalgamation and union of the particles of clay and each brick, molded from such a mass, and dried slowly by natural process, becomes more an integral structure, complete and separate in itself, than is ever possible for bricks made from bars of clay cut up in sections. In a hand moulded brick, the structure, such as it is, is usually alike all through and there is no weak point to attack. When vitri-

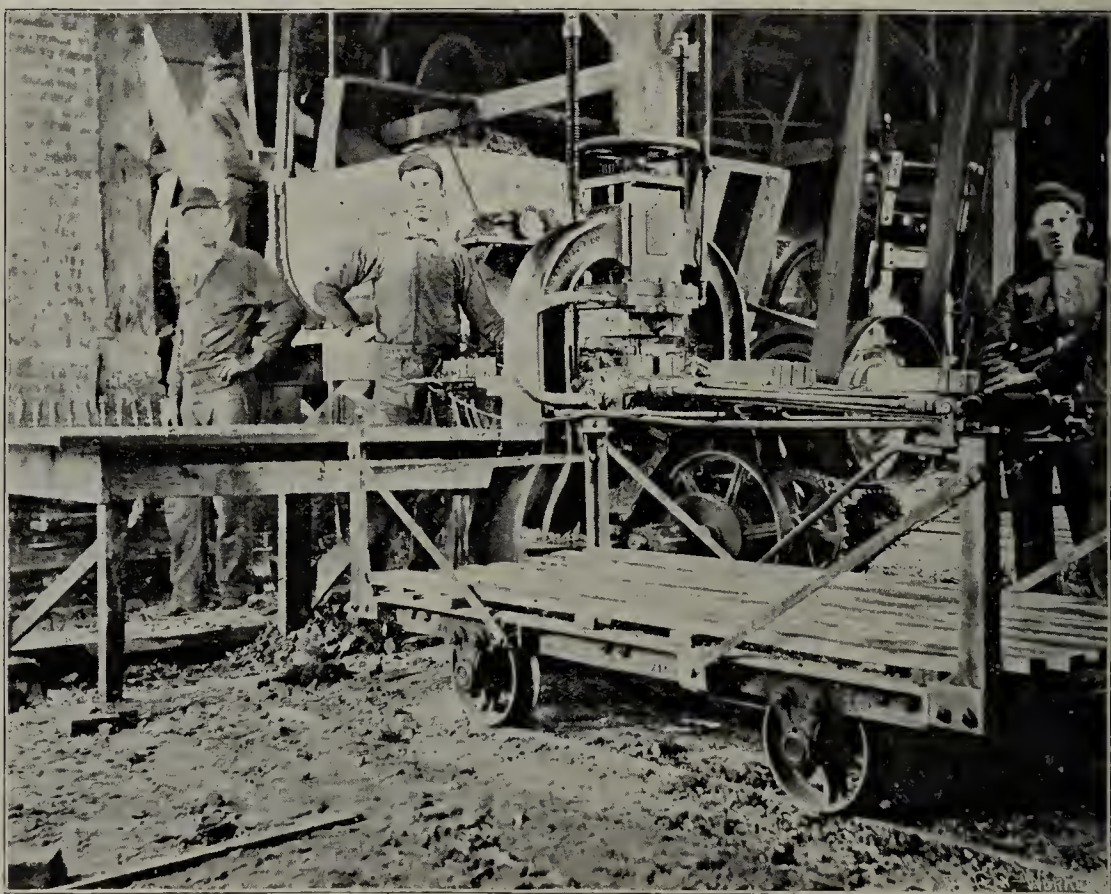
fied, it becomes like the hard greenstone boulders which used to be put into city streets.

If the hand moulding process as applied to material of the right composition and prepared with the same care and skill as is used in other processes, the product would in all probability be nearer our ideal of what a proper paving material ought to be than is attained by any known process.

*Soft mud bricks* have most of the good points of the hand moulded bricks, so far as structure is concerned. They are made by machines which force the soft clay into a wooden mould box which is emptied, sanded, and returned to the brick machine by hand. The process is thus seen to be but little more than a

size and shape, both due to the softness of the brick when first made.

*Stiff mud bricks* are made of clay of such a temper that it has become cohesive and plastic without becoming soft and sticky. When the clay is worked at this temper the bricks will stand up under their own weight when piled six or eight courses deep, without deformation; they can be repressed directly as they come from the machinery with good results; they dry quicker and probably safer, owing to the smaller quantity of water which has to be evaporated out; and added to all these practical advantages and conveniences, their structure is always dense and compact and coherent and usually can be made homogeneous as well. The fact remains,



BRICK YARD SKETCHES — RE-PRESSING PAVERS.

mechanical moulder, for all of the other operations are identical with hand moulding. The clay has the same characteristics of structure which characterize hand moulded brick, porosity, absence of lamination or cleavage, etc. The porosity, occasioned by use of so much water in tempering, cannot be overcome except by repressing when the brick have become partly dried out and stiffer in temper. But repressing at this stage of the process is very inconvenient and expensive; in fact it is commercially impossible; so that the essential faults of the output of the process are the same as those of hand moulding, porosity an irregularity of

however, that the products of the stiff mud process are more liable to structural faults or deficiencies than the product of any of the other processes, for it is necessary to maintain a balance between too great plasticity on one side, under which condition the clay refuses to produce a bar of clay by flowing through a die, and too little plasticity on the other, when the clay will become so hard packed as to break the machine; under such conditions irregularities of temper are likely to produce inequalities of structure in the product.

The products of the dry press process possesses the most dense, even, compact structure of any bricks made, but they



also have a fatal fault. The brick consists of millions of minute grains, having no bond or cohesion except that of propinquity and the pressure which put them there. If the clay vitrifies very easily so that its particles may be made to unite, forming a heat bond instead of plasticity bond, then the product would become the best and cheapest known. But in fact, no one has ever succeeded in producing to any profit, a dry press brick in which this is regularly accomplished. The heat attained vitrifies every particle of clay perhaps, but the brick remains a collection of vitrified particles, while in the stiff mud process, the particles having been rendered cohesive by water, a similar temperature vitrifies the entire mass into one particle. A dry press brick can scarcely attain this state short of actual fusion of its particles.

The effect of this granular structure is to render the brick absorbent, even if vitrified, and therefore easily attacked by frost, and easily worn away by friction on account of lack of bond. No illustration is yet furnished of a street built of dry press material however well burnt it may be, which is wearing well and with good promise for the future.

Thus it is seen that hand moulding is not practicable as a paving brick process on account of the porosity and irregularity of its product and the small output per day which can be made with ordinary facilities. That soft mud machinery does not help the solution of the problem, except in rendering a large output possible—as the diameter of the ware produced is essentially the same as hand moulded ware. Also, that dry press material, vitrified or not, is unfit for the duty of paving brick on account of its lack of bond and liability to absorb water, and, lastly, that in the stiff mud process material can be produced which has a dense, compact and homogeneous structure, bound together by the cohesion which water alone gives.

On account of the reasons given above, we must look to the stiff mud process for the paving bricks of the immediate future and devote our energies to removing its imperfections.

The manufacture of brick from stiff tempered clay is accomplished by the use of pressure behind a portion of clay in a closed space, whereby it is made to flow forth from a constricted opening in a bar or stream, which may be cut into equal lengths for bricks. The method of obtaining and applying this

pressure naturally divides stiff mud machinery into three classes, viz.: plunger machines, auger machines and combination types.

Certain qualities seem to belong to any bar of clay which has come through a die under pressure, independent of the source of pressure. Clay, under such circumstances, appears to act under the same laws as govern the flow of fluids. That part of the clay will flow the fastest which is farthest from any solid frictional surface, just as a stream of water flows fastest in the center and slowest along the banks. So the center of a bar of clay always tends to go faster than the outside. This

of the same bar of clay has an important bearing on its structure. If the clay is not tempered quite soft enough, cracks will sever the bar into short unequal lengths, the ends of which are conical and cup shaped respectively, instead of square. If the temper be too soft, the corners of the bar will ruffle up or tear back, making the product perfectly worthless. If the clay be tempered to the proper consistency but be too sandy or "short" in its nature, the corners of the bar will show a multitude of fine cracks trending forwards towards the center instead of right angles. If the clay be too plastic by nature, the center is liable to move so much faster



BRICK YARD SKETCHES — W. D. RICHARDSON'S HOME ON THE HILL.

tendency becomes less marked as the size of the bar increases; for instance the lineal surface of a bar 6x11 inches is only one inch to every two square inches of area, while in a bar 3x4 inches, there is less than one inch of area per inch of surface. But if the area is too much reduced, say to 1x4 or  $\frac{1}{2}$ x6, the tendency becomes inactive, for where the area of the bar is very small in proportion to the surface, the friction of the surface retards the center as well, and one part hardly exceeds another in speed.

The sizes of apertures at which the clay develops its greatest tendency to flow at unequal speeds lay in the limits of those sizes used in making paving bricks, from 2x4 up to 4x5. In either larger or smaller sizes the tendency diminishes.

This unequal speed in different parts

than the sides, that slips or laminations are produced which will not unite again by any subsequent repressing.

These various peculiarities of structure are all due to one general cause, viz., the flow of clay through a die, and they are faults which are inherent, and not due to the kind of machine or way the pressure is applied. Of course, any of these peculiarities influence the value of the output, and are a detriment to its strength and solidity.

There have been very many efforts made to overcome this tendency by use of special dies, which seek by all possible means to reduce the surface friction, especially at the corners, so as to allow the outside of the bar to move with as little hanging back as possible. In some the corners of the bar are lubricated and the sides kept dry; in others the whole bar is lubricated. In others,



again, the bar is incased in a steam bath which sweats the outside making it slippery. These various devices are all more or less successful, some suiting one clay and some another. But the relief is only partial and no attempt has been made to strike at the root of the difficulty and retard the flow of the center.

These tendencies to faulty structure may be expected in all machines where clay is made to flow through a constructed opening or die and are entirely independent of the source of the pressure or the method of application.

The plunger machines, the first and simplest type of stiff mud machine, make their bar of clay by inclosing a portion in a cylinder or press box and then forcing it out under the pressure of a piston operating from in rear of the clay.

A bar of clay thus made is subject to the enumerated faults which result from flowing through a die and one other which is largely characteristic of plunger machines as a class. This is the incorporation of air into the substance of the clay, from which it cannot escape. The cause of this trouble lies in the fact that the clay as it enters the pressing cylinder is granular or lumpy, and as the piston consolidates the mass quickly together, it nearly always happens that more or less air is caught and imprisoned.

The only chance to escape is by leakage around the clay piston or through the die with the bar of clay. The use of escape vents on the sides of the pressing chamber has been tried but as the clay escapes from the vents as freely as the air does, they make a good deal of trouble in cleaning up the discharges without doing very much good. The air which goes through the die is usually found in elongated cavities, or between laminated or slipped surfaces; and it thus assists in weakening the structure of the bar by greatly accentuating the faults of structure due to the influence of the die.

The only attempt so far made to overcome the introduction of air into the pressing chamber, has been by preparing the charge of clay outside of the pressing cylinder, free from air, and introducing this in front of the piston. The only air to escape will be that immediately surrounding the ball of clay and not contained in it. This idea is a valuable one.

The ball is prepared in a piston packer, which collects the granular clay as it falls in front of the piston and slowly compacts it into a large bar and formed with very slight pressure. This bar is cut up into lumps of suitable size. The diameter of the packer is made so

Written for the CLAY-WORKER.

## TILE MODELING IN AMERICA.

BY EDWIN ATLEE BARBER.



MODELING of relief tiles for wall decoration has become a distinct profession in the United States within the past fifteen years. English and German designers who had previously modeled for

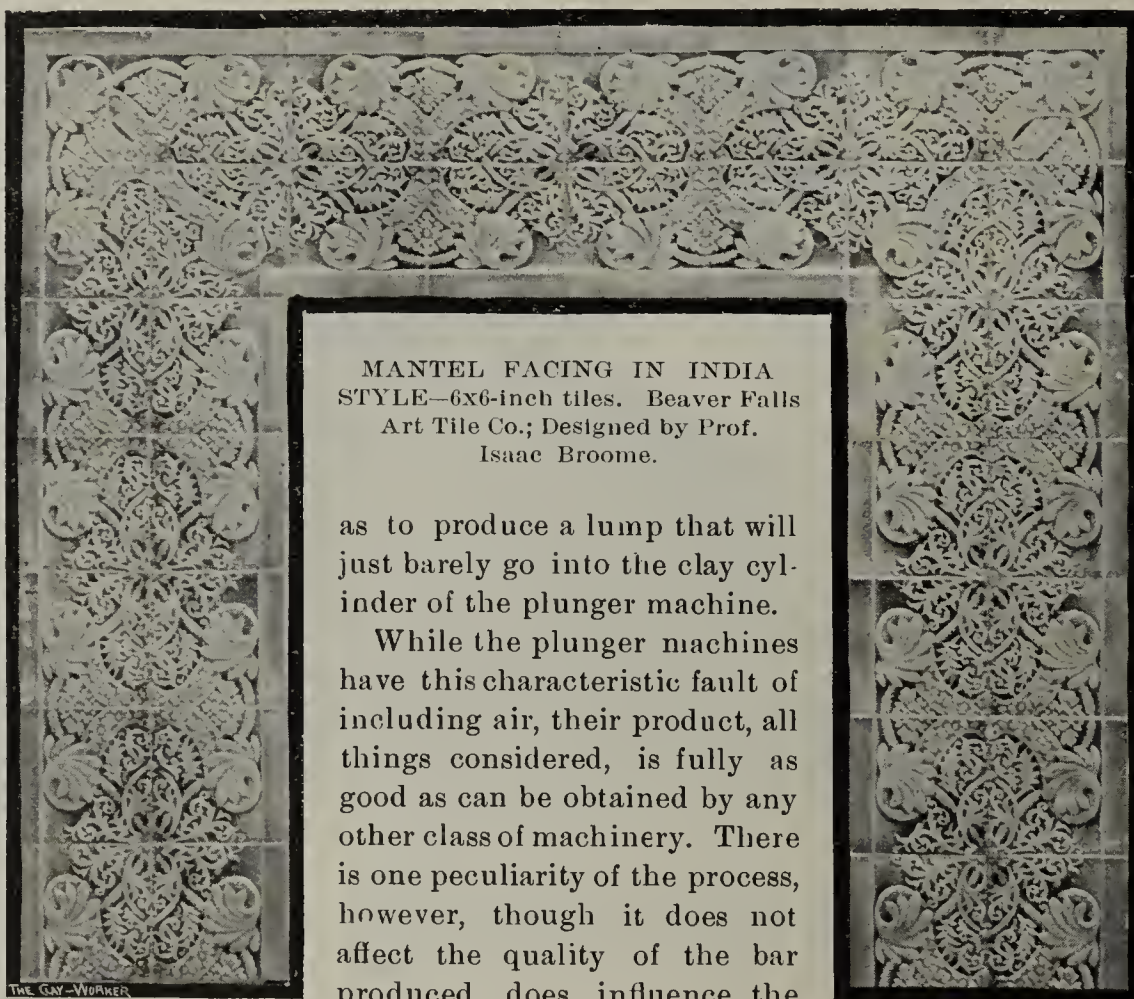
European establishments have come to this country and found a new and broader field for the exercise of their talents in sculptural art. The remarkable expansion of the tile industry in America has

created a demand for good modelers and thereby produced some capable sculptors among our own countrymen and country-women. Foremost among these is Prof. Isaac Broome, now connected with the Beaver Falls Art Tile Works, Mr. Arthur Osborne of the Low Art Tile Works, and Miss Ruth M. Winterbotham of the United States Encaustic Tile works of Indianapolis. Prominent among our foreign born modelers are Mr. William W. Gallimore and Mr. Scott Callowhill of Trenton; Mr. Herman Mueller of Zanesville, Ohio and Mr. Ferdi-

nand Mersman of Covington, Kentucky.

England and France have excelled in fine painted tiles, but America has concentrated her efforts on the relief style of decoration. Thus, with the aid of those who have studied abroad, we have achieved a reputation in this direction which is second to that of no other nation. The art of tilemaking as established by the countries of the East during the past centuries was first exhibited to us in 1876, and our American potters received a new inspiration which has resulted in the marvelously rapid development of an industry that is without a parallel in history.

In Europe and the far East, tiles were made in the middle ages of various sizes, frequently ten inches square. In the



MANTEL FACING IN INDIA  
STYLE—6x6-inch tiles. Beaver Falls  
Art Tile Co.; Designed by Prof.  
Isaac Broome.

as to produce a lump that will just barely go into the clay cylinder of the plunger machine.

While the plunger machines have this characteristic fault of including air, their product, all things considered, is fully as good as can be obtained by any other class of machinery. There is one peculiarity of the process, however, though it does not affect the quality of the bar produced, does influence the means of handling the output.

This is the intermittent flow. The cylinder is filled, pressed out and re-filled, and in the nature of the case the flow must be intermittent.

The various types of machinery included in the plunger class comprise the sewer pipe press, one of the most important of all clayworking devices; the horizontal steam press, and the various kind of cam presses worked by gearing. But the effect of the pressure on the clay is the same, however, the power is generated, whether by steam pressure direct or by use of belt power and gearing, and the output preserves its distinguishing character.

Little lumps of logic  
Mixed with business brain  
Make your ad. effective  
And credit loss and gain.  
*Jed Scarborough, in Printers' Ink.*



eighteenth century English and Dutch wall tiles were usually five inches in dimensions. The first tiles produced in the United States for interior use were generally of large size, measuring eight or nine inches, but at the time the large proportion of commercial tiles for flooring and wainscoting are six inches square, though recently larger ones have been made in multiples of three inches,

frame moulding. In this way rich effects may be obtained at a comparatively small cost.

The standard sizes of tiles are now almost entirely made by the dry process in which the prepared clays, in the form of powder, are slightly moistened and formed in dies by great pressure. The larger panels are usually made of plastic clay by moulding.

Of late years our tile designers have devoted considerable attention to figure modeling and relief portraiture. An examination of the elaborate catalogues published by the foremost tile works of the United States, which are in themselves works of art, reveals a wealth of designs of a highly artistic character that will astonish the uninitiated.

Here we find represented an infinity of geometrical and arabesque devices, classic female and child figures, Grecian interiors, hunting scenes, mythological and symbolical subjects, portraits of eminent personages of ancient and modern times, Shakespearian characters, Japanese sketches and reproductions in relief of noted paintings. Of the various styles of modeled glazed tiling produced in this country to-day we may mention the relief, the sgraffiti, the intagli modeled, which when filled with tinted glazes produces the effect of photographs on a flat surface, the

recently in the manufacture of soda water fountains, of which the Low Art Tile Works are foremost. Some of Mr. Osborn's work in this direction is most artistic and effective and is on a larger scale than anything heretofore attempted. A number of large panels executed by him, with groups of cupids in high relief have attracted wide spread attention, and some soda fountain designs by Gallimore, produced by the Trent Tile Co., of Trenton, N. J., are also of a high order of merit.

But while our tile factories have excelled in relief work, little has as yet been attempted in artistic tile painting. This is a field which must be, sooner or later, entered, in order that we may compete successfully with France and England, France in particular has developed this branch of the decorative art to a high degree of perfection. We have practically secured the home market for our glazed relief tiling and it seems to be but a question of time when we shall supplant the foreign trade in fine painted tile work. Already we have been experimenting with gratifying results in this direction, and since we possess many talented overglaze painters in this country who are abundantly qualified for this work, we only lack the proper enterprise to carry the art to commercial success. It is with pleasure that we learn of the intention of the Rookwood Pottery to enter the field of underglaze tile painting in Cincinnati at an early day.

#### NOVEL WEDDING PRESENT.

A marvel of the ceramic art is a bureau and bedstead made at the factory of an English potter as a wedding gift for the



SIX INCH RELIEF TILES.—Providential Tile Works; designed by Mr. Scott Callowhill.

such as panels 6x12, 6x18, 12x18 and 12x24. Tiles are produced also for special purposes, of a variety of sizes and shapes as some of the art tiles of the Low works at Chelsea, Mass., and other factories, and, in fact, it is possible to procure tiling in pieces from an inch square upwards. Until within the past five years modelers in this country confined their work almost entirely to the six-inch tile. The first designs of this size were geometrical patterns which were complete in each piece so that they could be used singly or in groups. Gradually the patterns were extended over two or more pieces, or so broken that several pieces must be placed together to show the complete design. Arabesque figures were cut up in such a manner that a continuous running design could be produced by placing the pieces end to end, or side to side, and in the more intricate designs a solid dado reveals a variety of pleasing effects in Rococo, India, Roman and other styles.

The wooden and marble mantels and fireplace facings of our fathers and grandfathers have in recent years been largely replaced by tile work, which possesses the advantage of greater cheapness, is perfectly fire-proof, can be easily kept clean and may be procured in an endless variety of designs and combinations and in every shade of coloring. Tile panels can also be utilized with wooden mantels by attaching them to the sides and top by means of picture



"POINTERS" PANEL—6x18 inches. American Encaustic Tiling Co. Designed by Mr. Herman Mueller.

mosaic, and the dull finished, produced by subjecting the glazed tile to the sand bath. We regret that our limited space will only permit of the illustration of a few of these characteristic sculptures.

In addition to the production of ordinary glazed tiling, some of our more prominent factories have embarked

Duke and Duchess of York. As described in an English print, these "life-size" and frail pieces of furniture are as perfect if not as useful as if they were made of wood. The large mirrors are wreathed in roses, and in their hearts, so that they light the mirror at night, are tiny electric lights.—*Exchange*.



## SAVING GREEN BRICK.

A PARTY of brickmakers, recently met by chance. Naturally brick-making was the topic of conversation, each one giving his views on how a plant should be properly propelled.

One of the party a very shrewd business

man, sat in silence and listened attentively to each speaker. When all had finished speaking, I approached him and asked what was his opinion on what he had heard expressed. "The argument of each one was good with many admirable points. Yet each one failed to dwell upon a minor item; an item, which in my opinion plays an important part in brickmaking," was his reply.

"May I inquire what that item is?"

"Certainly, it is, unnecessary loss. I mean the loss in green brick. You may visit any yard in our vicinity when they are through moulding, and you will see a quantity of green brick, these same brick when dried have a tendency to crack. Now, this is generally caused by lumpy or untempered clay. Out of thirty-two thousand brick I have counted upwards of 400 cracked and broken ones. Why suffer this loss when thoroughly tempered clay will remove it? Four hundred brick were lost through untempered clay, leaving 31,600 whole brick left, let us follow them to the kiln. They are dried and ready to be hacked, considerable damage is experienced at the hands of the hackers; their only thought is how soon the work can be done, and, in their hurry the brick are roughly picked up and as roughly dropped on the hack-plank. This kind



"SMELL."—After one of Hans Makart's Paintings of the Five Senses. Tile Panel, 6x18 inches. Cambridge Art Tile Works. Modeled by Mr. Ferdinand Mersman.

of treatment causes the corners of the brick to fly in all directions; and often breaking them to such an extent as to render them unfit for use. A fair estimate of the loss in this manner would be 200 brick. We have now 31,400 brick ready for the kiln, having a total loss of 600 brick in one day, permit this to continue throughout the whole season and it will amount to several hundred dollars."

"At my yard the clay is thoroughly tempered and I experience no loss in cracked or broken brick, unless cracked by strong winds. Not only do I observe this precaution, but will not allow the machines to run faster than to turn out ten moulds per minute. Running faster than this the moulds are apt to get caught in the carriage and utterly broken, causing annoyance, delay and expense."

"The loss by the hackers is overcome in this manner; they are not permitted to erect a hack containing 8,000 in less than two hours, with two hackers. This affords them ample time and the brick are carefully handled. I estimate my yearly saving in this way at \$400."

On his invitation, I visited his plant one week later and what I saw verified his statement. He was running two machines, making sixty-four thousand brick per day. Each machine running not faster than ten moulds to the minute. There was no hurry and bumping and jarring of moulds; but everything

to see the familiar barrow carrying off bats and broken corners.

This brickmaker has made a fortune in brickmaking; he has gained the name of being a shrewd man, and I believe he is deserving and came honestly by both.

Riding along the moonlit road and mentally recalling how careful was this man in business and its ways; and with what smoothness and evenness his plant was operated, I could not help but think of Franklin's words, "Beware of little expenses, for a small leak will sink a great ship."

J. G. GREUSEL.

Written for the CLAY-WORKER.

## BRICK LAYING.

## Ninth Paper.

IN work in Old English Bond, plans will be given for a 9-inch or one brick thick wall, and also for a 14-inch or wall a brick and a half wide.

The first course of a 9-inch wall is shown in Fig. 1, where two rows of stretchers *a, a, a*, are placed side by side for the entire length of the wall. The second course of the same wall is shown in Fig. 2, and comprises a series *b, b, b*, of headers placed side by side for the length of the wall.

It will now be easily seen that if this plan is adhered to, there will be no vertical bond between each series of two headers and two stretchers, the joints coming in the same vertical line. To



TILE PANEL.—12x24 inches. Trent Tile Co. Designed by Mr. W. W. Gallimore.

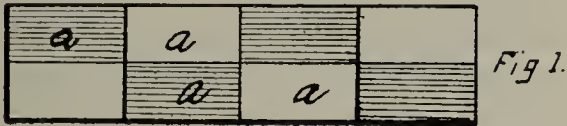
evenly and accurately handled. Every brick that came from those machines were uniform in shape, size and strength, with good smooth, square corners. And I noticed when they were dried there were no split or cracked ones among them. When they were hacked I failed

obviate this a half closer *c* in Fig. 2 is introduced in the course of headers, which operates to break the joints through the wall.

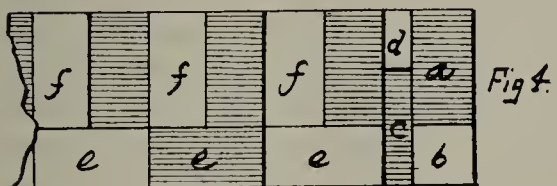
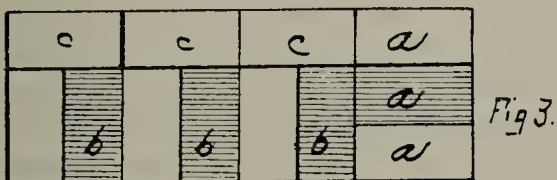
The first course in a 14-inch wall in the same style of bond is shown in Fig. 3, which begins at one end with the



three stretchers *a, a, a*, after which a series of headers *b, b, b*, is backed by a series of stretchers *c, c, c*. The second course is shown in Fig. 4. Over the



stretchers *a* of Fig. 3, are placed a header *a*, a bat or half brick *b*, and a half closer *c* with a quarter closed *d*. After these is a series of stretchers *e, e, e*, backed by a series of headers *f, f, f*. In this part of the wall, it is no more than the first course reversed.



If the pupil in laying bricks will secure a set of miniature bricks and plot out the various bonds and courses, it will probably accomplish better results than any other method. The same general rules that have been heretofore laid down will direct an intelligent student to the proper planning of walls of other thicknesses than have been given.

The next paper will tell of special constructions.

#### THE NEW YORK MARKET.

**A**UGUST is with us and the voyage of the ship *Brick* for 1894 is nearing its close. Before the month ends the whistle that calls the crew to work will be silent. Short as the cruise has been, she has sailed in rough waters and present indications are that after she is safely moored for the winter it will require a degree of financeering to hold her to her moorings, that will try the skippers' pluck, more than navigating her through the summer seas of making brick.

Obligations will have to be met, as they have been carried along, in the hope that at least a reaction would take place that would cause demand enough to produce cost price, if not more. The hope has been in vain and unless some fairy godmother takes hold of the situation before these lines are placed before your readers, common brick will be selling in New York city at lower figures than at present, low as they are.

Within the past week a movement has been underway looking toward a general stoppage of manufacture on the 15th of August. The emphatic "No" from a few left no hope for help from that source; some will stop at that time, but others will not hear to it.

The weather has been all that a brick-maker could wish for, plenty of sunshine and heat. The bosses have been unusually cautious. If it was cloudy in the morning they would not mould before noon, so that there were no damp brick set. This caused some complaint among the men who want the bosses to take chances and mold all the time—but then they are never satisfied.

#### EXTRA BOATS

At the present time the call for extra boats is from along the Hudson and there is not an agent but who had orders to send extra boats. There are 250 barges in the business with a carrying capacity of from 150 M. to over 300 M. each or about 60,000,000 in all; as some yards are not shipping, their boats are sent to other yards to load as well as sailing vessels. It is plain to see that the vessels that are loading will reach market about one time, and as a result there will be a "slump" in prices, for it is as certain as daylight that the majority who are sending are in need of money—in pressing need and will tell their agents to sell—yes, that's the rub. But the customer where is he, he cannot place a cargo only as he has work to send the brick to. If the dealer can pick up a bargain what is he going to do with it, stock it for next winter? That will cause an outlay that may pay well if next winter's demand should be of greater proportion than the past two. The chances are that later in the season he may buy at even a lower rate, and the money in his business is worth something. The call for extra boats on an already overstocked market and the prices below any that have been reached shows that the need of money is more than the pretense for the want of com.

#### LEASED YARDS.

Are not the only ones that are shipping but in many cases those who control the property, and companies at that, are placing their stock on the market. The Hackensack manufacturers are not shipping to New York with the exception of one firm. One yard molded its last pit on July second and unless there is a marked improvement in the local trade two more will stop on August 15th.

#### STRANGE BUT TRUE

That notwithstanding many millions of brick are sold there is one grade of common brick manufactured by a firm on the Hudson river that is commanding over a five dollar rate and the demand for them is so great that outside boats have been engaged to carry, not at a regular freight rate of nine or ten shilling per M., but under charter, which seemed strange, as any one who knows the detention that boats are subject to, one would think that it would be better to pay freight and let the boat stand the loss. Not so, the firm makes money by charter, as there is no detention of the boats. When they leave the yard the captain knows where they are going and they are sold with the understanding that there must be a berth to unload and quick dispatch or you cannot have the brick. Some of your readers may say how can they dictate terms with so many in the trade. By simply running their own business in their own way, entering into no combinations and making from 30,000,000 to 40,000,000 brick per year, they are in a position to take large contracts if they think best. Dealers who agree to furnish that brand of brick know that they can get them. Another and prime reason is, that when they sell a cargo of whatever grade it is, it is as represented. In a hard cargo there are no headings with yellow ends or other grades off in color, but all a No. 1 hard brick. The result has been that architects and dealers in conversation have recommend them as a good strong brick with no waste to speak of and brick to be relied on so that they have the call. There is a job in the vicinity of New York that will require 19,000,000 of brick and the specifications call for that brand.

#### DELIVER WHAT YOU SELL

At different times the readers of the *CLAY-WORKER* who are engaged in the manufacture of brick have been advised to deliver the grade they sell and thereby establish themselves as men to be



relied upon to furnish a load or thousand, or million of hard brick straight. There are other firms of as large productive power as the one in point but they do not command the market as this one—simply because they are not to be relied upon.

#### GAS AS A FUEL.

There is in process of construction at Haverstraw a large gas plant. It is the intention of the company to supply not only the town with illuminating gas but lay pipes so that all the yards can make use of it for burning brick. The question of cost will no doubt be a factor that will enter into the consumption for that purpose. Then the experimental period of burning is something that scares the average brickmaker. If he could see a plant where it is used or any of the different ways of burning, with coal, or oil, or gas, he would try it—that is some would, the more progressive. There are men in the trade who will stick to wood because their fathers used that fuel and think it is the only way to make a success of burning. Time works wonders, and when the present depression passes away and the yards earn money, there will be in this section at least, a fair trial of coal.

#### THE STRIKE AND ITS LESSONS,

Is the theme of an editorial in the July number. Yes, it furnished to the boss a knowledge of what to do in the future. When the Pullman Co., shut down their Detroit shops and transferred the work to Pullman to give the men work, the Detroit men did not say a word, but when they wanted to reduce wages at Pullman there was a strike. It is not a good lesson, for in the future the boss will shut down and end all trouble, as the men will kick if given work at reduced wages, but a shut down settles them effectively.

I had not the least idea when I wrote last month that the "other fellow" would have to show his hand to Coxey and his followers. The threat of going next time with arms in their hands is settled. A lesson that they required. It should be a lesson to the governors of the different states who let that "mob" march through their territory, yes and hurried them along as if they were afraid of them, till they reached the National Capitol. They should remember that they have an Uncle who wears a plug hat, claw hammer coat and striped trousers, who gets mad now and then and when he does he takes a hand

in the fracas the other fellow is not in it when it is over. It has been a costly lesson to the state of Illinois in dollars and cents as well as to all executives of the States, they should act, not talk when the mob law is in the ascendancy.

#### MARKET

Is one that is far from satisfactory in any point of view, plenty of stock to choose from and of a quality that is seldom met with at this time of year. The continued good weather is one thing in the favor of manufacturers as it keeps washed brick off the market. The rates are low but washed would be at least 50 per cent. below the quoted price for hard and the wide margin of one dollar in grade for brick should be a lesson to many. The top rate is \$4.75 and \$4.87½, lowest \$4, and in some cases that figure is shaded if the customer is obstinate and says, "I will wait till to-morrow"—the agent knows what that means if he gets away, he will get what he wants before he leaves 52nd street.

A. N. OLDTIMER.

Written for the CLAY-WORKER.

#### DRY PRESS HINTS.

##### Number 12.

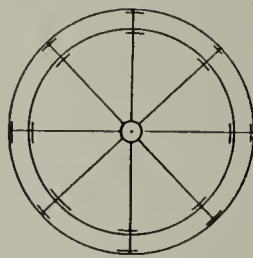
LIME PEBBLES AND HOW TO GET RID OF THEM.



NUMBER of parties having written me recently concerning the presence of lime pebbles in their clay, making their brick almost worthless when burned, and asking for a remedy, "if there is one." I think the subject of sufficient interest to ventilate through the columns of the CLAY-WORKER. My exper-

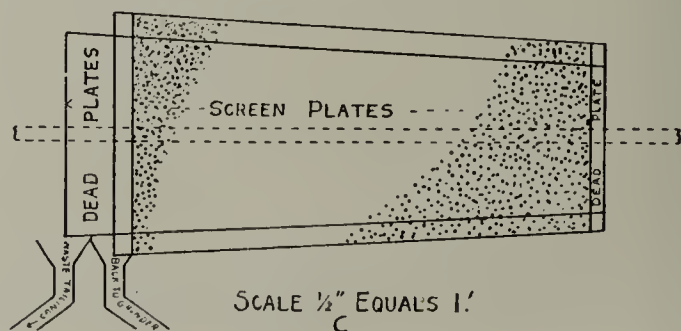
as they work best in combination and are less expensive (if not quite as thorough in their action) than the washing process.

To begin with the clay must be very thoroughly dried, either by the sun and wind, or by artificial means, and the drier the better, if it be done without injuring its plastic or cohesive qualities or as the "craft" says, "taking the life out of it." In this condition it will not do at all for making dry or semi-dry pressed bricks, but after it has gone through the process of reduction and screening it can be very easily restored to a suitable condition by subjecting it to a steam bath before reaching the machine. The reducing process is one of particular importance, and can either be done in dry pan crusher, pulverizer, or a cylindrical mill made for the purpose. The principle involved is to reduce the *clay lumps* to fine granules or powder, but to preserve the lime pebbles at their original sizes. If a dry pan is to be used, then the rollers, or mullers must be so arranged that they do not ride on the grinding (or dead) plates, but clear it about one (1) inch, this will prevent the crushing of the lime pebbles. An extra set of scrapers will also be required (making four instead of two) to help scatter the clay and keep it passing under the rollers. To get the best results the pan must be run "pretty full" when feeding, but must be allowed to run empty about every half hour, so that the lime pebbles can be removed from the pan. This is very readily done (while running) with a long handled shovel, but due care must be exercised, that the shovel does not catch any pos-



DRY PRESS HINTS.  
\*12

SKETCH SHOWING DOUBLE SCREEN.



ience of "fighting lime" began a little over thirteen years ago, and the lessons then learned have stayed with me.

There are three ways (leaving chemistry out of the question) by which lime may be eliminated from clay, viz: By washing, by the attrition reduction method, and by screening. I will take the latter (2) methods first, inasmuch

sible projecting plate, or a new shovel will be required. (I have seen nothing worse than that happen.) The ground clay is now passed by elevator in the ordinary way to a screen, which may be as described in the last November issue of the CLAY-WORKER. I have found a mesh of 144 to the inch to fill the bill exactly. If a pulverizer (of the Stead-



man type) is to be used, then I would recommend a slightly different screen.

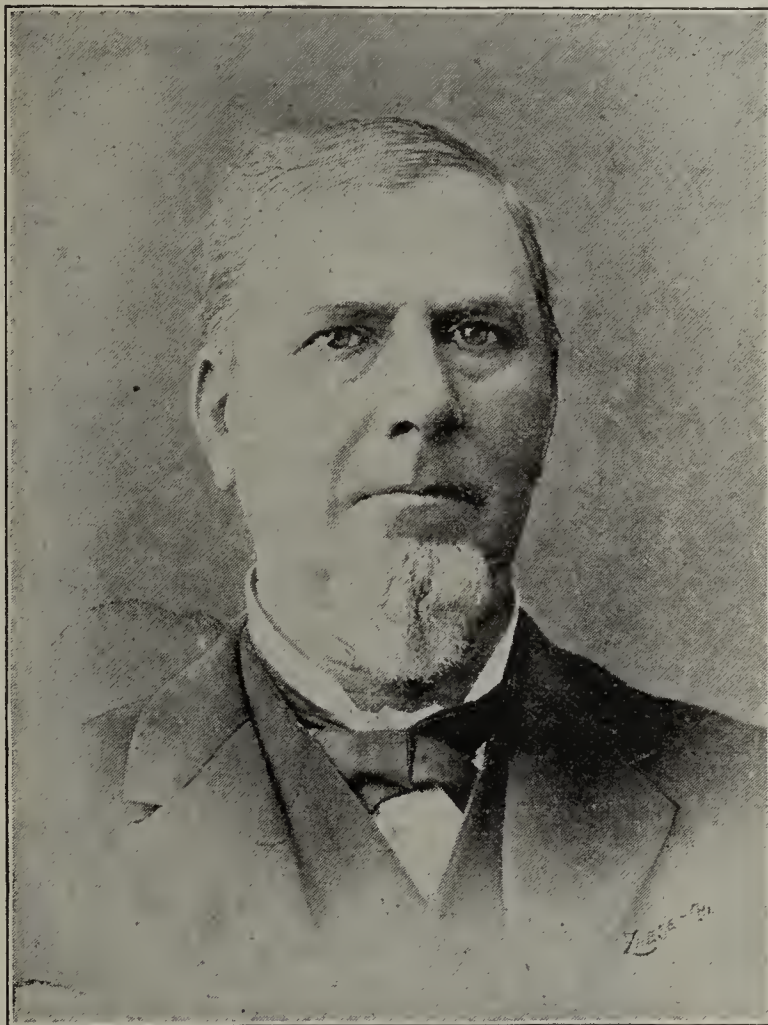
This is a design of my own, and will—I think—be approved of by any practical mind. In construction it is practically two screens, one inside the other, with a space of about four inches between. The inside screen or No. 1, has a mesh size of 16 to the square inch, and the outside, No. 2, 144 to the square inch. The inside screen must project (at the tailings end) about 8 or 9 inches beyond the outer screen. See sketch. Each screen has a tailings spout peculiar to itself. The tailings from No. 1 screen are carried outside of the building and dumped, being worthless for further grinding, as they very largely consist of lime and other pebbles, and possibly rooty fibre.

The screenings from No. 2 are returned to pulverizer to be re-ground. I do not claim that the No. 2 screen keeps out all the lime pebbles, but it certainly does take care of the "biggest majority" and these are the mischief makers. Anything fine enough to pass through the outer screen is powerless to cause trouble. This screen arrangement is also valuable for use in clay or shales that contain silicious or "flinty" pebbles, which leave, when burned, white spots on the face of the bricks, and although they are not destructive like lime, their presence is certainly undesirable on the face of a fine pressed brick. I think the practice of returning everything to the grinder that will not pass through the screen, a piece of mistaken economy and a detriment to the manufacture of fine brick.

For an object lesson, take a half pound (or other known weight) of the screenings, and the same weight of the clay as supplied to the press. Wash carefully with hot water until the residue of each quantity is perfectly clear of clay and then weigh. While washing the slush should be passed over a fine hair sieve to get good results. I think you will be surprised, and perfectly willing to let your coarsest tailings go, on this demonstration, but anyway you will have satisfied yourself as to the percentage of insoluble matter in your clay. Insoluble is not always infusible but anything that enters into the make-up of a brick in disproportionate size, tends to weaken the bond and destroy its

solidity, whether it be fusible or not, so the conclusion I mean to draw in this: *"To make a good, solid, homogeneous dry press brick, we must have our material of uniform body and consistency, and entirely free of all matter foreign to its composition."*

For another object lesson, examine the die plate sides of a dry pressed brick, especially when a coarse screen is used and shale clay the material—and you will find its area covered with small irregular circles, corresponding to the size of the granules used in its manufacture. Another important point is, that the coarser the clay fed to the machine, the more pressure is re-



JOHN CUBBINS.

quired to make a half way strong and decent looking brick, entailing more wear and tear on your machinery, inducing break downs, and adding to your fuel bill. This subject will be further treated in the ensuing CLAY-WORKER.

PRESS.

#### THE POTTERY TREE OF PARA.

One of the curiosities of Brazil is a tree whose wood and bark contain so much silica that they are used by potters. Both wood and bark are burned and the ashes are pulverized and mixed in equal proportions with clay, producing a very superior ware. The tree grows to a height of 100 feet, but does not exceed

a foot in diameter. The fresh bark cuts like sandstone and when dried is brittle and hard.—Demorest's.

#### OBITUARY.

Death of John Cubbins, Member of the National Brick Manufacturers' Ass'n.

MR. JOHN CUBBINS, for many years a member of the National Brick Manufacturers' Association, died at his home in Memphis, Tenn., July 23rd, in the seventy-fourth year of his age.

Mr. Cubbins moved to Memphis in the early fifties, and engaged in brickmaking and general contracting. He was always careful, thoughtful, industrious and honorable in everything that came to his hand to do. Necessarily, he was very successful. He established several very large concerns, among which was the New Artesian Water Co., and the Livermore Foundry and Machine Co. Finding his interests too large he abandoned the brick business for several years, but finally after disposing of his interest in the Water Co. and Foundry Co., he returned to brickmaking, and continued in that business until the time of his death. As a brickmaker, he was practical and advanced in all of his methods. He was always ready to take up any new method or device which promised to improve the character of his product. He was first in the section in which he lived to introduce the rack and pallet system, also, burning with oil and artificial drying. He took up with these various improvements at a time when they were generally considered impractical, but being clear headed,

aggressive and of a mechanical turn of mind, the discouraging expressions of those around him did not alter his fixed purpose.

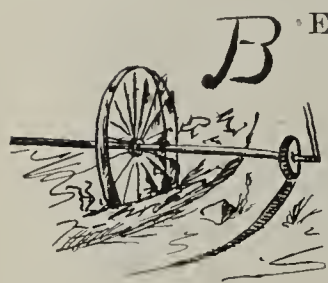
Mr. Cubbins was an earnest church worker and a member of the Masonic fraternity. His funeral services were held under the charge of that order.

There are a few men of his type in every community, men who from great industry, fair ability, backed up with good principle are certain of success. This type of man comes into a community practically as a pioneer, they quietly attend to their own business, accomplish everything by building up, adding substantial wealth to their section, and



go out of it in the end with a fair accumulation of this world's goods. He belonged to the class of men of which Mr. Lincoln said, "They don't make much noise, and they never make the same mistake twice."

#### WITH EASTERN BRICKMAKERS.



BEFORE the time of the modern trade unions there were established in almost every industry, strong guilds, among the makers of bricks as well as others. It was the custom amongst these guilds, that before a journeyman who had attained his trade, could settle down to work, he must make a journey about the country, working here and there to pay his way. It was supposed that such travel among those of the same industry, would tend to broaden the field of the young workman's views, and inform him of many little tricks and arts in the trade. Like a journeyman, the writer contemplates a visit to many of the brickyards and factories of the East, and hopes to gain for the readers of the CLAY-WORKER many points of information and interest, as well as to recall many old acquaintances.

Baltimore is the seat of the Southern enterprise of to-day, and is the first city to receive the benefit of the new awakening in that section. It is located upon what is probably the most remarkable bed of iron-ore clay in the country, as there seems to be hardly a foot of other soil in many miles. The clay is very tenacious, and might be almost called stringy and fibrous. While it is true that it makes a very tough brick and an excellent one for building purposes, it requires very careful burning, as there is danger in the high temperatures of fusing and running.

The first impression of the tyro when he enters Baltimore is, that the population comprises two classes, those who have white steps to the front of their houses, and those who do not. The former seems to be in the majority, and might be suspected to be democrats. The remaining characteristic of the city is the pavements of rough rubble and cobble, the stone being principally a hard river sandstone. It occurred to me that there was a famous opportunity for the makers of vitrified brick pavers to attempt the introduction of

their wares. At this time there is much street repair work on hand, and there is no reason why some wide-awake firm should not try to start the fashion. The city fathers are very conservative, but when they once move, they are very liberal in their improvements.

The brick manufacturers of Baltimore group themselves in two portions of the city, one being upon what is called the Washington Road, the highway towards that city, and the other in the far eastern part of town, upon Monument Street extended. Altogether, there are some twenty-five or thirty makers, the large majority of whom, however, are operating only small yards, and make hand brick. My visits were confined to the larger makers who were of easy access.

In the yard of Weaver & Harman,

faster than it could be supplied. As his partner humorously expressed it, "as a burner it was a great success." The yard is equipped with a six-mould Penfield vertical machine for use in semi-plastic or semi-dry clay. It is not found necessary to repress the brick. Of the six millions of brick produced per annum, probably more than half are from the machine, the remainder being hand-made. The preparation of the clay for the machine is entirely by means of the tempering wheel, and the drying is under open sheds. The plant employs about a hundred hands, which in periods of exceptional haste, is increased by twenty-five or thirty. Trade is at this time very dull indeed, and the price of brick has slowly gone down till it is now \$6.50 per thousand, the lowest for a very long time. Mr. Harman in



IN WEAVER & HARMAN'S YARD.

which is located nearly two miles from the city upon the Washington Road, I found Mr. Harman directing the firing of a large kiln of brick. It seems that the strike of the miners had caused a coal famine, and in sheer desperation, Mr. Harman had secured a lot of wood and was making the attempt to fire the kiln with this fuel. The famine affected almost every industry in Baltimore, and many were the expedients for firing engines and kilns. Mr. Weaver, of this company, being of an ingenious turn of mind, tried to rig up a temporary oil burner, but upon putting it into use, it was found that it burned oil

speaking of the condition of business is rather of the opinion that they ought to make some changes in the nature of their plant, unless there is a revival of prices. The days of hand work are numbered in Baltimore City, as the engineers and architects are leaning towards the machine product.

One of the enterprising firms is that of Pitcher & Creager, whose yard is located next door to Weaver & Harman. I found Mr. Pitcher attired in a huge chip-hat and other summer-habiliments, and although personally directing work upon one of the hottest days of the season, he looked as cool as though discuss-



ing terrapin at a convention dinner. He was rather proud of the fact that two kilns were just being fired, in view of the coal famine—something probably justifiable. But it took about the last coal, and that had to be swept up. The yard produces both hand and machine brick, the former about 40 thousand, and the latter about 44 thousand per day. The latter are made upon two Chambers C machines, and they give great satisfaction in their work. The product is clean and has sharp edges, and indicates good mixing of clays.

In the city office of Pitcher & Creager, located at 10 East Lexington Street, I found Col. Creager hard at work for the welfare of the company. Col. Creager is one of Secretary Randall's old friends, and as a fountain of brickmaker's lore, he is *par excellent*. Among other things, I called his attention to an alleged interview in the office of a well-known Chicago contemporary of CLAY-WORKER, and was much amused to find that he had not been in Chicago since the Exposition.

While this company feels the pressure of hard times as well as others, they have several large contracts that save them, and to fill which they are working full handed. One of these is with the Belt Line Railroad for their new tunnel, a great engineering feat, which requires thirty millions of brick, about twenty-seven of which has been delivered. Another is the North Avenue Bridge, a



THE MARYLAND BRICK COMPANY'S WORKS.

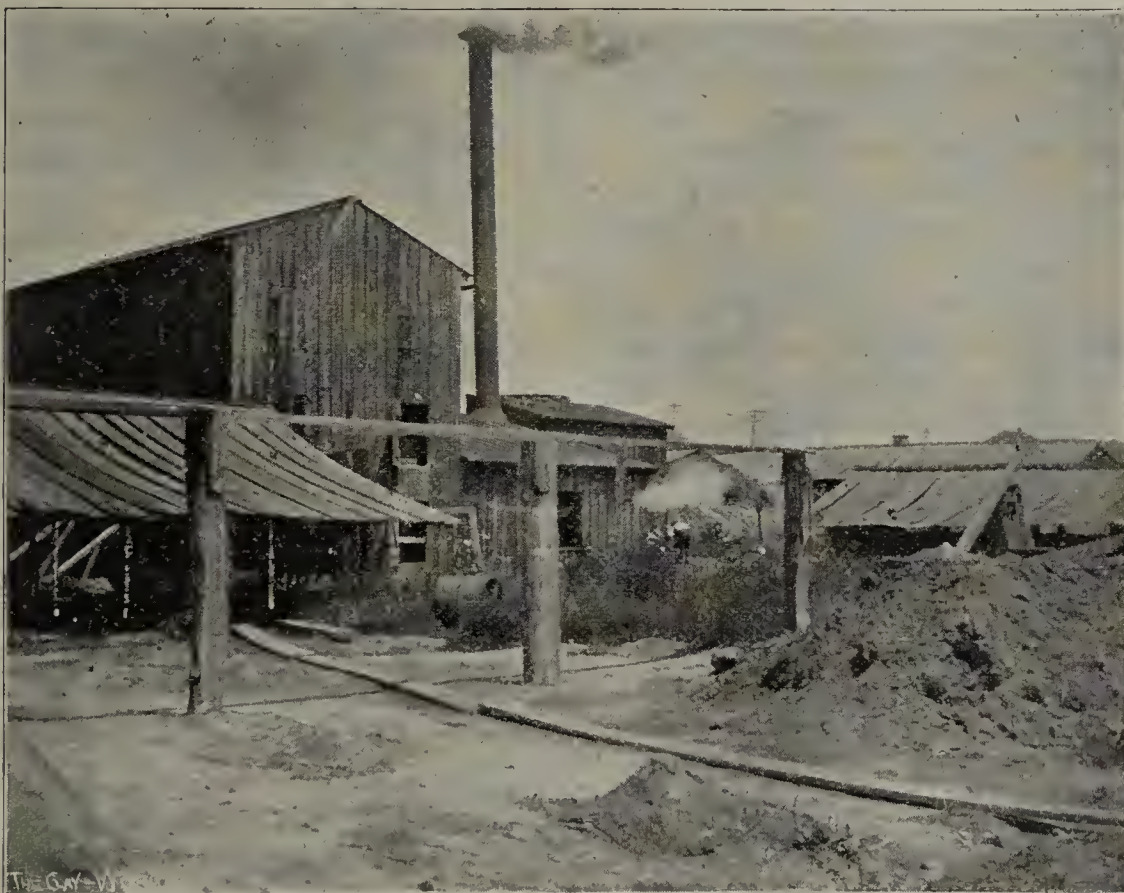
large structure of three spans, which is made of brick faced with granite blocks. This contract amounts to 10 millions. The bridge is about one-third finished, and shows sufficiently to promise a very handsome structure when completed.

Col. Creager is president of the National Builders' Association, a position which he finds of some value in his business. Both members of the firm are staunch republicans, something rather

unusual in this democratic city, and for which they receive considerable banter among their fellow makers. But as their district elected a republican Congressman sometime ago, the banter is now upon the other side. Mr. Pitcher is quite well known in the politics of the town, having been delegate to the republican conventions, and otherwise active in local circles.

The Young O. Wilson Brick Co. has two yards located upon the Washington Road, one however, of small hand-makers. The entire capacity is about ten millions per annum. In the steam plant there is placed two of the Chambers auger machines. The pugging is entirely in the pit with a tempering wheel. In speaking of this feature, one of the firm expresses the belief that in no other way can a satisfactory pugging of the clay be accomplished, as it is too tough for working in machinery. In any event, there was but one plant that I visited that mixed their clay in any other way, and of that I will speak later.

Mr. Wilson also suffers for need of coal, having a million of bricks ready for firing, and no fuel to work the kilns with. The business is steadied through the financial depression by several large contracts similar to the firm of Pitcher & Creager. They have made the Belt Line Railway nearly 30 millions for their tunnel, and have eight and a half millions for the North Avenue Bridge already mentioned.



A GLIMPSE OF PITCHER &amp; CREAGER'S WORKS.



Mr. Wilson is also of the opinion that the clay they are working upon would make good terra cotta. A company for this purpose was once organized, and located opposite Harbor Bar, but as a matter of fact they have not got beyond the making of a good quality of brick. The company is known as the Maryland Brick and Tile Co., and use a Whittaker press and Wolf driers. Their capacity is about 25 thousand per day.

Leaving the regions of the Washington road, I boarded the celebrated "Pumpkin Line," as the yellow cars are termed by the fond Baltimoreans, and travelled about a mile east of Patterson Park. Leaving the cars here, I walked a short distance north to the works of G. W. Robinson & Bro. Here were two of the well known six mould Martin vertical presses at work, making excellent brick, and that without a stoppage or breakdown. The drying is done in open sheds, and I was pleased to notice use of the improved steel pallets and cars.

A very interesting yard is contiguous to the latter, being that of the Maryland Brick Co. Here the clay is brought in to a Penfield crusher and mashed up just as it comes from the bank. From this machine it is taken to a Davis disintegrator, a machine that is seldom found nowadays, and which resembles somewhat the Steadman basket machine. The clay is reduced to a powder, and is elevated to the second floor and wetted for the semi-dry machine that presses it into bricks. This machine is one of a very rare type, the design being that of a naval officer, and only a few were made. One of these is to be found in the Washington Brick Machine Co., at Washington, D. C. Briefly described, the machine comprises a pair of tangent wheels, one being provided with moulds upon its circumference. In each mould is a plunger worked from the inside by means of tappets and a skeleton cam. The mould is filled with clay and pressed at the point of tangency of the wheels, the plunger emitting the brick upon an apron at the other extremity of the wheel revolution. The machine used by the Maryland Brick Co. has a double set of moulds side by side, and the capacity of the machine is 60,000 per day. It is readily seen that the capacity of such a machine is governed alone by the size of the wheels in diameter, and the number of rows of moulding boxes.

The clay used by this company is a mixture, there being at least four grades.

The mixing and gradation is accomplished by shovelers, who fill the Penfield crusher, a shoveler being detailed to each pile. This part of the process depends very much upon the skill of the foreman, Mr. J. W. Moore, who is quite an expert in clays. He has conducted several experiments in the way of mixing their clays for tiles, terra cottas, and special bricks, but so far has failed to develop any valuable combination. As he says: "It is the fault of the clay, which when worked right makes good bricks, but has too much iron for anything else. Even in common bricks the greatest care and skill needs be exercised." In this yard I saw the first dryer I had seen in Baltimore. It is an old type, being, I believe, a Garr dryer. Five long tunnels have a flue at the entrance end, and fires in the arch at the other. When first made they were provided with Sturtevant fans for an artificial draught, but Mr. Moore did away with these and built stacks. Being at the time of my visit out of hard coal, they were burning bituminous fuel in the dryer, and as a result the brick that had entered the tunnel a bright red, came out as black as coal itself. The setters well sooted in their work.

The Maryland Brick Co. uses seven kilns of the old Dutch type, the largest of which set 500,000 bricks in twenty arches. The entire output of the plant in 1893 was 11,000,000 of brick, but this year it will be considerably less.

One great advantage of the system of pugging and disintegrating is that work can be continued in any weather. Careful handling of the clay even in the severest Baltimore winter will result in good product, and for this reason the company is hand loose when it comes to competition for business.

I was informed that one of the most enterprising makers and one introducing the greatest amount of modern machinery was Mr. W. H. Perot, for which reason I regretted very much not visiting his plant. Smith & Schwartz and Daniel Donnelly & Son are other considerable makers of bricks located in the eastern section of the city. I met Mr. Smith and found him on the eve of sailing for Europe.

My general impression from what I saw and what was told me by the makers themselves was that Baltimore is somewhat behind the times as regards the using of improved machinery in the manufacture of bricks. Much of the

apparatus is very old, and the time is ripe for the change that new demands of the builder will make imperative. As has been hinted in what has gone before, the change to machine made bricks has been the first step, and even that has not been made decidedly. Of auxiliary machinery there is very little indeed, and it lies with the makers of such improved types to demonstrate the fact that their machinery will do the work quicker, better and cheaper than it is done now. Whoever first does this will crack the golden egg.

"RAMBLER."

Written for the CLAY-WORKER.

## CHEMISTRY FOR CLAYWORKERS.

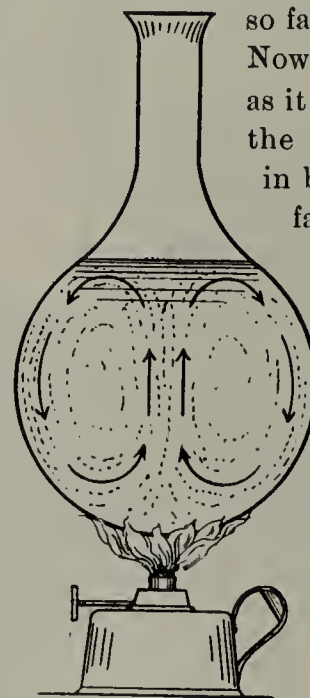
No. 25.

BY WM. WAPLINGTON.



ONVECTION of heat is most satisfactorily explained by an example; for this we need a florence flask, a spirit lamp and some water. In this case we must apply the heat of the lamp to the bottom of the flask containing the water as per sketch.

Here now is a case of both convection and conduction of heat. The heat from the flame of the spirit lamp is communicated first to the glass of the flask and is conducted through the glass to the water inside the flask by being transferred from particle to particle of the glass from outside to inside, the last particle inside transfers it to the water,



so far it is conduction. Now watch the water as it receives heat from the glass, and it rises in bubbles to the surface, conveying its heat along with it and distributing it as it goes, when it reaches the surface it floats to one side of the flask and descends for more heat, this process is repeated and there are consequently, currents

of water established in the flask indicated by the arrows and the heat is thus conveyed from bottom to top, the rising current being in the center of the flask,



and the down current being all round the sides of same. This then is convection of heat, and to make the matter as plain as I can, also to distinguish clearly between conduction and convection, let us suppose a pile of bricks to be moved from one shed to another, one set of men propose to stand in line and pitch them to each other, another set proposes to carry them, each man carrying a certain number all the way and return for more, etc. These two methods of removing a brick pile, although not strictly parallel cases with conduction and convection, are sufficiently so to distinguish the difference and as a further aid to that end it must be borne in mind that only liquids and gases convey heat, solids cannot, they therefore conduct it, or as it were, throw it particle to particle.

Gases are better conveyors of heat than liquids, and both are the worst kind of conductors of heat.

The circulating currents of water seen in the flask above, represent the circulating currents of air produced during the burning of a kiln of brick and this in turn is a miniature reproduction of wind currents, for bear in mind, a windy current in any direction on the surface has its counter current in the opposite direction at some height above.

Now let us see what part radiation, conduction and convection play in burning a kiln of brick.

Radiation as set forth in these papers can only come into play in the arches and spaces left in setting the brick, here also, is where convection takes place and conduction can only take place where the bricks are in contact; we may safely assume then that radiation and convection are the chief factors and do nearly all the work of getting the kiln hot, but the equalizing of the heat at the top and bottom so far as it is possible—is accomplished by conduction and radiation.

The burner puts on his platting or closes his dampers as the construction of the kiln demands, seals up his furnace doors—for what? To prevent heat being conveyed to the cool top or bottom, as the case may be; he wants these cooler portions heated, but not by conveyed heat. To use his own term, he wants to draw it to the top or bottom. Now if his platting is all right, and the kiln walls of a suitable thickness and it is thoroughly closed up, he may rest assured that the drawing of the heat will be perfect for as long as there

is one brick hotter than another, conduction and radiation will proceed; nay, further, if we accept the law of interchange, or rather, the theory of exchanges as set forth in these articles in June number of the CLAY-WORKER, then conduction and radiation proceeds even after the bricks have all been reduced to the same temperature. However, it is sufficient for our purpose here to show that radiation and conduction “evens up” the temperature of the kiln, after firing has been stopped and the platting has been thoroughly done.

Artificial drying as it is called, though why so called is not so clear when critically examined, for it is quite as natural as the old sunshine method in that it depends on the same natural laws, and the same remarks apply equally to so called artificial ice. Artificial drying is accomplished largely by convection of heat, or it might be called a kind of double convection, as the air conveys heat to the bricks, and further, conveys away the moisture the bricks discharge.

Water smoking is another example of this double convection, in fact it is only a continuance of artificial drying and calls in the aid of the very same laws as the dryer, but uses towards the finish a higher temperature, which not only evaporates the mechanically combined water of the clay, but decomposes and drives out that which was chemically combined with it.

It may appear to some readers who are anxious to obtain sufficient chemical knowledge to enable them to “kill” the white efflorescence, so odious to the owner of a fine red pressed brick fronted house, or of the green so repulsive to the owner of a buff brick front, and so rise to fame and fortune by a bee line through a sort of chemical magic, to such, I say it, may appear that these papers on heat are a long and tiresome digression, and not chemistry at all; well perhaps not; heat such as we are accustomed to use, is generally generated by chemical action, but the laws which govern it are usually set forth in Physics or Natural Philosophy, and that which relates to the power or energy of heat, is usually treated under the head of *Thermo-dynamics*.

Heat is a very large factor in every brickyard and factory for the manufacture of clay products, therefore cannot be overlooked or slighted by the CLAY-WORKER.

It would be foolish and misleading to assert that an intimate knowledge of

latent heat would enable the brick burner to save 10 cents per thousand on his burn and a further knowledge of specific heat would secure a further reduction of 5 cents cost per thousand, but it is quite safe to assert he will lose nothing by such attainments, and it is also safe to say that if he is moderately acquainted with heat and its laws he is safer and much better guarded against the fanciful but absurd devices pertaining to kilns and dryers that are unceasingly being foisted on clayworkers, etc. Besides, a general knowledge of heat and its laws will confine him to the proper path during his investigations and experiments to improve his burns and to burn at less cost. He will not be caught trying to drive the heat from the arches to the top of the kiln by throwing in each arch a certain quantity of common salt! This is no imaginary case but a bona fide one and performed with a sincere belief that it accomplished that end, because where salmon bricks were produced without the use of salt, glazed bricks were produced when salt was used; and the inference was, not that they were salt glazed, but were hard burnt.

So much then for misleading appearances, and so much for guess, or rule of thumb, experimenting. We will dismiss the subject of heat for the present with a brief reference to another very interesting characteristic, which while it may appear of no special value to the practical burner—cannot fail I think to interest all who are desirous to attain a general knowledge of heat and its laws.

*Diathermancy.* It is a well established fact, radiant heat will pass through some substances without making these substances hot, such substances are called *diathermanous* and are analogous to substances which allow light to pass through them, and which we call transparent. A convex glass lens will allow the sun's rays to pass through it and converge them on tobacco in a pipe bowl with sufficient energy to set the tobacco on fire while the lens through which that heat has just passed remains cold, this fact is quite familiar to many smokers who never heard of diathermancy. The late Prof. Tyndall made many interesting experiments in this direction, and strange as it may appear he constructed burning lenses out of solid ice through which heat passed without melting to any appreciable extent; nay, further, he passed radiant heat through a lens of ice, and concentrated the heat rays in



the center of another block of ice, and melted a cavity therein, which contained nothing but the few drops of water made by the melting of the ice!

Substances that are perfectly diathermanous would never get hot by radiant heat pouring on them, because the heat would all pass through them, none would be absorbed. *Radiant heat only transmits its heat or energy to bodies when it is obstructed by them.*

I am not aware so far, of any substance that is perfectly diathermanous; rock salt is the nearest approach to it that I know of, a plate of this will transmit 92 per cent. of the rays that fall on it, while glass and clear rock crystal transmit respectively 39 and 38 per cent. Substances that absorb all the rays of radiant heat are called athermous.

For fuller and more interesting reading on these laws and qualities of heat I must refer you to the works of Faraday, Tyndall, Balfone Stewart, Clerk Maxwell, etc., etc.

#### PHILADELPHIA BRICK MANUFACTURERS AND THEIR PLANTS.



MUSING myself with my camera one fine afternoon in April taking shots at quaint old homes in the rural vicinity of Rabbit Lane, I saw through the thickly studded spruce, pine, pear and cherry trees surrounding the Smith homestead, a tall iron smoke stack, and long lines of sheds. I had long known that J. P. Hanerty had a brick plant in West Philadelphia but up to the present I had not located him. Mr. H. was not at the works, but his sons were there, five of them, and John the eldest of them, manages the yard while the father looks to the financial part.

This yard was run by the Equitable Brick Co., for two or three years and has been run by Mr. H. for about seven years. They have an annual capacity of about 5,000,000 all made on a Chamber's C. D. machine, they make machine pressed, stretchers and common, no hand made. The clay is dumped into a set of Peerless Clay rolls and carried up into the hopper of the machine by a Chamber's belt elevator. Their power is supplied by a 70 horse power boiler and a 35 horse power horizontal engine. The drying is accomplished in the old fashioned open sheds, and Mr. H. like

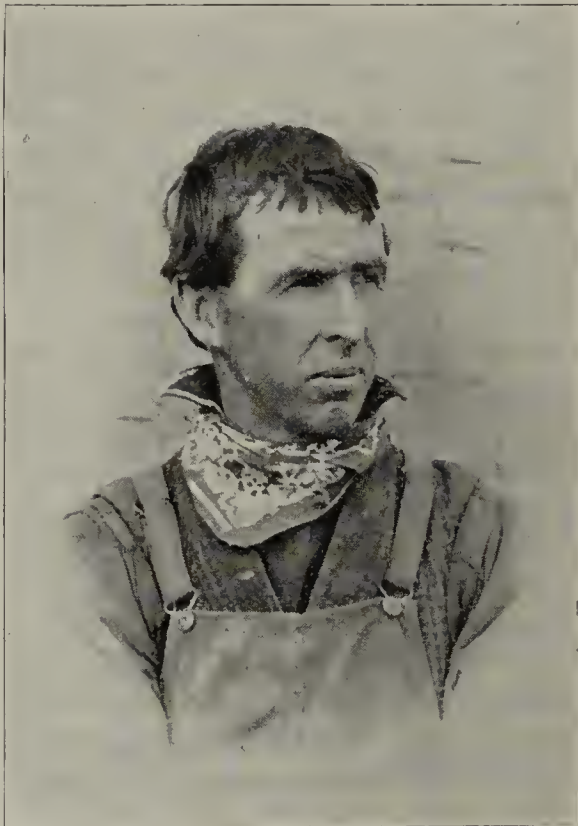
many more Philadelphia brick manufacturers lost heavily by a snow and rain storm late last spring. I think most of them would erect modern dryers if they could conveniently stand the first cost, in the meantime what ails the Carroll double deck dryer it is at least storm proof.

Their clay bank is a magnificent one about 10 feet deep and they have not a brick in stock.

I regret that I am still unacquainted with Mr. Hanerty, Sr., but much gratified with the good common sense and intelligence manifested by his son John. There is lots of good stuff the CLAY-WORKER and N. B. M. A. is as yet, unaware of.

#### A GOOD BEGINNING.

C. E. Dickinson, of the Hanibal (Mo.) Press Brick Co., is renewing his subscription, says that his company first



JOHN HANERTY IN BRICKYARD ATTIRE.

broke ground for the erection of their plant in March last and had burned 1,000,000 brick by Aug. 1st. They have a fine bed of fire clay and also one of buff clay and a deposit of shale, are using Kullage's machinery, and will soon put in a Boyd press. Mr. Dickinson also says that in spite of the general business depression they are meeting with fair trade, far beyond their expectations.

The successful advertiser should know his medium as a spider knows the strands of her web. Let a fly light on remotest fiber and she knows instantly where to look for "business."—Ex

Written for the CLAY-WORKER.

#### "CHATAUQUA" IN CLAY-WORKER ECHOES OF "DOWN-DRAFT," AND "DRY PRESS," RUNNING INTO POLEMICS.

BY J. W. CRARY, SR.



DON'T know what Chatauqua means, nor did Webster, when he finished his dictionary. He knew what "chat" meant, and as a verb, means familiar talk, or perhaps better expressed "idle talk." It matters not, whether Chatauqua means Pow-wow, for Indians, or talk for white folks, the word is used now, without regard to its philology, and means a place or society, where there is general discussion, disputative or otherwise.

I think the CLAY-WORKER is the proper, and best medium, in which all matters directly, or indirectly, concerning clay, can be discussed or elucidated. If I understand the object and aim of the CLAY-WORKER, it is not the mere record of the sayings and doings, of a sort of "mutual admiration society," composed of brick machine and brick kiln men, mixed up with green and ripe brick-makers, but it is a journal for the general dissemination of all knowledge and facts, that will in any way, contribute to the true, healthy progress of the clay art, or interest, specially, or incidentally. What sort of a show would the CLAY-WORKER make if it occasioned no disputes, as to the best machines or kilns, or no difference in the theory and practice of making, setting and burning of brick? Competitive effort in brain and muscle, to achieve the best, and most profitable result in all human things, should characterize every thought, action, pursuit and enterprise of the respectable citizen.

WE LIVE IN THE FASTEST AGE EVER KNOWN TO MAN.

The last century has developed more for the material progress of the world, than all of the centuries before. While moral progress holds its own and is steadily gaining, yet the avarice and ambition of man, wherever competition is free and open, blinds his sense of paternal love, and ingenuousness, and his selfishness runs into all sorts of extravagance and humbug. There is not one business man in fifty, that will not



claim to have the very best and cheapest things in the market, he will look at the advertisement of his competitor, and its startling headlines, set with artistic effrontery and proclaiming "*The best, cheapest, and only genuine, etc.*" With a derisive smile, he says to himself, "what a humbug," and in the next morning's paper he has a "bug" of an "ad." that "out bugs" the humbug of his competitor.

This may be applied to all kinds of business, and all kinds of professions, and to parties and politicians generally.

LET US LOOK AT THE CLAYWORKING SIDE OF THIS MATTER.

Mr. A. has a very excellent clay bed near a good market for brick, he has at his command, all the money needed to erect a first rate plant for brickmaking. If he is a thoroughly accomplished, expert brickmaker, he will have little trouble in deciding as to the most suitable brick machine, tools and kiln, for his clay. If he is not such an expert he will very likely get the CLAY-WORKER, and look through it to see if he can select suitable machinery, and a kiln for his plant. With a few exceptions he finds every machine and every kiln advertised to be the very best; the grammar in adjectives, in every "ad." is in the superlative degree, and after going through from cover to cover of the CLAY-WORKER, what little good judgment he had at first about machinery and kilns, has been so confused and muddled, that he is in despair, or ready to take the advice, good or bad, of the first expert in selling brick machines and kilns that he meets.

I have not been nor do I wish to be a critic in this line of the brick business, I have simply tried to tell in the CLAY-WORKER, and in a little volume entitled "Brickmaking and Burning," what I know not only by correct theory, but by long and varied practice about clay and brickmaking. In so doing, I have said that my way of setting and burning brick, (which I have repeatedly explained and published in the CLAY-WORKER,) is entirely successful and satisfactory, wherever properly tried. I have also given my opinion and experience of the different kinds of brick machinery. I have also said distinctly that I have no brick machine or kiln on the market, nor have I any interest, money or personal in any brick machine or brick kiln, for sale in the market.

In speaking of my own ways, practice and theory in brickmaking, it was natural and entirely proper that I should

contrast them with other ways, practice and theory of making brick. In doing so I went straight along, and did not "dodge" around somebody's machine or kiln, for fear that I might damage it by a little friction. I paid no attention to the private interest, or personal side of the question. I had no special favors to give and I asked none, "For the common good" was my text. If I have tread upon somebody's toes, in doing what I conceive to be my duty, all I can say, is don't wear tight shoes, and keep in your own path and I won't hurt you.

THE LATEST FAULT FINDER OF MY WRITINGS, IS "DRY PRESS HINTS."

When I criticise a person I always give my name. This is old-fashioned "Down South" propriety, but we have got more used to more cosmopolitan ways since the little fuss that Jeff Davis had with Abe Lincoln, and so we wave the call for "coffee and pistols," and don't care for a feller "incog," so long as he keeps at long distance.

My friend "Dry Press Hints," thinks I don't know much about changing dies for dry press machines, and has done me the honor to show me by diagrams in his late July article in CLAY-WORKER how perfectly a die may be filled with dry clay. He agrees with me that it is quite possible to vary one or two ounces but that the brick are all of the same size. Of course they are but the brick, having the least weight of clay, are not thoroughly pressed, or else those having the most clay, are over-pressed. But if we admit, that every mold, has exactly the same weight of clay, it is impossible that the clay in the mold can be equally distributed. There cannot be the same compactness, from end to end of the mold, the middle will be likely to be a little more compact than the ends, or one end may have a little more weight of clay than the other, and when the die impinges on the clay, it does not or cannot move it, only in a vertical direction, so that if there be more clay in weight in the middle of the mold than at the ends, the middle of the brick will be more dense than the ends.

THE ONLY POSSIBLE WAY TO INSURE EQUAL DENSITY IN DRY PRESS BRICK

Is to have the mold open at the ends and a die, or plunger at each end, move exactly at the same time with a top die so that the brick would be pressed equally from all sides, and have a uniform density. I do not think that a bottom die is necessary. A body of dry clay the thickness of a brick, will receive

nearly the same pressure at the bottom as at the top, and a machine would be more simple. The bottom discharge die, would act only once, and that, to push the brick up and out of the mold. I think an end pressure to dry pressed brick, would be a great improvement on dry presses, especially for street paving brick. I would be glad to see dry press machines made to insure a perfectly uniform brick in strength and density.

My friend "Dry Press Hints" may do well to think of my suggestion and if he can get up a perfect machine thereby he will find it more profitable, than criticisms of my writing.

I have had much experience with dry press machines, and though I don't claim to know all that is worth knowing, yet I cannot accept any theory not based on true principles.

My friend, "Dry Press Hints," (by the by, he had better give me his name and address) thinks it would interest me to know that he "water smokes" his "down draft" kilns, by the up-draft way. Yes, I think you are sensible in that much of your brick burning; but I shall never be able to comprehend the scientific beauties of down draft brick kilns, until I start a water power by pumping the water up to the wheel by a steam engine; then I will run a brick machine by cheap water power, and burn the brick in a "down draft kiln."

My friend, "Dry Press Hints," says, "he will leave this controversy to any who have more spare time than he," and then "resume his series of Dry Press Hints."

My good friend, "Dry Press Hints," is in sight of the affectation line of controversy, when he so curtly dismisses what he calls controversy with me. I never invited, or provoked a dispute with "Dry Press Hints." I am very glad to say anything true, good and useful; and if it provokes jealousy, or opposition not founded on the logic of truth, it is proof that I am doing some good; so I try to "scatter bread upon the waters, for after many days it shall return to me again." I am not so self conceited that I cannot see my own faults, I have good sight yet, I have written this article without eyeglasses, and without any personal prejudice or ill feeling. I am willing to discuss any matter that will in any way benefit the clay craft. I began work in a brick yard about 70 years ago; being then ten years old. I have been almost continuously at the business ever since. I think I could mold a day's work of first



class mud brick now. I have out lived the hand making age of brick and the first machine age, and am now in the midst of the second. When I was a boy no man even dreamed of the present progress of brickmaking. God only knows of the future developments of the clay art. I have tried to "keep up with the procession," my march has been long, varied and sometimes perilous, and discouraging, but God, blessed me with an iron constitution and with a moral courage born of faith in his promises and ever present fatherhood and care. I cannot but venerate the old craft to which I belong. Some people say to me, "Why do you bother yourself with clay writing?" I say with Paul, "Woe is me if I talk not clay work." The greatest, grandest, most sacred and lonely teacher of all ages past, or to come, was Jesus of Nazareth, he was the source of all true riches, and the only true millionaire that ever did, or ever will live on this earth. If his whole life was spent in doing good to his fellows, with no earthly pay, but a cruel death, why should the best of us hesitate to use our poor, weak talents and means to help our fellows, and especially our craftsmen?

Written for the CLAY-WORKER.  
G L A Z E.

BY D. W. STOOKEY.



THE subject of glaze has been talked and written about at different times by various parties and has been pretty thoroughly canvassed, but, possibly, all has not been said yet. Even granting that all that may be written now will be a repetition we venture a few thoughts, remembering that good things bear repetition. New readers are constantly being added to the list who to the CLAY-WORKER for information and pointers as to the status of the art of clayworking.

This latter fact alone will justify the writing and publishing old matter in new forms.

In general terms, glaze is understood to mean a thin, vitreous or glassy coating upon the surface of clay wares.

In the manufacture of glass, certain materials must be brought together

under certain conditions and subjected to specific modes of treatment, and, in order that a glaze may be formed upon the surface of the ware it is essential that the ingredients of glass shall be upon the surface and that they shall be there subjected to the treatment necessary to form glass of them.

There are two methods in common use for producing glaze; slip glaze and salt glaze.

Slip glaze is usually employed in the manufacture of the coarser grades of pottery. This is made by dipping or washing the ware in a solution of the ingredients. This wash is generally made of a slip clay or a clay that is found to possess the essential ingredients.

These slip clays are found in nature in certain localities and are made articles of commerce by the parties who possess the beds. Sometimes the glaze is only wanted on one surface of the ware as in encaustic tile.

It is often made in these cases by placing upon the upper surface of the ware, when it is set in the kiln, the materials for the glaze in a pulverized state.

When heated in burning the slip or materials for forming the glaze are fused and the desired result is thus obtained.

Varied and beautiful colors of glazing are obtained by adding coloring matter to the materials used in the production of this class of glazings, or by the use of different substances from which to form the glaze. High art tiles owe much of their beauty and value as decorative material to the colorings given to them in and under the glazing. With a transparent glazing, decorations placed upon the surface of the ware before the glazing is applied, are given a beautiful and delicate appearance.

The handsome and artistic china, with which recent art and enterprise have made us all familiar, has been produced by placing the decorations upon the ware and afterwards making it permanent by "firing" and protecting the whole with a glazed surface.

The purely transparent glazing and those of decorative colorings are produced only by the use of carefully selected ingredients that contain known properties but in the glazing of the coarser grades of pottery the native slip clays are used. These give results that are satisfactory for the purposes intended but because of the impurities they contain the colors are often dull and

unsightly. With this class of goods it is imperviousness that is essential while beauty is of secondary importance.

Sewer pipe are usually made of clays that do not thoroughly vitrify nor fuse sufficiently in burning to render the pipe impervious to water and the liquids of the sewer. This lack of imperviousness, which is one of the essentials of a first-class sewer pipe, is remedied or rather an attempt is made to remedy it by the application of a salt glaze to the surface. This is made by throwing common salt, chloride of sodium, into the furnaces while the ware is heated to a high degree. The salt volatilizes and upon coming in contact with the surface of the ware is decomposed, forming a fusible silicate of sodium. This, wherever perfect, forms an impervious coating.

#### PROVISIONS AGAINST FIRE LOSS.

THE number of tile factories that have gone up in smoke and flame in the past few months leads us to advise needful means for protection. But few tile factories can get insurance at any living rate for the reason that they are bad risks.

It is very seldom that any provision is made for extinguishing a fire, notwithstanding the extra liability to fire. A few barrels of water stationed at convenient points about the factory and on the roofs, with buckets hung on the barrels, so that a spry man in a moment of time might put out an incipient blaze would probably be the means of saving half of the factories that burn.

Light ladders of suitable lengths hung where they can be used without any delay, in ascending to the roof or any part of the building are indispensable. The writer keeps a light 16 foot ladder hung on the side of a plank fence half way between the house and barn, where it can be got quickly if needed in case of fire. One or more should be kept in every tile factory—not up in a loft or in some corner, where it cannot be got hold of, but out of doors near by where it will not be out of reach when wanted quickly. Such provisions are wise and should be provided to prevent loss—often sad disasters.—*Drainage Journal*.

The advertiser who has enthusiasm without prudence and judgment to guide him is like a blind horse with lots of mettle—liable to dash into danger.—*Exchange*.



Written for the CLAY-WORKER.

### THE CONFESSION OF A POIK.

Old King Coal  
Was a merry old soul,  
A merry old soul was he;  
So I always heard,  
Upon my word,  
When I lived in the nurseriee.  
And they added remarks on his pipe and his glass  
And his calling for fiddlers three.

But Old King Coal  
Seems an altered old soul,  
An altered old soul seems he,  
So — him and his pipe, his glass and his fiddlers three,  
—Selected from my \$7.50 per ton coal bin.



FRIEND, possibly well meaning, writes to ask if I have ever "dabbled in poetry, either original or selected." If he means to inquire if I have ever selected, the poems that others have written and appended my own name thereto I must in my present self-confessing

mood, reply in the affirmative. I have written and borrowed — verse; replevined lyrics from other people's waste baskets and relabelled them as mine own compositions; pilfered pastoral poems from the literary pastures of gifted pastors; diluted the morals of didactic verse written by deceased poets and sold the same as original to unsuspecting publishers of Sunday school papers; appropriated elegaic verse from the files of the *Undertaker's Journal* only to re-sell them, to be given to the public as the product of my prolific pen, sundry bits of epic verse that were written by old Epic himself for the *Calliope Muse* when he was the staff poet lariat of that excellent publication.

In fact I was born a poet but got sidetracked by unappreciative parents.

I was not anxious, as a boy,  
To be a ruthless pirate,  
Nor was my only source of joy  
To load a gun and fire it:  
No thirst had I for daring deed—  
That all the world might know it—  
It was my only hope and heed  
To be a first class poet.

I vowed, with no untutored mind,  
I'd grapple with the matter,

That none should call what I should grind,  
Inconsequential chatter.  
While yet my years one figure told  
I entered into training—  
I swore that "hot" rhymed with "cold"  
And "dry" quite well with "rainng."

— but I was not appreciated. When I got beyond the pale of parental au-



The Lodging House Keeper Had No Poetic Soul.

thority I tried it again, but I encountered a ring, an editorial conspiracy which has ever kept my noblest works from print and which also accounts for the fact that we have no great living American poet. It is too late now. I have grown too old and modest to claim the title.

Once I was appreciated, only once. I wrote:

Out from her window the lodging-house keeper  
Gazed mournfully over the dull cheerless lake  
And, gazing, her heart sank deeper and deeper;  
Her room ne'er the ghost of a lodger would take. Etc., etc.

I was living in a small town upon the lake shore near Chicago and sent my effusion to the only daily paper there.



CUPID:—"Look out! Here comes the intelligent compositor and his crowd."

They printed it. It was the first time the editor had thus favored me. When I came home my trunk was on the sidewalk. My lodging house keeper had read my poem and taken it as personal

—just as she had often taken my cologne and bitters.

Then, again, typesetters have discouraged me greatly. One of the many grand things I have written commenced thus:

Twang'the lyre, sound the lute and  
Crown my brow with music, too;  
While you're at it wreath the goblet,  
For I sing of love, I do.

Oh! 'tis of a youth and maiden,  
As all love songs ought to be!  
And he was with Cupid stricken  
As to that, so, too, was she.  
Etc., etc.

And the blinketty, blanketty printers dallied with it, and it appeared thus:

Bang the lyre, pound his snute and  
Drown the crow, his music, too;  
While you're at it wean the gobbler,  
For I sing of love, I do.



Design for a Poet Tag to accompany each Poetic License.

Oh! 'tis of a tough old maiden,  
As all stove tongs ought to be!  
And he was with chol'ra stricken,  
As to that, so, too, was she.  
Etc., etc.

And yet people wonder why I don't write original poetry instead of stealing it.

CHARLES LEDERER.

### A NEW DRY PRESS.

On page 159 we introduce the "Progress Dry Press." Though this is its first appearance to the trade generally, it is not, strictly speaking, a new machine, having been in regular use at the yards of the Tower Grove Brick Co., St. Louis, for several years, so that in no sense is it an experiment, but has demonstrated great capacity and other good qualities. Those interested will confer a favor on the manufacturers by writing them for circulars giving a detailed description of the "Progress" and its advantages.



Written for the CLAY-WORKER.

## FIRE CLAYS AND THEIR PROPER APPLICATION.

### THE ALKALIES AS IMPURITIES.

It would be difficult, indeed, to find a strata of clay in any locality which does not contain, at least, a trace of potassium and sodium. These two elements, or what are understood to be "The Alkalies," are, strictly speaking, fluxing agents, and, as such, are the most active of any of the accidental impurities in fire clay.

As a rule, the sole object in mining fire clay has been to excavate where the product shows the least sign of these elements or others, which will unite with the silica of fire clay to form fusible silicates. Clays, that show 4-5 per cent. of alkalies in their composition, have been thrown into the dump and later, to the surprise of the manufacturer, the advent of this apparently impure clay has made it possible for other clays to be raised to a very high standard in meeting the requirements of peculiar classes of work.

Whether by theory or by chance, these results have been attained and the virtue of a fire brick mixture has been traced back to the clay which had originally gone into the dump. Such conclusions were not jumped at or conceived of hastily, but are the fruits of patient research, which places these facts beyond the possibility of a doubt.

Sodium and potassium are not such "draw backs" and despised elements to those who would use them where they were intended to go. Physical structure is a matter of vital importance in the manufacture of fire brick, to give the product a characteristic which may be acquired by chemical agencies, though the superiority of it cannot be credited to its chemical composition alone.

Theoretical and practical investigations not only teach us that potassium and sodium cannot be spared from mixtures, which are giving excellent refractory results, but we are also sure to learn that so many conditions exist which must be considered in the application of this theory, that its field is limited and the formula would vary in harmony with the composition of the clay.

The method of manufacture, the manner of burning and the percentages of other elements present are all important facts, both of which effect the refractory properties of a fire brick quite as

much as the presence or absence of the alkalies.

As is true of the other bases in fire clay it does not matter whether these elements, sodium and potassium, are present as the chloride, sulphate or silicates, the effect of the elements themselves upon the clay is the same, for if they are not in the form of silicates when taken out of the ground, they will speedily become so when burned in the kiln.

There are, probably, no two elements that make up the composition of fire clay which form more fusible silicates than the alkalies. They are often at the bottom of the fusing quality of paving brick mixtures, and while comparatively low in percentage by weight, they do their work very thoroughly.

### SHRINKAGE OF FIRE CLAY.

Fire clays containing enough alkalies or other fluxing agents to "vitrify," when burned in a kiln, show a larger shrinkage than more refractory clays if subjected to the same treatment. By examining the analyses of such clays and observing the shrinkage of each, the fact becomes apparent that this change, in the linear dimensions of the sample, is directly dependent upon, and bears a close relation to, the chemical composition of the fire clay. This suggests the fact that the shrinkages of clay, as employed in the manufacture of brick, either paving or fire brick, can be attributed to two general causes which might be classified in the following manner:

1. Shrinkage due to loss of water of combination.
2. Shrinkage due to semi-fusion.

Clays which come more directly under the first head are of the refractory varieties, containing practically nothing but alumina, silica and water of combination.

In burning clays which run as high as 85 per cent. of silica, it is true that the shrinkage is comparatively slight and also as the silica decreases in the sample its shrinkage increases, in a manner that is constant and apparently dependent upon the chemical composition of the clay.

In these refractory clays, bearing little else than silica, alumina and water in their composition, it is natural for the alumina to increase, in percentage by weight, as the silica decreases,—which is the case.

But while the silica and alumina are

varying in this way there is another change which is going on in the clay and is an important feature, especially in relation to the matter of shrinkage.

By examining analyses of several clays the fact appears that with an increase of alumina invariably comes more water of combination. The variation of this constituent is in a constant ratio with the increase or diminution of the quantity of alumina present, which furnishes a reason for the high alumina clays possessing such an excessive shrinkage, and also explains what I mean by "water shrinkage." Almost every form of clay, whether in a coarse, disintegrated or plastic state, sustains a shrinkage when burned in a kiln.

The fact that plasticity of clay usually increases with the quantity of alumina, does not account for the highest alumina clays carrying the most water.

Water of combination is not "held up" by the clay by reason of its peculiar physical condition. The bond is chemical and depends directly upon the quantity of pure silicate of alumina (kaolinite) present.

By drying clay at 100° (centigrade) all the moisture is expelled and passes off in the form of steam, leaving only the water of combination, (index of water shrinkage), which will remain as a part of the chemical composition of the clay till the temperature shall have reached 110° (centigrade), when it becomes absolutely anhydrous. Shrinkage due to semi-fusion or vitrification supplements the "water shrinkage" and indicates another form which takes place at a still higher temperature, the effect resulting partially from a chemical reaction in the formation of certain fusible silicates, though principally from physical changes.

If a sample of clay, containing about 4 per cent. of alkalies, is dried, relieved of its moisture at 100° (centigrade), then put into a kiln and burned at a moderately red heat, the loss in size or cubical contents determines its "water shrinkages."

By raising the temperature to a point at which the clay becomes vitrified, as the result of the presence of 4 per cent. of alkalies, its shrinkage (in inches per foot) has about doubled itself. Such shrinkage is plainly due to vitrification or a solidification of the particles of clay, when in a state of semi-fusion. This shrinkage is entirely dependent upon the fluxing impurities of iron, lime and magnesia, as well as the alkalies, and



also upon the temperature, which governs the closures or completeness of the vitrification. For *one* kiln in which the heat employed is fairly constant, the variation of the shrinkage, due to vitrification of different clays, could be determined in a comparative way, the results of which would be controlled by the combinations of fluxing impurities and the quantities of each.

In a subsequent paper I am in hopes to formulate "a rule for determining the coefficient of shrinkage due to loss of water" from experiments performed upon highly refractory plastic clays.

CHARLES FERRY.

## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

### Coxeyism—A Reply to Mr. Walling.

*Editor Clay-Worker:*

In perusing the columns of the CLAY-WORKER to-day I find a correspondent from Denver, who signs himself John E. Walling. Now, I have not the pleasure nor the honor of being acquainted with Mr. Walling, nevertheless I must reply to his statements.

1st. He says, "Bad legislation has been going on for twenty-one years." To this I take issue. Business in Denver has been good from the year 1879 up to the opening of the year 1893, every man who wanted work could get it at good remunerative wages, but the trouble with our workmen is, they think they know their employer's business better than he does himself. I am a brick manufacturer, and when I was paying brick moulders \$3.50 per day, and other labor in proportion, these men would sit down and figure up what they thought my bricks cost to manufacture, and then come to the conclusion it was time to order a strike, and strike they would, and neither work themselves nor let any one else work.

Mr. Walling says the producer receives none of the benefits. Why don't these producers start business for themselves? This country is free to all men to go into business, unless when interrupted by mobs, such as this State has experienced for the past four or five months at Cripple Creek, where they were receiving \$3 per day for nine hours work, in a dry and healthy camp; but they

were not satisfied, they must keep up their reputation and strike, thereby holding millions of dollars of gold out of the market, and these are part of the men who marched out with Mr. Coxey.

2nd. Mr. Walling says, "If our House and Senate were composed of just such men, the times through which we are passing would never have been experienced." God forbid such a calamity. We have them in office to-day in Colorado from Governor down, and the statesmanship which these gentlemen have shown to the country has made our beautiful city what she is to-day. Confidence in the city destroyed, and no man who has the means will invest one dollar while our State is governed by a set of men who are nothing more or less than anarchists, who have been fighting amongst themselves, and with the appointments they have made, ever since they went into office. But, thank God, the day will shortly arrive when the citizens of this State will wipe them off of the face of the earth *politically*.

3rd. As the preachers say—Mr. Walling's threats will cut a small figure with law abiding citizens. The Government of the United States, no matter what political party may be in power, will in the future as in the past, uphold all law abiding citizens; and such braggarts as this Mr. Walling will be found skulking in the rear, should the time ever come when *men* will be called upon to protect Old Glory.

A few words now about silver: Every man, woman and child in the State of Colorado is in favor of the free coinage of silver, but those who wish the success of our State don't want the impression to go abroad that Colorado has no other resources than silver. There is no raw material under the sun but what can be found in unlimited quantities in this State besides the precious metals, and if these *sore heads* had sense enough to either work or let other people work who want to, Colorado's output of gold in the ensuing year would be so great that silver mining would be almost forgotten. Lack of confidence is what is detrimental to this State, and that will not be restored until we purge ourselves of what is called the Populist party, which will be done most emphatically at the coming November election. When that is accomplished Mr. Walling will find Denver turning out her million and a quarter of bricks daily, as she was doing before she disgraced herself by placing the State in the hands of

men like Gov. Waite, who couldn't make \$5 a week in Russellburg, Pa., where he originally hailed from.

June 21, '94.

JOHN MCCAIN.

### The Situation at Chicago.

*Editor Clay-Worker:*

The month that has passed since our last letter to you has been one full of exciting incidents, fraught with many anxieties and dangers to the people of the whole country, and especially to those residents of Chicago and vicinity. Quiet now reigns in and about Chicago, and business has assumed its normal condition with one exception, that it is falling very far short of its usual volume; and especially we believe this to be true in regard to the building interest. Careful inquiries made of brickmakers in Chicago and others connected with the building trade seems to establish the fact beyond question that at the present time there are less building operations under way than at any time during the last decade. There is no well defined opinion among manufacturers, dealers or contractors in the building line as to what the fall trade will be. There is a cloud hanging over business, which hides from view any, if there be any, prospects for renewed energy in the line of new construction. From the records of the city department of building, there is shown a decrease in the totals of the first half of 1894 and the first six months of 1893 of \$1,776,905. It is also a fact that 1893 fell far short of the usual volume of business in building lines compared with the years preceding it, not taking it into account the extra building due to the holding of the World's Fair.

At the time of the outbreak of violence on the part of the strikers in the Debs insurrection there were several large and permanent improvements about to be started, all preliminaries having been arranged and negotiations for great sums of money completed, but owing to the inability of the authorities in Chicago to protect property, they have been withdrawn, and these improvements, which would have been an honor and a credit to this city and have given employment to many builders and contractors, and a small army of laboring men, and would have been of great value to material men have been abandoned, at least for the present. We feel that there can be no good grounds for the feelings manifested by capital in these cases. While Chicago has suf-



ferred more than can be told, owing to the demagogism of its mayor and the Governor of this State, still Chicago is here and stands ready to maintain its supremacy and stability at all times and under all conditions. Its prestige and its strength can not be undermined nor destroyed by the combination of any plotting politicians. Mayor Hopkins claims that he put down the strike, and not the United States government. If he was able to do so after the insurrection had passed far beyond its first starting, and the expectations of those engaged in it, he certainly could have put it down with a great deal less effort, and saved immense sums in values destroyed and losses to be borne by the public. Chicago will hold Mayor Hopkins responsible for very much, if not all, that has fallen upon the shoulders of the people from this last strike.

We notice on the part of many writers in the public press a sentimental demagogism, if we may be allowed such an expression, reflecting upon Mr. Pullman for not having submitted to some plan of arbitration voluntarily, or when called upon to do so by the Mayor of Chicago and the committee appointed by the American Railway Union to make a demand for such arbitration. We are entirely at a loss to understand that Mr. Pullman had anything to arbitrate, and we believe that the people of this country, and especially those in Chicago, should be offering up thanks instead of fault-finding that Mr. Pullman had the business sagacity and a character strong enough to resist all such appeals even to the end. We contend that if Mr. Pullman had in any wise conceded in the demands of Mr. Debs—no matter by whom presented—the cause of law and order would have been the loser and American Railway Union would have been victorious. We believe this position is one that can not be set aside or shown to be inconsistent by any argument that may be brought against it.

There is a great deal of talk as to Mr. Pullman's duty toward his ex-employees, and that he should have contributed to their aid and support instead of continuing to declare a dividend for his company. This position is wholly untenable as the dividends that have been declared on Pullman stock were made in the past and not from earnings made under the depressed condition of things as they now exist in this country. If we rightly understand it, Mr. Pullman and the Board of the Pullman Company

hold the funds of that organization in trust. Its earnings do not belong to Mr. Pullman, nor to the Board of Directors, but to the stockholders whose money is invested in the enterprise, and we contend that Mr. Pullman or the directors of the Pullman Company have no right in law or justice to appropriate one cent of the money of its stockholders to any purpose whatever, except to those which are proper in conducting the business of the company; and earnings once made belong to the stockholders and not to them. We can see no difference in the position, in this regard, between the President and Board of Directors of an industrial corporation and the President and Board of Directors of bank, and we think that no one would contend that the officers of a bank or its directors have any right to part with one cent of the bank's money for any purpose outside of the stockholders' interests. Mr. Pullman may be a hard master, or he may not. That is a matter between Mr. Pullman and his men. If they do not wish to work for him they are at liberty to lay down their tools any day and go elsewhere. They are not "slaves" or "serfs," as some labor unions are fond of calling them. They were certainly in as good a condition to go before the strike as they are now after it is over. But the long train of evils that followed the strike will not end yet. We believe that it is possible that just such a climax was necessary to show labor and capital where and how they stand. It was good to know that there were laws that could be upheld, and that our nation had a quick, strong pulse, and that there was protection for all in the late trouble. Matters must right themselves, and the atmosphere clear itself. Better days are before us.

We notice that an ordinance has been introduced in the Chicago City Council regulating the dimensions of paving brick. It orders that when any avenue, street, alley or public place shall be ordered paved, the brick used shall be made from pure shale, or mixture of shale and potter's clay of a quality equal to that found in Canton, or Zanesville, or Hocking Valley in Ohio, provided that the portion of the clay used shall not exceed 25 per cent. The ordinance also directs that the dimension of the brick shall not be less than  $7\frac{1}{2}$  inches, nor more than 9 inches in length, 4 inches in depth, and not less than  $2\frac{1}{2}$  or more than 3 inches in thickness, with rounded edges with a radius of  $\frac{3}{8}$  of

an inch. An amendment was offered changing the dimensions from 9 to  $8\frac{1}{2}$  inches, and the  $2\frac{1}{2}$  to  $2\frac{1}{4}$ , and the 3 to  $2\frac{1}{2}$ . We also notice a letter signed by C. H. Flagg, chief engineer of public works, indorsing the amendment. This seems to indicate that there is a movement on foot in the Chicago Council working in the interests of some special brick manufacturer or manufactory.

In 1892 there was a club organized in Chicago called the Chicago Brickmakers' Club, which had a membership including most of the Chicago brickmakers. It was in no way a trust, nor was it organized with the view of having anything to do with the regulation or establishing of prices. This organization lasted something like a year, or a year and a half, and finally the World's Fair and other things coming up it failed to have meetings and gradually ceased to exist. One of the Chicago papers has taken upon itself the task of making a great hue and cry about a brick trust organized in 1892, and, still in existence—organized, of course according to the spirit of the article in said paper to rob the people. It is intimated in certain circles that the object of said paper is blackmail. Certainly it is a fact that the personal character of the individual members of this supposed association are taken up one by one in the columns of this paper and abused in the most indecent and outrageous manner. The facts of the case are as follows: The club was organized as a social affair only, and no prices were allowed to be mentioned at any of its meetings or discussed in any manner by any of the members. The rules and by-laws of the club were such that it could not be allowed. We notice in last night's issue of this paper it is claimed the Attorney-General will take the matter up and bring the membership to an accounting. If such a course is undertaken by the representatives of the State, the club can quickly establish the fact that no trust has ever existed.

COSMOPOLITAN.

Chicago, August 11th.

#### Good Brickmakers Wanted in the Land of Flowers.

*Editor Clay-Worker:*

It is a long time since I pointed my pen at your readers, and it has occurred to me that a few lines as specimen bricks from this "Flowery Land," might be acceptable, and at a time when the



benighted Northerner places his thermometer on ice, and pities the supposed victims of a torrid zone. Far from it, as to the roast we are supposed to be sweltering in; cool gulf and ocean breezes prevail during day and night, especially the latter, and life is worth the living "away down south" in Florida. The northern superstitions and traditions of a hot Florida in summer, are vanishing in the face of the experienced northern business men who are here not for their health, but for wealth, and find both, while the heat does not climb to the hundred mark on the thermometer as up in the broiling North; singular and paradoxical, is it not? But it is a fact. It is properly explained by stating that the summer season is blessed with copious showers that cool the days and makes the nights sleepy delights. No sun strokes, and mechanics work out in the sun all day during the entire summer; all of this for an opening to adorn the tale I am going to tell, and that is mainly one of brick.

Although Florida was the first land discovered in America, it "laid out of doors" for all people until within a very recent period and was given up mainly to 'gators, snakes, swamps, sand and "sick yankees," by the average cute business man, and the sandy peninsula drew reputation only from these things, and the finest oranges in the world.

All is now changed. Six years ago something was found under the universal sand. It was phosphate, the richest ever known and in inexhaustible quantities. Then, for the first time, the capitalists and the business men of America discovered Florida all over again, and now literally, these human augurs find "millions in it." From all over the world these hunters came, and not only have they found phosphate, but clay. "Clay, me boy," has been turned up, and found in varying kinds from the finest kaolin and potter's clay through the list, to ye humble clay for brick, sewer pipe, tile, etc.

It is all here, but brickmakers are not. The brickyards of all Florida could be counted on the fingers of one hand, I think, and here's the opening to advise, "Go South young man," but be certain that you are a good brickmaker, or don't come. Good men are wanted; they are needed, and when the right men come they have only to *locate right* to have a "dead sure thing." Come first and look around, get posted before you "plant" yourself, then settle down and

stick. Brick comes high here, the common \$10 per thousand, and there you are. The bulk of the stock comes from Georgia and Tennessee, and the imported goods brings from \$12 to \$15 per thousand, this for only a fair brick.

Tampa and Bartow are two very good points to found plants for export as well as local trade, and such towns as Fort Mead, Lakeland, Orlando and numbers of others are good places for yards of modest pretensions. The most interesting thing in the way of advanced ideas on the use of brick, is the fact, that Jacksonville has gone in heavily on brick paving of her leading streets that is now assuming the dignity of miles, and thus has set an example to the whole State, as well as practical aid to brickmakers who care to take up the manufacture of "pavers." I send you a specimen of the pavers used on Bay Street, Jacksonville; they were made at Chattanooga, Tenn.

Sewer, drain pipe, and tile come so high here through a "High Protective Tariff" of exorbitant freight rates, that native borne "infant industries" in those lines will thrive at once without a nursing bottle, because the stock is needed and will be used in large quantities if placed on the market less the prohibitive freight tariff.

I hope the CLAY-WORKER will "whisper softly" these facts to some of its readers.

Florida is now on the edge of a rising tide of business prosperity and a boom. The late panic had but little effect, and the people generally are prospering. Hustling men in the clayworking business will find here "fresh fields and pastures new" if they desire to change for the better. The people are hospitable and progressive, and welcome new men and new enterprises. Kaolin and plate glass sand, equal at least to any in the world, is here in quantities to last for generations. White laborers can work as many days in the year as christian laws will permit them. All natural conditions favor the working man, and so far no necessity has crept in for "Labor Troubles" and strikes.

The writer will cheerfully reply to any communication from *actual* brick or clayworkers in reference to the foregoing matters, but does not care to encourage mere exploiters or soldiers of fortune. I am living in a land of plenty, but starving for the last two numbers of the CLAY-WORKER. It seems to be a rare fruit in Florida, so I will try to do a

little transplanting when I can show off some of the "Hoosier stock" in clay journalism.

D. E. RYAN.

Bartow, Fla.

#### A Clay Centre That Is To Be.

*Editor Clay-Worker:*

Conditions are developing which I think will make this city one of the principal points in the West, if not in the nation, for clayworkers.

From the starting of the city, there has been the usual amount of brickwork done which the local demand has called forth, but within the past year a vein of coal has been discovered cropping out of the hillside, which is proving profitable to mine, and the prospecting for coal that resulted has revealed immense deposits of various quantities of clay, until it is now certain that we have a greater variety of valuable clay, and in unlimited quantities, than any point in this section.

Of our clay for vitrified brick, Mr. O. N. Townsend, of the Townsend Brick and Contracting Co., Zanesville, Ohio, says: "The shale in Atchison is not excelled in the United States." Our brick stands all kinds of tests, and comes out on top in competition with the best brick made.

In addition to the shale mentioned we have clays for common building and pressed brick, fire brick, sewer pipe, jugs and all such pottery, and a fire clay that burns as white as snow; besides these there is found, in several places, slate that appears to be all right for roofing, but this has not been given the attention necessary to decide that fact.

The yards appear to find ready sale for their product, some building is going on, and the surplus is shipped. The yard of John Gaffney makes paving brick only, and he is at present paving one of our principal streets, using artificial stone for curbing, this combination having been found to be the only satisfactory way to pave. We tried Bois d' Arc, and while it wears well, it is so slippery when wet as to make it dangerous for horses. We tried cedar, and it wore and rotted out in a very short time and we used various stone curbing, all of which except Colorado stone, crumbled with frost. We paved with brick of our own and Galesburgh, Ills., make, and there is no appreciable wear, even in the track of the horse car line after years of hard service.

I hope in the near future to be able to submit further facts relating to our clays and clayworks that will interest some of your many readers.

Atchison, Kan.

GEO. INNIT.



# THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK  
MANUFACTURERS' ASSOCIATION OF THE  
UNITED STATES OF AMERICA.

PUBLISHED MONTHLY.

INDIANAPOLIS, AUGUST 15, 1894.

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ADVERTISING RATES furnished on application.

Correspondence on all subjects of interest to Clayworkers is solicited. Communications from practical men will always be welcome. Address all communications to

T. A. RANDALL & CO.,  
5 Monument Place. INDIANAPOLIS, IND.

## CLAYWORKING NOW AN ART.

The August number of the *Drainage Journal* has an appreciative editorial on the growing respectability of working in clay, compared with what it was only a few years ago. An octogenarian on reading it, says: "And the editor of the *Drainage Journal* hardly knows it all. He is too young a man—he can hardly be much above fifty—to know it all, or even half. When I was a boy the brickmaker and the potter embraced all that was known of clayworkers in Indiana. They were respectable enough socially, but were always poor. The brickmaker, like the shoemaker of that period, generally went around doing jobs. A farmer thinking of building a brick house hunted up the itinerant brickmaker of the region and engaged him to come next summer and 'burn a kiln.' As apt as any way he engaged him to cut the wood for the kiln during the intervening winter. And such brick! Not half of a kiln was fit to go into the house. As towns began to grow, and brick houses multiplied, brick yards became more a permanent feature. As to potters, they were always poor. They did poor work, and got poor pay. If the young man who edits the *Drainage Journal* could have a number of the clayworkers of sixty years ago pass before him, he would be surprised." Yes, clayworking is now among the industries which command the best order of business talent, with

large capital and returns remunerative profits. No calling presents among its operatives more culture and social refinement than is to be found among clayworkers, while improved machinery has played a very large part in making the calling honorable and profitable.

## A NEW COMBINE.

The daily papers inform us that the tile makers of Indiana have formed a combine after the fashion of others. We have not the details, neither do we care to have. It is said that a uniform price is to be agreed upon, and the territory is to be "equitably" divided so that every man shall have his own customers and so on. We can not say with the *Drainage Journal* that this scheme may succeed. It can not even for a season. It may succeed in crowding out the small establishments for a year or two, but the increasing demand for drain tile, the cheapness of an ordinary plant, and the comparatively little skill required to make a passable tile, utterly forbids success. It will have to have its run, we suppose, but it can never be formidable. It will be more likely to curtail the use of tile for a season than anything else.

## MORE UNDESIRABLE COMPANY.

In our July issue we briefly expressed our opinion of pirates in general and literary pirates in particular. As no individual pirate or piracy was mentioned we were not prepared for the harrowing wail of woe that it wrung from a Chicago cotemporary. That the shoe would be a close fit we were well aware but that it would pinch so painfully is a surprise, for as a rule pirates are not possessed of sensitive natures.

Our cotemporary's misery (and indiscretion) is pitiful indeed. Though it really deserves no sympathy, we haven't the heart to goad it further for while its sins of piracy are many and grievous it would be little short of cruelty to add to its burden of woe. The falsehoods it utters in the vain attempt to shift responsibility are either the result of maddening pain or a mind diseased. No one sane and sober would be guilty of such malicious mendacity. We assume that our cotemporary is not responsible and so will cover its shame with a broad, thick mantle of charity. This we can well afford to do, for no trade magazine under the sun is freer from the sin of "cribbing"

than the CLAY-WORKER. Our matter is almost entirely original, being prepared especially for our columns by the ablest writers known in our line, but whenever a clipping is used credit is given invariably. This the clayworking craft well knows and it is this phase of the matter that makes our cotemporary's falsehoods so utterly inexcusable except on the theory of irresponsibility.

## BUILDING LAW LOGIC.

There are yet those who say that building law, the law which states how a man shall build, flavors of paternalism, and that they are opposed to anything of that sort. Argument of this kind is calculated to make friends for paternalism. Were it not for a building law, there are those who would build frame structures on Broadway, New York, and they would make argument to justify their course. Building law is a necessity. A certain class of builders would construct murderous fire traps, if allowed to follow their natural bent. They would build structures which would tumble down of their own weight, carrying destruction with them, if there was no law to prevent it. Moral law is not strong enough for these people. It is the law which fixes a penalty that commands their respect.

In a rapidly growing Western town it is found necessary to rebuild the majority of the structures a relatively few years after the town has been settled. In our own city it will be necessary to rebuild the principal business streets almost entirely within a few years. Now that there is talk about extending the fire limit, there is much opposition thereto. There is a strong effort to batter down a good building law—to allow people to build as they will. The argument is that people will build well enough if they are allowed to consult their own interests. The record in this city does not show this. We have twelve-inch walls separating wholesale warehouses which are five stories high. We now have an instance of one who wants to build a large flat and is quarreling with the city authorities because he is not allowed to build a nine-inch wall three stories high. He threatens, if he is not allowed to do this, to take his money and build somewhere else—in some other community where the citizens are more liberal. He should be allowed to go.

Any good building law has the desir-



able effect of putting more brick into a building. It makes better structures in every way. It develops what is good for posterity. Many who are building in a careless spirit without the limitations of a building law are laying the foundations of a lot of delapidations for their heirs. They imagine that they are leaving large fortunes behind them. In truth, everything will have to be rebuilt under wiser counsel. In the State of Massachusetts, which by the way is in some respects the most civilized commonwealth in the United States, there are state building regulations which apply to the building work in all of the smaller towns. The result is a manifest improvement in the character of the building throughout that State.

#### HONOR TO WHOM HONOR IS DUE.

On a preceeding page we present to our readers a very good portrait of Mr. Henry R. Griffen, the author of the series of papers on "Enameling Brick," which we have been publishing over the nomdeplume of "Artemus," and which we are sure have been a source of interest to all and of much real value to those who are working out the problems presented by the enameling process, and they are many, as indicated by Mr. Griffen's closing article in this number. The thanks of the entire craft is due Mr. Griffen for the plain, practical manner in which he has treated the subject. Unlike most of this class of matter prepared for publication, there has been no attempt to advertise the author as one of the few who possess great secrets by which alone can the clayworking craft hope to overcome the difficulties encountered in enameling and glazing clays. Such matter is quite common and seldom conveys any information except that the author can put would-be-manufacturers on the high road to wealth and fame—if furnished employment and the necessary capital.

The enameling problem is assuming practical form; the veil of mystery that has covered it in past years is being lifted by the intelligent, broad guage craftsmen like Mr. Griffen, who are not afraid of injuring themselves by imparting information to others, but are willing to exchange ideas and experiences for the good of all.

For the past few months Mr. Griffen has been engaged at the works of the American Terra Cotta and Ceramic Co., Chicago, where he has demonstrated

that he not only understands the theory, but is a master of the art of enameling, having turned out a fine line of enameled and glazed terra cotta for that company.

#### SLAVERY OF TRUST AND UNION.

Negro slavery as it existed a half century ago and down to war times was bad enough, but it was nothing compared with the white slavery under which tens of thousands are groaning to-day. Excepting a few extreme cases, such as are woven together in *Uncle Tom's Cabin*, there were compensations for almost every feature of slavery as it existed in the South, but there is none whatever for the main features of white slavery which now curses two extremes of society, the very rich and the very poor, with its strongest hold on the well-to-do class.

Time was when business men could conduct their own business in their own way and reap the proper reward. By industry, economy and skill almost any man could live well, and many could grow rich, but that time is past. What with trusts and combines among capitalists which are to limit the output of almost every article, and fix its price on the one hand, and the dictation of employes on the other, there is no more abject slave than the capitalist who is in the trust or under its iron heel.

Next to the capitalist comes the laboring man, as he chooses to call himself. This trust or combine may be a terror to the capitalist, but the laborer is the greatest sufferer. In its worst form African slavery never took bread from the mouth of the slave. He always had work to do and food to eat. While we write these lines there are thousands of mouths to feed for which there is no food in sight. White slaves, who were earning food daily at satisfactory prices, were "ordered out," and they had to go out, and they are starving now. Negro slaves had no such yoke to bear. Only in an accommodated sense can this slavery be said to be voluntary in either the capitalist or the laborer. It is forced upon each. What legislation is needed to emancipate both may be considered hereafter.

Advertise regularly in the trade newspaper which contains the most information concerning the business that you are engaged in. That is the paper that is read, and if your advertisement is in it, it will be read, too.—*Cordage Trade Journal*.

#### TRADE LITERATURE.

THE STANDARD DRY KILN Co., Indianapolis, have favored us with an odd little pamphlet, telling of the merits of their drier in a very catchy manner, commencing with the following squib:

"Suppose the sun should cease to shine—  
How would you dry your clay?  
You'd have to use 'The Standard' Drier,  
There'd be no other way."

Following this is a brief discourse on "Nature and Art," quaintly illustrated with portraits of Old Sol in varying moods. Brickmakers in general and those struggling with the drying problem in particular, should address them for a copy.

HENDRICKS' ARCHITECTS' AND BUILDERS Guide and Contractors' Directory of America for 1894-5 has been received. It is a large quarto volume of 800 pages, substantially bound in cloth and contains classified lists of manufacturers and dealers in nearly all lines, the building trades receiving especial attention. Those desiring to circularize any particular class or territory will find this work quite valuable. Price \$5.00, S. E. Hendricks & Co., publishers, 61 Beekman St., New York.

THE CHISHOLM, BOYD & WHITE Co., is the new name of an old firm. A circular announcing the change is being mailed to their friends and patrons in which it is stated that the business will be actively continued in the same lines that have brought them success in the past. The officers and directors of the new company are J. A. Boyd, president; B. C. White, vice-president; S. S. Chisholm, secretary and treasurer; H. J. Flood and H. W. Boyd.

NEW ENGINE PAMPHLET. The James Leffel & Co., Springfield, Ohio, has issued a new pamphlet, illustrating and describing their well known line of Upright and Horizontal Steam Engines and Steel Boilers with latest improvements, which were awarded Diploma and Medal at World's Fair. A copy may be had free on application to the company.

#### AN EPITAPH.

I gladly lay me down to sleep  
Within the grave so quiet,  
For if 'tis calmer than my life  
I would be fain to try it.  
The earthly goal I sought for—rest—  
I found ('tis not surprising),  
For I engaged in business and  
Eschewed all advertising.

—Printers' Ink.



## A HONORED BRICKMAKER AND LEGISLATOR.



MEMBERS of the N. B. M. A. will one and all be pleased to know of the good fortune that attends our third vice-president, A. S. Blaffer of New Orleans. He has served a term in the Louisiana Legislature with more credit than usually falls to the lot of legislators and on his return home the Mechanics', Dealers' and Lumbermen's Exchange, the leading commercial body of that city, recently held a reception to welcome him home and show their appreciation of his public services. The occasion was made one of unusual festivity as may be imagined. The New Orleans *Picayune* records the event thus:

"The Mechanics', Dealers' and Lumbermen's Exchange had possession of West End last night jointly with the regatta people. There was nobody else out there. For some time the exchange has desired to honor Hon. A. S. Blaffer, one of its members, who has done a good deal to please the members in his legislative efforts, and has stood by the interests of the people the best he could.

"The affair was well known as a testimonial to Mr. Blaffer, but there was very much more testimonial than he had expected, and to-day he is the possessor of one of the finest Swiss repeating watches in the city. The meeting was set for 9 o'clock, but it was after 10 before the tocsin sounded, as some of the members were late, and the others were not in a hurry, for they had a special train ordered to take them to the city at 2 a. m.

"The committee in charge of the affair was composed of Williams Roberts, H. S. Karstendick, R. H. Hackney and H. U. Beach. The members and guests were ushered into the dining room of Paul Lecourt, and sat down to an excellent supper with various wines of the finest brands and other things. Mr. Blaffer sat near the center of the table, and near him was Richard Downey, the chairman, who invited the assembly to go to on the viands, and they did so.

"When the repast was finished Mr. Downey called for as much silence as was practicable, and made a very neat little speech, in which he complimented Mr. Blaffer on the distinction he had attained at Baton Rouge, and predicted that he would get away up high in the

world some time. He then produced the watch and displayed it to the admiring crowd. It has 'A. S. B.' on the front of the case, beautifully engraved, and on the back '1894.' The heavy gold chain had a fine gold charm, set with a diamond, with 'A. S. B.' and 'July 28, 1894,' on it. On the inside of the case was engraved, 'Presented to A. S. Blaffer by his friends.'

"Of course, even a legislator would be embarrassed by such a present, and Mr. Blaffer had to think hard before he was able to make the pleasant and feeling reply which he finally delivered.

"The conclave broke up later in the morning, and the special car was called into requisition to take the party home after one of the pleasantest contracts which any of the members remembered having undertaken this year."

## OIL FOR BURNING BRICK.

The recent coal famine resulting from the miners strike has set many a clay-worker pondering over the fuel question, and very many will turn their attention to crude oil as a desirable substitute for coal and wood. Where oil can be obtained at a reasonable price it is a much better fuel than either, for it saves a great deal in both labor and expense and insures more uniform burns through the ability of the burner to obtain and hold a given temperature. Those of our readers who want information relative to comparative cost of oil, management of burners, etc., we refer to the Hydraulic Press Brick Co., St. Louis, Mo., who now offer to the trade an improved method of using oil, (see page 172,) and also to the Thurman Fuel Oil Burner Co., Indianapolis, (see page 165), who make a specialty of this branch of the work.



## THE WORST FEATURE OF IT.

HOD A. BRICKS.—The walking delegate was here this morning, and he was as mad as a hornet.

MORT A. CUMMING.—You told him we had nothing to complain of?

HOD A. BRICKS.—Yes; that's what made him hot.

## EDITORIAL NOTES and CLIPPINGS.

A brick plant will be erected at Dundee, N. Y.

White City, Fla., is to have a new brick plant.

A new brick yard will be opened up at Windom, Mo.

An improved Brick Wagon is illustrated on page 173.

Chas. Pack & Son have removed their yard from Salmé to Syracuse, N. Y.

Dennis Buckley has leased the brick yard of Morgan Bros., South Wilkesbarre, Pa.

G. W. Lambert, formerly of Richmond, Texas, will build a brick plant at Broadway, Texas.

The North Alton (Mo.) Brick Co. will increase their capacity by adding a dry press to their plant.

All the brick plants at Canton are having a good season and are running to their fullest capacity.

The Parmenter Manufacturing Co., East Brookfield, Mass., suffered a slight loss from fire the 23 ult.

The Stanberry (Mo.) Press Brick Co., has been incorporated. D. F. Hill, Frank Jones and others are interested.

Brenton & McCormick of Hughestown, have leased a plot of ground in Smithville, Pa., and will start a steam brickyard.

A brick kiln at the Heminway Brick and Tile Works, Wellington, Ohio, caved in on four of the workmen, seriously injuring two of them.

The Des Moines (Iowa) Co-operative Brick Co., has been incorporated with F. P. Boggs, Carl E. Bachtel and F. C. Rawson, directors.

A new firm to be known as T. E. Woods & Co., will commence the manufacture of sand brick at Benton Harbor, Mich., in the near future.

Good fire clay has been discovered at Brockwayville, Pa., and efforts are being made to organize a stock company for the establishment of a brick plant.

A large manufactory for the production of clay goods will be established at Athens, Ohio, in which Mr. H. B. Camp, of Cuyahoga Falls, Ohio, is interested.

The Murphy Brick Co. has been incorporated at Chicago, with a capital stock of \$50,000. William J., Mal V. and Francis T. Murphy are interested.

Pilmer & Hall, 522 Walnut St., Des Moines, Ia., want to purchase a soft mud

*Continued on Page 158.*





## OPTIMISM.

**Y**OU may reap your harvest of wheat and tares,  
 You may gather your cockle and barley,  
 You may husband a harvest of joys and cares  
 Laboring late and early;  
 The grain of gold  
 And the poppy bold  
 And the cornflower blue for adorning;  
 But the fullest ears of the seven fat years  
 Will be gleaned by the gleaner next morning.

You may draw your nets, you may draw your line,  
 Find silvery fish in plenty;  
 You may angle for honor, hook titles fine,  
 And of places and posts fill twenty;  
 The fish of weight  
 Swallow up your bait,  
 Your lures and your wiles not scorning;  
 But the lustiest trout, there's no matter of doubt,  
 Will be caught by the fisher next morning.

You may think out thoughts that are witty and wise,  
 You may think some deep, some shallow;  
 You may store your brain with truth or with lies,  
 You may let your brain lie fallow;  
 Thought is good,  
 Be it understood;  
 But this fact on your mind must be borne,  
 The latest thought that mankind can be taught  
 Will be thought by some thinker next morning.

You may cling to this world of time and sense,  
 You may think of another rarely;  
 You may sigh, Ah, whither? and ask, Ah, whence?  
 And find life puzzling fairly.  
 Yet life is sweet,  
 We still repeat,  
 On this dear old earth we were born in.  
 God bettered to best, best changed into blest  
 When we wake to God's cloudless next morning.

—Blackwood's Magazine.

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 Morrison and Reep, \$3.00

**"BRICKMAKING AND BURNING,"**  
 J. W. Crary, Sr., \$2.50

**"TABLE OF ANALYSES OF CLAYS,"**  
 Alfred Crossley, \$1.00

**"DURABILITY OF BRICK PAVEMENTS,"**  
 Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of  
 them to one address for \$5.50. Address T. A. Randall  
 & Co., Indianapolis, Ind.

## ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and Belleville, Ill.

ESTABLISHED 1859.

**R**ED Pressed and Ornamental Brick of unsurpassed quality  
 a specialty and can be furnished in any desired quantity.  
 Builders who desire the finest pressed brick at reasona-  
 ble prices, are requested to write for illustrated catalogue and  
 price list.

Rock-faced and Roman brick, red and brown, granite,  
 mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

**ANTHONY ITTNER, Telephone Building, ST. LOUIS, MO.**



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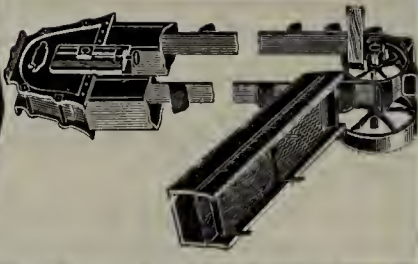
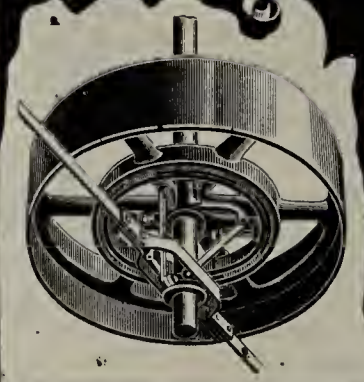
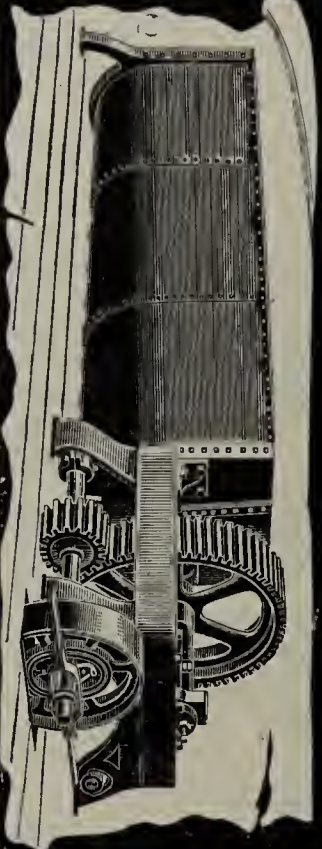
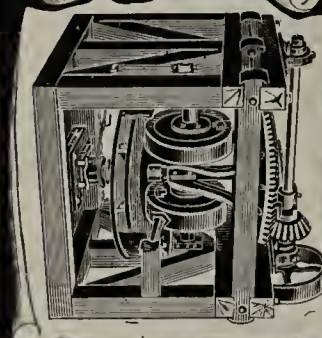
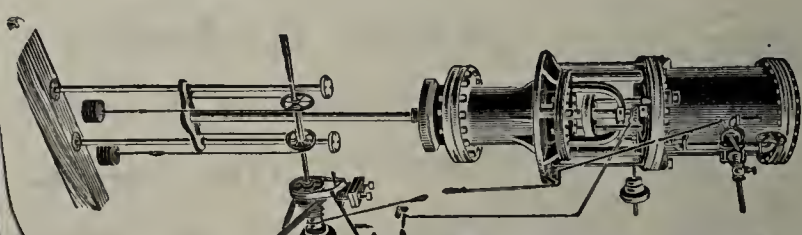
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**STEVENSON & CO.**  
WELLSVILLE, O. U.S.A.

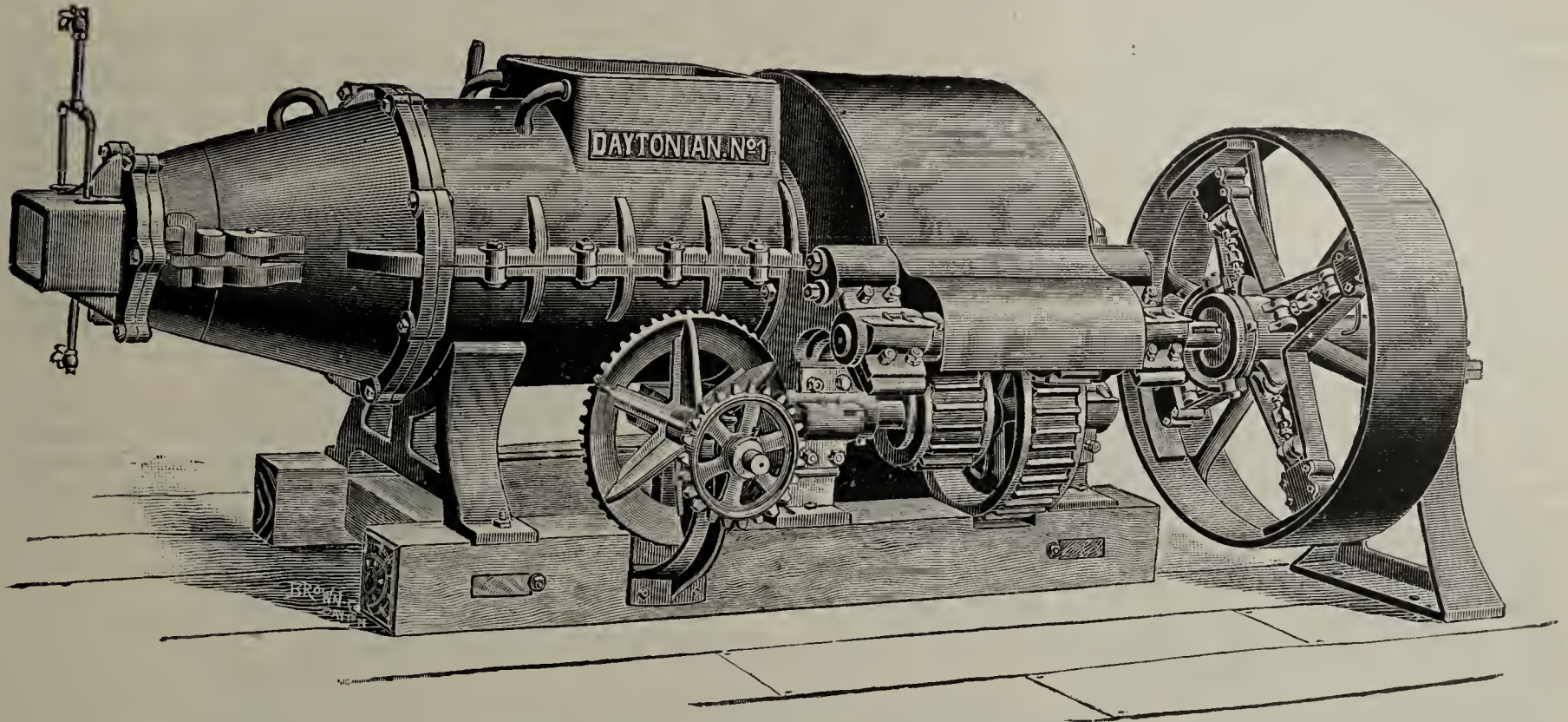
**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES,  
STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES,  
DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR  
BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS &  
ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFTING,  
BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS,  
MANUFACTURED & CARRIED IN STOCK WITH ALL MILL  
& FACTORY SUPPLIES.



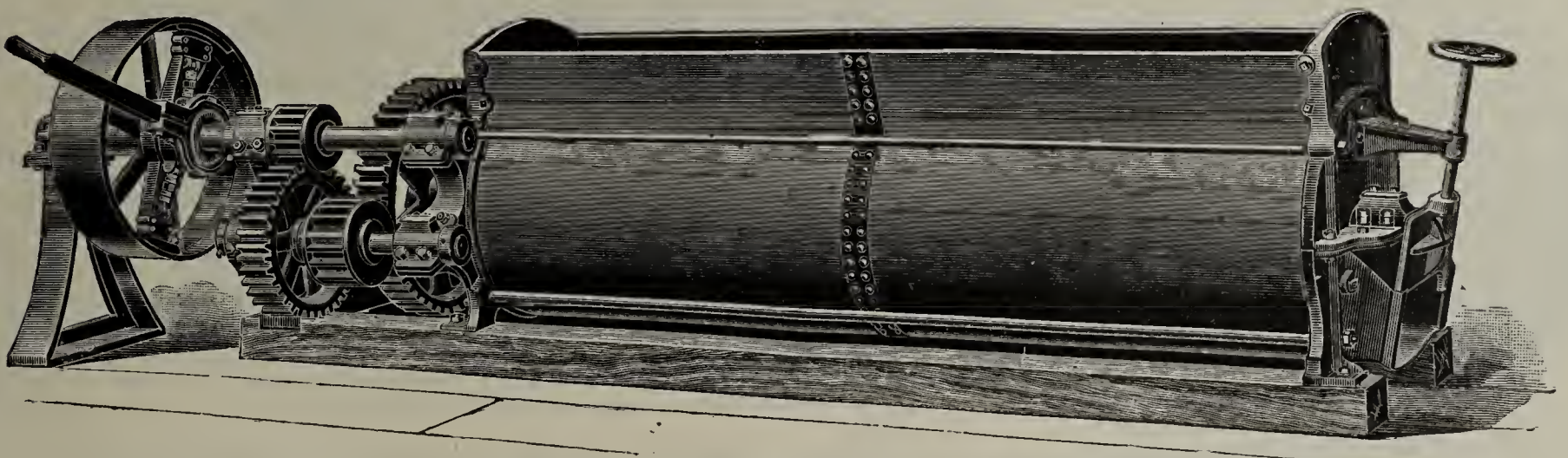
# RAYMOND'S

✦ Brick ✦  
Machinery.



DAYTONIAN No. 1 BRICK MACHINE.

The mechanical perfection of our modern line of brick machinery is astonishing the World.



No. 1 COMPOUND GEARED PUG MILL.

*Brick Machines,  
Cutting Tables,  
Pug Mills,  
Revolving Screens, Etc.*

*Disintegrators,  
Crushers,  
Dry Pans,  
Re-Presses* Adapted to  
ALL USES.

**C. W. RAYMOND & CO., Dayton, Ohio.**



## Editorial Notes and Clippings.

*Continued from Page 154.*

brick machine—horse-power preferred; also a lot of brick moulds, etc. They think of starting a 20,000 a day plant.

A new company has been formed at Uhrichsville, Ohio, known as the Advance Fire Clay Co., Geo. Ross, Thos. W. Hughes and Geo. Porter are interested.

Saylorsburgh, Pa., is to have a new brick plant. Judge Olmsted and other prominent men of the city are interested, which augurs well for the success of the plant.

W. A. Connell is president of a stock company at Scranton, Pa., which has been organized for the manufacture of vitrified brick. They have a capital stock of \$65,000.

The crown shed on one of the kilns of the Oakland Pressed Brick Works, Zanesville, Ohio, caved in and allowed the flames to communicate to the kiln sheds, causing a loss of about \$500.

The Hydraulic Press Brick Co., of Louisville, Ky., has been sold to Dumesneil Bros., of that city. This is one of the best steam brick plants in the city and covers about six acres of ground.

Messrs. W. S. Purington and M. Smith of Galesburg, Ills., were recently at Canton, Ohio, taking in the different brick plants in the vicinity. They seemed to find much of interest and report a pleasant visit.

Sylvanus Glick's large tile plant at Columbus, Ind., was completely destroyed by fire, Mr. Glick had recently put in some new machinery. The loss will probably reach \$4,000 with little insurance.

Jno. W. Sibley, of the Coaldale (Ala.) Brick and Tile Works, has booked an order from Montgomery, Ala., for \$28,000 worth of paving brick. This firm are also furnishing a large order for Jacksonville, Fla.

W. P. Blair and Jos. Ayers, who are already engaged in manufacturing paving brick at Brazil, Ind., have purchased 120 acres of ground on the other side of the city and purpose erect a brick and sewer pipe plant.

The Stringers Sons' Pottery, San Jose, Cali., one of the largest establishments of the kind in the West, was burned to the ground the 8th inst. Loss is estimated between \$80,000 and \$100,000. Insurance \$65,000.

A disastrous fire occurred at the Fiessinger Brick works, at Norwalk, Ohio. The plant has been idle for some time, having just recently been purchased by Jno. Gardner and Mrs. Mary Fusch of Sandusky.

The pottery at Harrisburg, Pa., owned by Fred'k H. Cowden was damaged to

the extent of \$2,000 by fire. The plant will be rebuilt at once, as there are a large number of orders on hand which must be filled within six weeks.

The Indiana tile manufacturers met at Elwood, Ind., July 19 and formed a secret organization. Mr. Lee Goodwin of that city was elected president. The object of the Association is to keep up prices and advance the interests of the members in a general way.

The Ottumwa (Iowa) Brick and Construction Co., were the victims of a very destructive fire last month, which completely destroyed the buildings, machinery, etc. They estimate their loss at \$30,000. The plant will be rebuilt.

The new plant of the Cleveland Brick Co., at Canton, is just about completed and they expect to commence turning out brick in a very short time. The Company has been in business for a number of years past but have this year erected a fine plant, modern in design and complete in equipment. The ma-

chinery was all furnished by the Bonnot Co., of that city.

John Robinson was crushed to death at the C. Pardee Brick and Tile Works, Perth Amboy, N. J. Some one of the employes started a brick machine which Mr. Robinson was repairing and he was caught in the belting.

John Briggs, an old resident of North Cambridge, Mass., died at his home in that city the 1st inst. Mr. Briggs was a pioneer brickmaker, but for the past few years his advanced age had prevented close attention to business.

The Rockdale (Tex.) Pressed Brick and Stoneware Co., have filed articles of incorporations with a capital stock of \$30,000. Incorporators, B. B. Baxter, R. H. Hicks, J. F. Coffield, James Loewenstein and H. Lockwood.

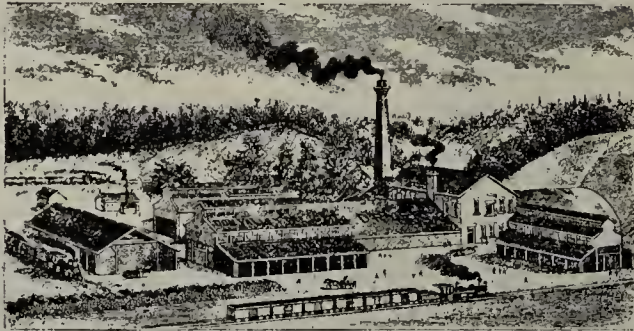
H. Brewer & Co., Tecumseh, Mich., are having a fairly good trade. The demand for their tile machinery has been quite active. They recently got out a

*Continued on Page 160.*

## A SUCCESSFUL CONTINUOUS KILN.

## Read What The Users Say.

OFFICE & SHOWROOMS: 60 ADELAIDE ST. EAST. W. F. TASKER, MANAGER. TELEPHONE 2997.



**DOUGLAS VALLEY**  
**PRESSED BRICK WORKS**  
**TAYLOR BROTHERS**  
MANUFACTURERS OF  
**FINE GRADE PRESSED BRICKS,**  
IN ALL COLORS & DESIGNS  
FIRE CLAY, FIRE BRICKS, SEWER PIPES &c

TORONTO, August 6th 1894

The Wilford Patent Kiln Coy.

Toronto, Ont.

W. A. Wilford, Mgr.

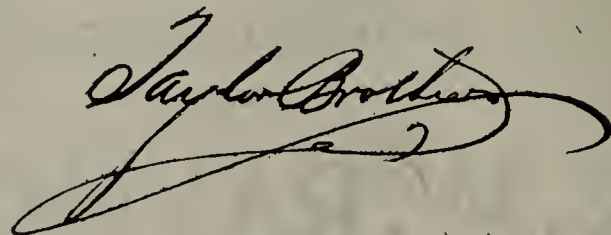
Dear Sir:- We are thoroughly satisfied with the results we have secured from your Continuous Kiln, and have got out of it Vitrified Paving Bricks that are fully equal to anything on the market.

We have looked into the matter of your Downdraft Kilns, and have decided to put in 4 of them for the purpose of burning our Ornamental and Terra Cotta wares, and enclose herewith amount of your fee for same. If you can so arrange, kindly let us have one of your foremen right away, as we are anxious to have them ready as soon as possible.

Shall be more than pleased to give any information to your prospective clients regarding the Continuous Kiln we got from you.

You deserve every success, as you have undoubtedly the best in your line.

Yours truly



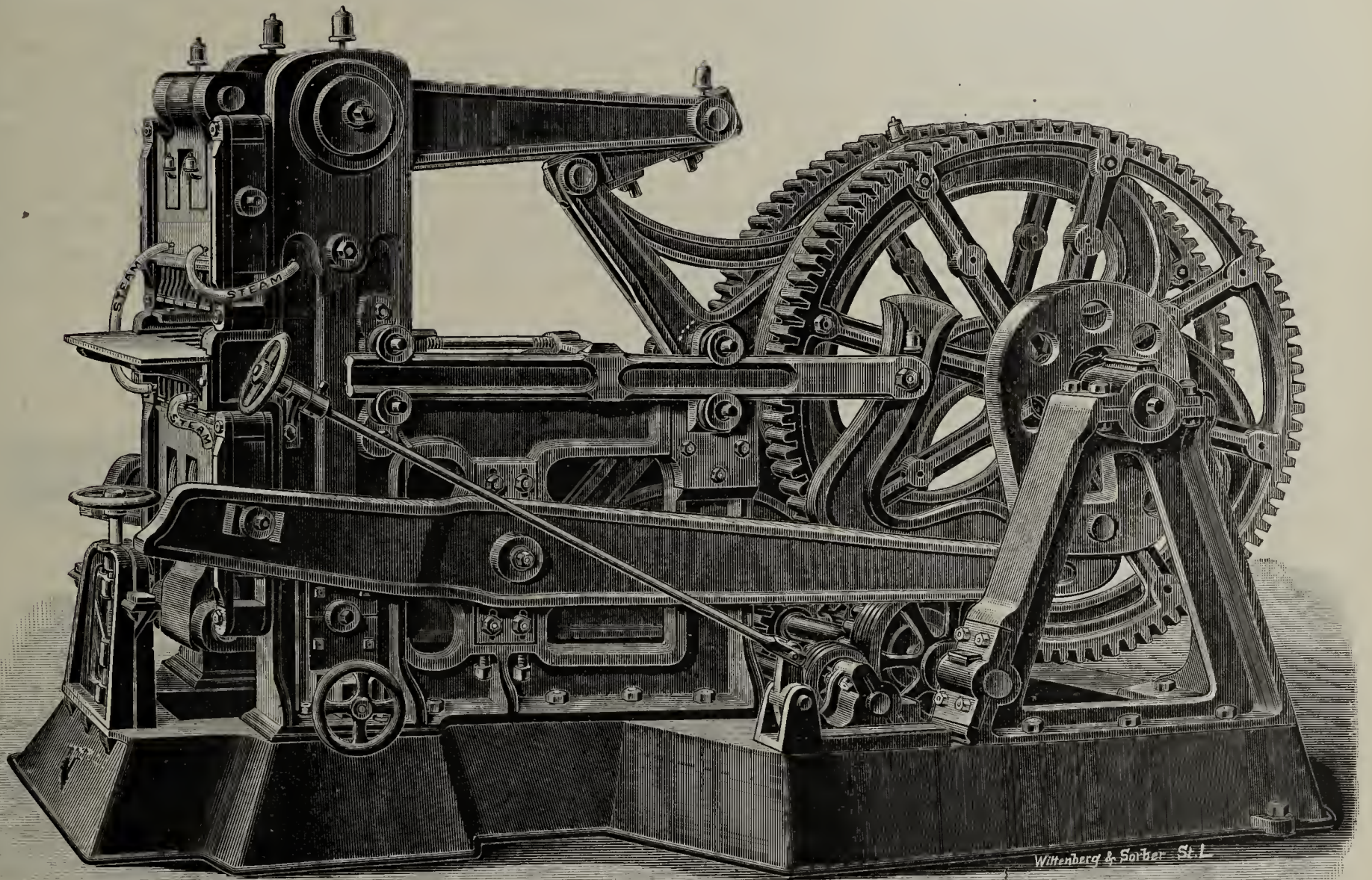
See ad. on Page 179.



# The Progress Brick Press,

✻ *DRY and SEMI-DRY.* ✻

This machine is the result of years of practical experience in Dry Pressed Brick-making, a model combining **Simplicity, Durability and Economy**, as Brickmakers and Press Builders, we have entailed every advantage in producing the machine for a Brickmaker.



Can be seen in daily operation on plain, stock and ornamental bricks at any time at our yards. **Inspection solicited.**

Equal in strength to 50 tons of iron; this press is built of **Bassic steel and best quality iron.**

Bearings of **split boxes**, and wear taken up with **kib and key**, hence no lost motion.

All **adjustments** arranged with **wedges** operated by **hand wheels**, no **troublesome liners** and all parts easily accessible.

**Only Six Horse Power** required to operate our largest 6-Mold Press.

No **liners** to our mould, no **table** to fit mould into, and no **change** in size of bricks by **regrinding** moulds.

Of the time of each revolution 40 per cent. is spent in high pressure on bricks, permitting all air to escape, hence, no **seam or granulation**, in the brick, 28 per cent. in **charger** forwarding bricks, perfect filling of moulds and undamaged product secured by this easy movement. Only 32 per cent. in moving of the **Plunger.**

This machine is adapted to making all sizes and shapes of bricks up to 12 inches square. Bricks pressed on edge, etc., etc. We manufacture 2, 3, 4, 5 and 6 mould presses and sell them with a perfect guarantee.

Descriptive catalogue, prices and terms on application.

**Tower Grove Brick and Machine Works,**  
King's Highway and Oak Hill R. R. **ST. LOUIS, MO.**



## Editorial Notes and Clippings.

*Continued from Page 158.*

new extra heavy machine especially adapted to the manufacture of large tile. It also has large capacity for small or medium-sized tile. Their sales of brick machinery average up pretty well with former years, so their shops have been kept going about as usual.

The Mill Hall Brick Co., Lock Haven, Pa., have recently equipped their plant with the Simpson Brick Press Co.'s machinery, and report themselves as well pleased with same, in fact, that the machinery is giving perfect satisfaction.

Henry Atkinson, an old time brick manufacturer died the 4th inst in his 88th year, at his home in Pittsburgh, Pa. He furnished the brick used in the construction of the right and left wing of the capital at Washington, D. C.

The plant of the Darlington (Pa.) Fire Brick Co. was completely destroyed by fire recently. The works was valued at \$10,000, and was not insured. They had just started up after being idle for some time. The fire is thought to have been the work of an incendiary.

The double repress lately invented by Mr. F. E. Frey is meeting with much favor. The special features of this machine consist not only in uniqueness of design but in certain details of operation. Illustrations can be had by writing The Bonnot Co., Canton, Ohio, who manufacture the machine.

The kiln sheds at Collin Houghton's brick plant at Carthage, N. Y., valued at \$500, and \$100 worth of wood were destroyed by fire the 4th inst. Fortunately for Mr. Houghton, the wind carried the flames away from the drying rack and engine house, otherwise the loss would have run up into the thousands.

Daniel Goff, of Millville, N. J., who has been prospecting for clay in Cecil county, Maryland, has found a rich deposit on the farm of William Singerly, at Frenchtown, near Elkton. He pronounces the clay of superior quality, and says it is the intention to erect a plant on the farm for the manufacture of brick for interior work.

The F. D. Cummer & Son Co., Cleveland, O., write us that the sales of their clay dryers continue very satisfactorily. They have recently booked orders from Fairfield, Ia., Utica, Ills., Baltimore, Md., Keeler, Cali. and Tebessa, Algeria, Africa, and feel much elated over a deal with the Rathburn Co., Deseronto, Ont., whereby their dryer supplants a large steam heated tunnel dryer.

The Frey-Sheckler Co., have just closed a contract with H. B. Camp and others of Cuyahoga Falls, Ohio, for the entire equipment of their immense tile and brick plant. The outfit is for common and pressed brick, conduits, ornamental blocks and a great variety of terra cotta wares, all of which is to be

ready for operation by October 1st. This will be one of the largest and best equipped plants in America, with all the latest devices for saving labor and for making a great variety of building material from clay which is said to be of very rare quality. The reputation of the capitalists interested and of the Frey-Sheckler Co., assures the building of a great property.

The Chambers Bros. Co., are supplying machinery for the new paving brick plant to be erected near Philadelphia by T. B. McAvoy & Sons, which they think will become a large and important plant in its line in the future. Last week they made a shipment of brick machinery, pug mill, etc., to Jacksonville, Fla., and will this week ship a complete outfit to Sumpter, S. C., for J. Ryttenberg & Sons. They are also getting a large shipment ready for Wm. H. West & Bro., Washington, D. C., and also have in course of construction a complete equipment for works near Savannah, Ga. Chambers Bros. & Co., like many of our advertisers, are not complaining of dull times, but on the contrary are very busy.

## A GOOD THING.

## Being a Hint to Inexperienced Advertisers.

It is not always an easy matter for advertisers to determine just the best course to follow in placing their ads. They one and all realize that under the existing order of affairs a liberal amount of advertising must be done to achieve success, but how to obtain a maximum return at a minimum expenditure is a question that advertisers generally find difficult to answer.

In the clayworking line it is answered easily, having been determined very satisfactorily by most all of the leading advertisers. Modesty forbids our dwelling at length on this point, so we simply offer in evidence the following letter from a firm who, having advertised extensively for years, know where of they speak. They now advertise only in the CLAY-WORKER:



No. 358 Dearborn St., Room 304.

Messrs. T. A. Randall &amp; Co.,

*Chicago, Ill. May 24, 1894*

Indianapolis, Ind.

Gentlemen:

It affords us pleasure to testify to the good work done for us

by the Clay-Worker. We have been advertising in it continuously for

many years. It has brought us business from all portions of the

country, and so long as its present high standard of excellence is

maintained, we will be satisfied to confine our advertising in the

clay-working line to its pages.

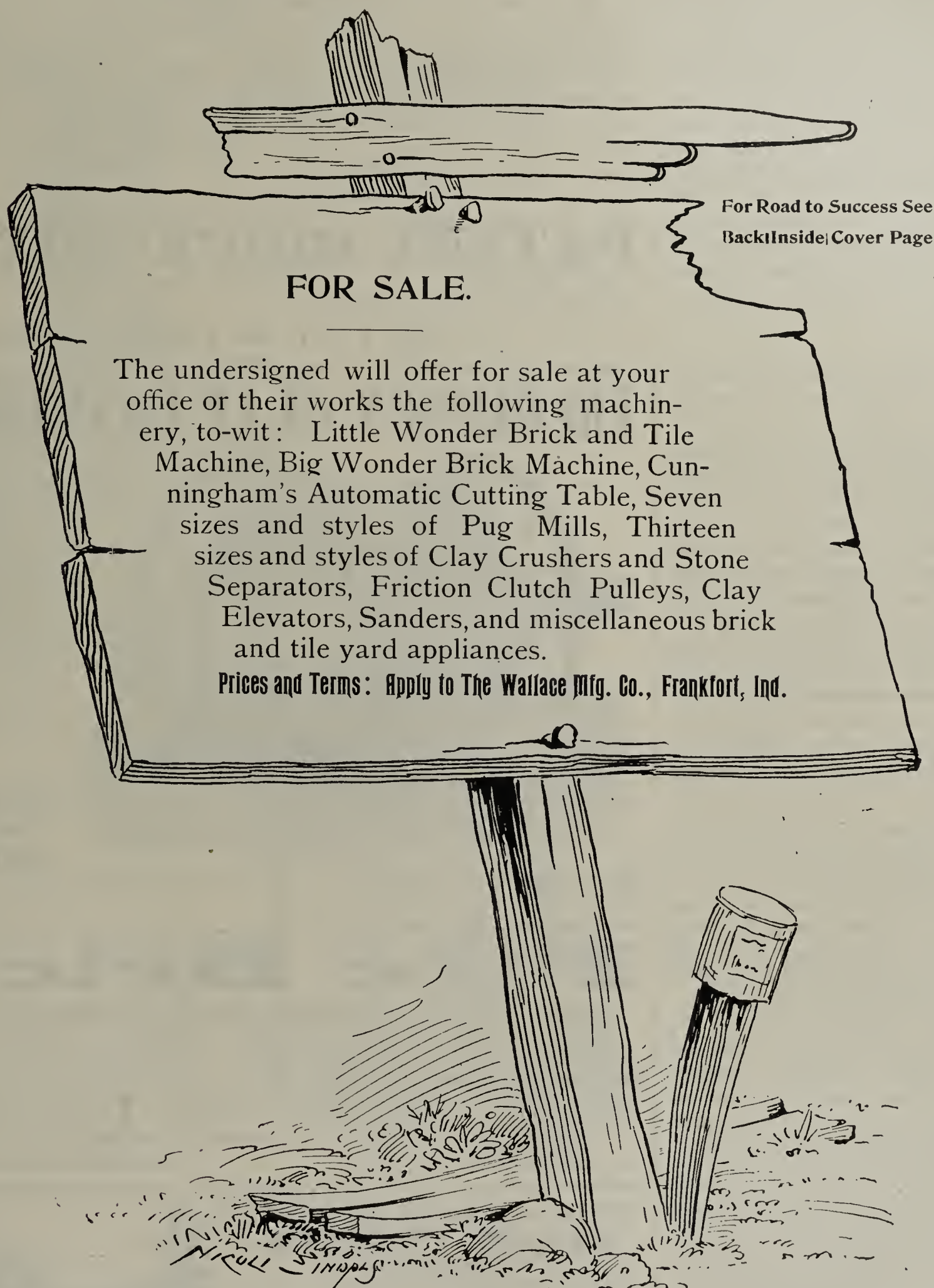
We have advertised in other papers, but have always found the

Clay-Worker the most effective way of reaching the trade.

Wishing you continued success, we are,

Yours very truly,





## FOR SALE.

The undersigned will offer for sale at your office or their works the following machinery, to-wit: Little Wonder Brick and Tile Machine, Big Wonder Brick Machine, Cunningham's Automatic Cutting Table, Seven sizes and styles of Pug Mills, Thirteen sizes and styles of Clay Crushers and Stone Separators, Friction Clutch Pulleys, Clay Elevators, Sanders, and miscellaneous brick and tile yard appliances.

**Prices and Terms: Apply to The Wallace Mfg. Co., Frankfort, Ind.**

For Road to Success See  
Back|Inside|Cover Page



## BRICKYARD AMENITIES.

A PLEASING diversion from the usual hum drum of brickyard life occurred on the yard of the Keokuk, Ia., Brick Company July 31st, when during the noon hour, the men were called together and the Superintendent presented with an elegant ebony, gold-headed cane, on which was engraved "To J. W. Carson, from employes of Keokuk Brick Co., July 31st, 1894." The presentation speech was made by David Hendricks on behalf of the workmen. Mr. Carson was surprised, but managed to reply briefly thanking his co-workers for their generous gift and friendship. Mr. Carson is now in Wisconsin, enjoying a brief vacation.

Philadelphia bids fair to become a brick paved city. Their experience there is very favorable to brick, and as the City of Brotherly Love is abundantly able to obtain what she wants regardless of cost, it is fair to presume that in a comparatively short time her streets will be paved with that best of all paving material—annealed brick. With his usual foresight, Thomas B. McAvoy has observed the drift of things, and will soon have a large paving brick plant in operation near that city. That they will make first quality brick is a certainty, for Frank B. McAvoy will have charge of the plant. Frank is a brickmaker, every inch of him and he's no dwarf.

Mr. J. E. Eastes, Chicago agent for the Chambers Bros. Co., recently closed a contract with the Chase Brick Co., of Milwaukee, for the entire outfit of machinery and dryer to be used in their new plant. Since Messrs. Burnham Brothers of that city started up their outfit of Chambers machinery last spring Mr. Clinton Chase, proprietor of the Chase Brick Co., has been watching the work done there, and as a result, has just given the contract for a similar plant, which will be one of the largest and most complete in Milwaukee.

Elsewhere in our issue will be seen an illustration of the works of the Bonnot Company, Canton, Ohio. The plant is one of the largest of its kind in the country. Hon. Michael D. Harter, Congressman from the 16th District of Ohio, is president and Henry W. Harter, Canton, vice-president. With a plant of such ample capacity and unsurpassed

conveniences, this company is certainly well equipped for furnishing clay machinery. While this company has had a very large trade in pottery machinery and has been engaged in equipping plants in the pottery line for some years past, yet brick machinery has had careful attention. During the past year a repress and brick machine have been added to the line of manufacture so that this company not only manufactures a full line of pottery machinery, but also manufactures every machine that is

necessary to equip a complete brick plant, including steam dryers.

WANTED the services of a capable, enterprising and reliable business man; must be competent to take the management of a large press brick plant; a good place for the right man. Applicants will be required to establish good character and ability. Address with reference, giving age and occupation for past year.

8 1 d

PRESS, Box 1.  
Care "Clay Worker."

WANTED a practical brick man with capital to take an interest and management of a plant for the manufacture of building and fire brick; unlimited supply of clay that will burn light straw color, and high fire test; cheap coal; samples of clay and sand furnished. Box 19.

8 3 d

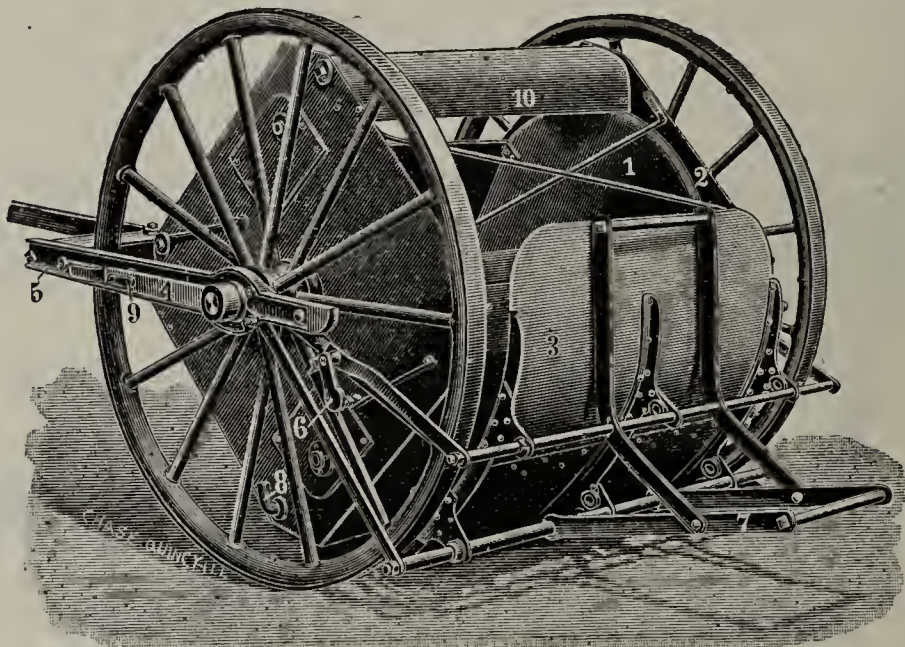
Care "Clay Worker."

## PATENT BRICK BOXES,

Are durable, save labor and are practical for delivering brick in every way. Also rights and territory for sale. Write for circular. Address

J. BLUM, 1015 Lincoln Ave., CHICAGO, ILL.

## The QUINCY CLAY GATHERER.



This is by far the best machine that has been introduced to gather dry clay for making pressed brick. No pressed brick works is complete without one.

For gathering and shedding Dry Clay it is unequalled.

It is self-loading and unloading.

It is the cheapest and most approved Clay Gatherer.

Gathering Clay by this method dispenses with shovellers and avoids strikes.

No Brickyard complete without the Quincy Clay Gatherer.

For prices and further information, apply to

ILLINOIS SUPPLY  
& CONSTRUCTION  
COMPANY,

ST. LOUIS, MO.

## Fire Brick

We make a special High Grade Fire Brick (all shapes) for Brick Kiln Construction.

**NOT EXCELLED** By any. Our quotations will surprise you. We sell Fire Brick on their merits and their use will prove **AN ECONOMY.** GROUND CLAY IN .....BULK OR SACKS.

We solicit your favors.

Manufacturers of.....  
High Grade Fire Brick for Every Purpose.

THE AMERICAN FIRE BRICK & CLAY CO.,

MINERAL POINT, OHIO.

STRONG, WELL-BUILT, SERVICEABLE  
STEAM ENGINES

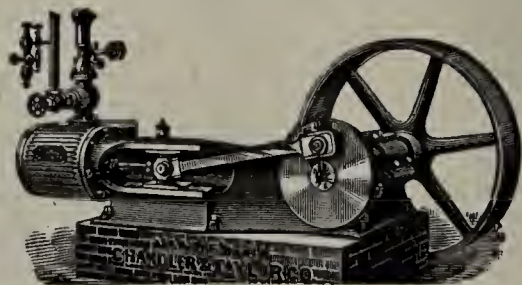
12 to 100 Horse-Power.

Adapted to heavy continuous work. Every Engine tested under full load.

Suitable Tubular & Firebox BOILERS On hand for immediate delivery

For descriptive catalogue address

CHANDLER & TAYLOR CO., - Indianapolis, Ind.





DO NOT BUY A

[FOUNDED 1879.]

# SOFT CLAY BRICK MACHINE

Until You Have Investigated Ours.

Send for Photo.

W. E. TALLCOT &amp; CO., Croton-on-Hudson, N. Y.



Complete specifications with drawings of any patent may be secured from Edward C. Weaver, Councillor and Attorney in Patent Law, 900 F. Street, Washington, D. C. Enclose fifteen cents in stamps to cover cost of each copy, and order by the number of the patent.

522,686—Clay Tile, by J. E. Donaldson of Montezuma, Ind., and others.

523,076—Brick, by Henry Lottie of Syracuse N. Y.

523,275—Brick Kiln, by Philip Gonder of Canton, Ohio.

523,330—Combination Down Draft Kiln, by Frederick W. Dennis of Ocala, Fla.

523,353—Roofing Tile, by Albert Kayser of Miltelbexbach, Germany.

523,479—Pottery Kiln, by Richard Heilmann of Stuttgart, Germany.

523,979—Machine for Pressing Brick, etc., by Jacob Leonhardt of St. Louis, Mo.

523,928—Sagger, by Henry Brunt of Baltimore, Md.

**WANTED.** Purchaser or partner in large brick and tile plant in Iowa. Splendid clay and market. For particulars address,  
BRICK AND TILE WORKS,  
Cherokee, Iowa.

82c

**FOR SALE** at one-half the price of new, the following machinery, etc., formerly used by the new National Brick Co., of Waterloo, Va.:

Three large Knowles pumps.

Three 400-horse-power boilers.

Two 125-horse-power Westinghouse engines.

One four-mould Simpson Brick Press, as good as new, only been used two months.

Two Steadman Crushers.

Three Quincy Clay Gatherers.

Six dry houses, capacity 180,000; also, track, cars and pipe complete.

Nine Screw Presses, also 75 moulds for making fancy brick.

Six patent dump wagons.

One set of Fairbanks' scales.

One new grinding machine for grinding arches.

One Graham Wheel Machine, built by the Phoenix Iron Co., of Trenton, N. J.

All of this machinery will be sold separately, or the whole plant will be sold as a whole if so desired. Apply to

THOMAS COLLINS, Salesman,  
Tenth and F. Streets, N. W.,  
Washington, D. C.

81d

**\$5** EXCURSION TO **\$5**  
**NIAGARA FALLS**

AND RETURN

TUESDAY, AUGUST 28,

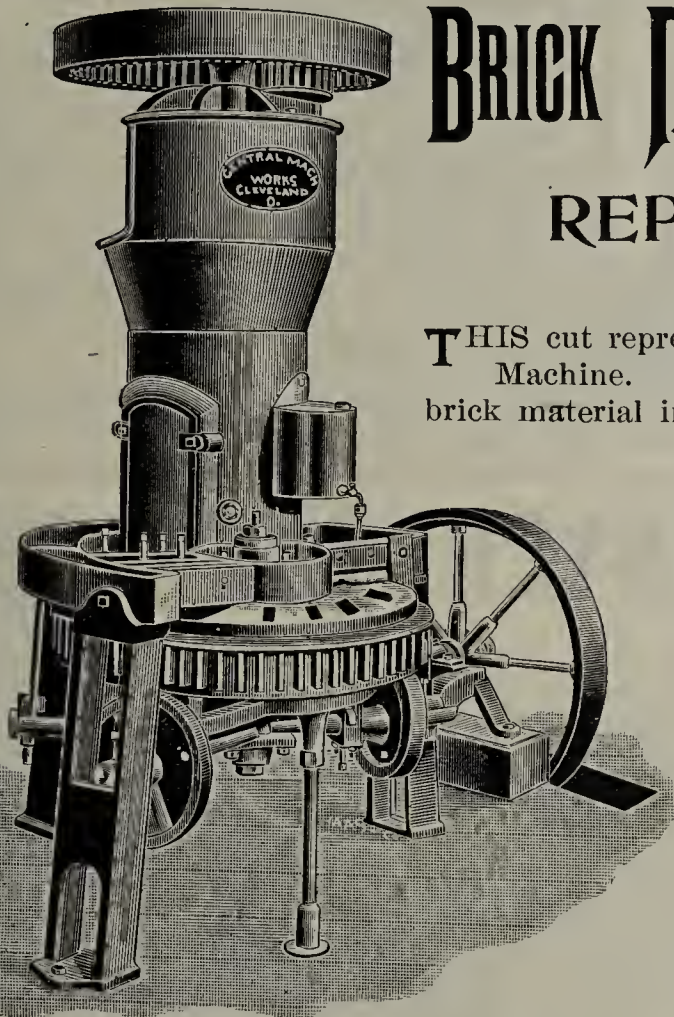
VIA THE

Cincinnati, Hamilton & Dayton R. R.  
AND ERIE LINE.

On Tuesday, August 28th, the Cincinnati, Hamilton & Dayton R. R. and Erie Line will run a personally conducted excursion to Lake Chautauqua, Niagara Falls, Toronto and Thousand Islands. The rate from Indianapolis will be as follows: Lake Chautauqua and Return, \$4.00, tickets good 6 days including date of sale; to Niagara Falls and Return, \$5.00, tickets good 6 days including date of sale; Toronto and Return, \$6.00, tickets good 6 days including date of sale; tickets to Thousand Islands (Alexandria Bay), \$10.00, tickets good 11 days including date of sale.

This will be absolutely the last opportunity to visit Niagara Falls, Lake Chautauqua, Toronto and Thousand Islands at the above rates this season.

Tickets and full information call on your local ticket agent or address D. E. Edwards, General Passenger Agent C. H. & D. R. R., Carew Building, Cincinnati.



## BRICK MACHINES AND REPRESSES.

••••

**T**HIS cut represents our Stiff Mud Brick Machine. It will work any kind of brick material including fire clay, shale or common clay right from bank without the use of a pug mill. Each brick is pressed separately and can be haked 7 or 8 high, or repressed right from machine

Over 50 in operation.

Send for price and circulars

Manufactured by

**CENTRAL  
MACHINE  
WORKS,**

226-236 Abbey St.,

Cleveland, Ohio.

## THE "AJAX" BRICK MACHINE

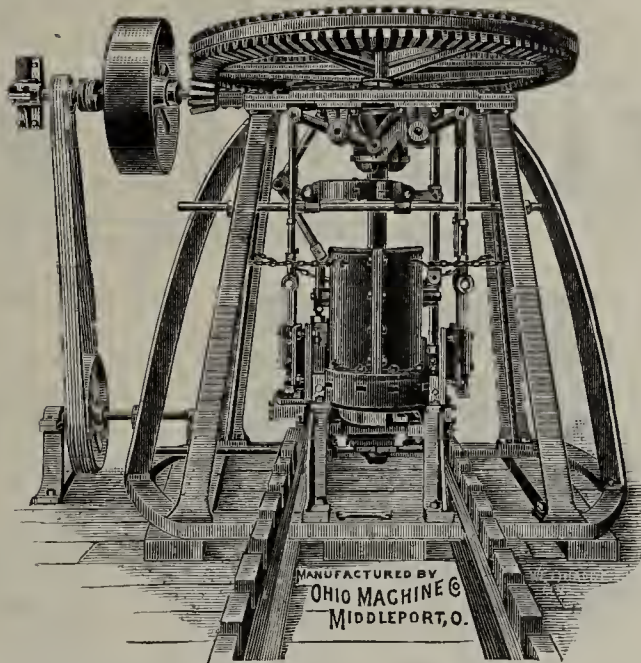
MANUFACTURED BY

**Ohio Machine Co.,**

Middleport, Ohio.

Under the very Latest Improved Grant-Murray Patent.

This machine is constructed with the object of giving to purchasers the very best results obtainable for the money invested. It is at once Simple, Durable, Convenient, and Easily operated. We claim these machines make the strongest brick in the market, a brick that is very superior for Street Paving and building purposes. Their superior quality as pavers may be ascertained by reference to some of the leading cities of Ohio and West Virginia. This machine works the clay very stiff, pressing all the clay into each brick that it will possibly contain, thus imparting the quality requisite to a No. 1 Paving Brick. We guarantee these machines to our customers, and solicit investigation as to their merits. For further particulars please correspond with



**OHIO MACHINE CO.,**

MANUFACTURERS.

We manufacture the Grant & Murray Patent Repress  
Brick Machine, pressing 4 brick each revolution  
and 40,000 per 10 hour day.

Middleport, Ohio

MENTION THE CLAY WORKER

When writing to advertisers

MENTION THE CLAY WORKER.



FOR SALE, WANTED, ETC.

Advertising rates in this column 25 cents a line, or 4 cent a word, each. insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

**WANTED.** Position as foreman, burner or setter in brickworks by young man, experienced. Good references furnished. Box 15. 82d Care "Clay Worker."

**FOR SALE.** Very cheap. One Raymond No. 1 B. 19th Century Disintegrator. Only used about four months. Address, A. A. THOMSON, Carlisle, Pa. 81c

**FOR SALE.** Several Miller hand presses for repressing Standard press brick. All in good working order. Address Box 18. 8tf d Care of "Clay Worker."

**PARTIES** wishing services of expert in dry press process to superintend the erection of new or the reconstruction of old works, at a fair remuneration, please address PRESS, 8tf d Care "Clay Worker."

**FOR SALE.** Machinery for making sand-moulded brick; complete outfit; engine, boiler, two upright machines, shafting, pulleys, trucks and molds; capacity thirty-three thousand per day. CHASE BRICK CO., Millwaukee, Wis. 81d

**FOR SALE.** Brick yard at St. Johnsville, N. Y. Large bank of clay; Pallet yard; fifty-horsepower engine. Sold on easy terms; nearest yard thirty miles; have lots of business; reasons for selling, poor health. Address Box 1. 8tf d Care "Clay Worker."

**FOR SALE.** At easy terms, brick plant in a prosperous town of Iowa, located on four railroads. Good clay and good demand. Machinery in good shape. State will use 1,000,000 brick next season. Address, CEDAR, 83d Care "Clay Worker."

**WANTED.** A man thoroughly acquainted with the fire-proofing business; one able to equip and run a yard. State experience and salary wanted. Address, THOS. H. COLLINS, S. W. corner Tenth and F. Streets, N. W. 81d Washington, D. C.

**WANTED.** A second-hand four-mould Boyd or Lyon Dry Press Brick Machine. State how long same has been in use, general condition at present time, lowest cash price and all other particulars. Address, Box 17. 83d Care "Clay Worker."

**FOR SALE.** One Brewer Tile machine, good order. One New Departure Tile machine, good as new. One 40 horse-power engine, good as new. One Brewer Crusher, absolutely new. EDGAR M. HEAFER, Bloomington, Ill. 7tf d

**WANTED.** To purchase a dry press of the Whittaker make second-hand, in good repair; also dry pan. Address L. C. BARNES, Bloomington, Ill. 7?

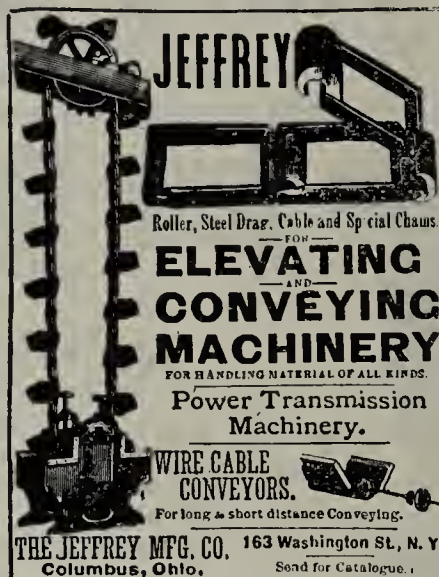
**SITUATION WANTED.** A competent and thorough burner of dry pressed brick, at present employed as head burner by a leading concern, desires similar position elsewhere. Can refer to present employer. Address H. S. H., 732p Care Clay-Worker.

**SECOND-HAND MACHINERY.** We offer the following second-hand machinery cheap for cash:  
One Wallace Brick and Tile Machine.  
One Ohio Brick and Tile Machine.  
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One Hoosier Soft Mud Brick Machine.  
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One Cunningham Automatic Cutting Table, in good order.  
One Adrian Automatic Cutting Table, in good order.  
THE DECATUR LEADER MFG. CO.  
8tf d Decatur, Ill.

See our Advertisement on page 195.

# ELEVATORS JEFFREY CONVEYORS

For Handling  
CLAY,  
COAL,  
SAND,  
BRICK,  
TILE,  
PACKAGES.  
  
Also Furnish  
RUBBER,  
LEATHER,  
COTTON  
BELTING.



Manufacture  
SHAFTING,  
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ETC.

## NEW DISCOVERY KILN.

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More Than 1,000 Now Stand as Monuments of Fame to its Inventor

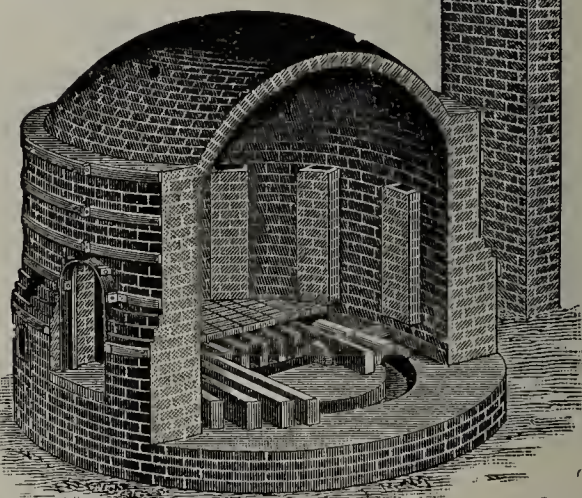
It is neat, compact, durable, easy to handle, constructed on scientific principles. Has been improved and now burning almost everything made from clay, such as Sewer Pipe, Vitrified Pavers, Etc., to Pottery and finer wares. Built any size up to 100,000. In short it leads the way.

Reward For Information of Infringements.

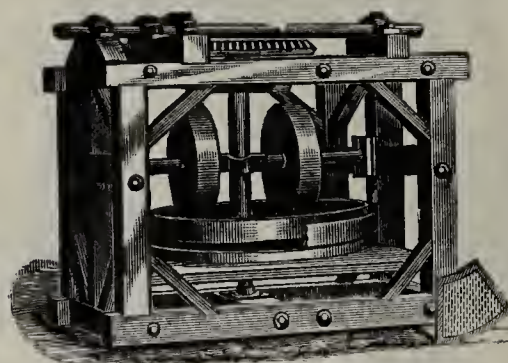
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E. M. PIKE, Patentee

CAPT. G. H. ETTLA, Agt. } Chenoa, Ill.  
Marietta, Pa.



## EAGLE IRON WORKS, DES MOINES, IOWA.



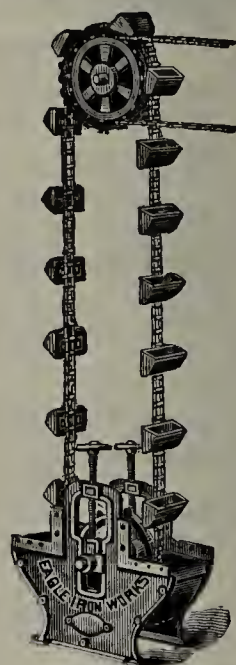
FOUNDERS,  
MACHINISTS  
and  
MACHINERY  
CONTRACTORS.

DRY AND WET PAN CLAY CRUSHERS. CLAY ELEVATORS AND CONVEYING MACHINERY TO ELEVATE AT ANY ANGLE. ENGINES, BOILERS, POWER PLANTS AND TRANSMISSIONS.

Highest References from Users.

Correspondence solicited.

[Mention the Clay-Worker.]



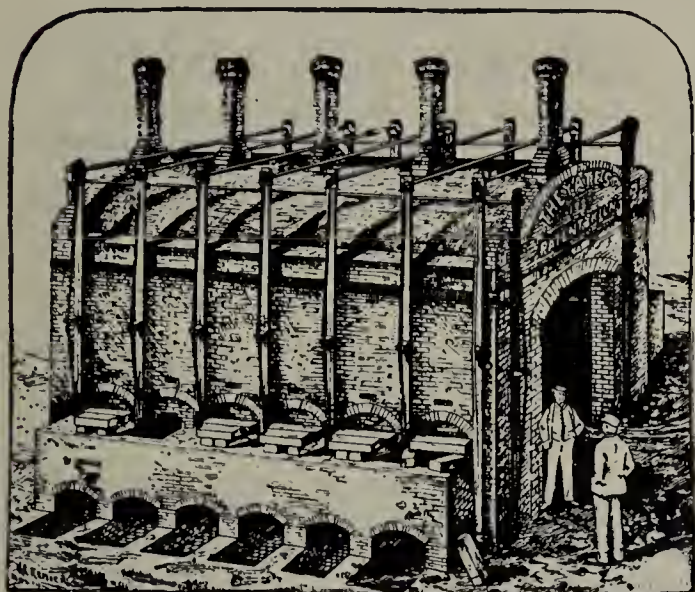
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Look out for our *New Iron Frame Dry Pan*, which we are now perfecting.

It embodies new and valuable patented features peculiar to itself, and will easily lead them all.



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For Burning All Kinds  
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BOTH ROUND AND SQUARE KILNS.

Fully Protected by Patents.

THIS Kiln has worked its way to  
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This cut represents the latest im-  
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Serviceable.

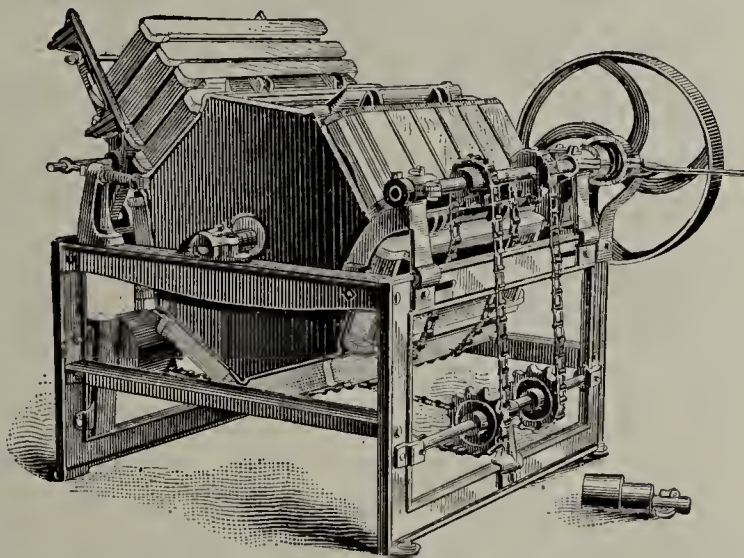
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Manager and Sole Agent,  
HAVERSTRAW, N. Y.

**NOTICE** To Brickmakers, Dealers  
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Any person purchasing Champion  
machines from other than the above,  
render themselves liable to damages,  
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The suit brought against one of my purchasers by Buck has been abandoned, and suits are now being  
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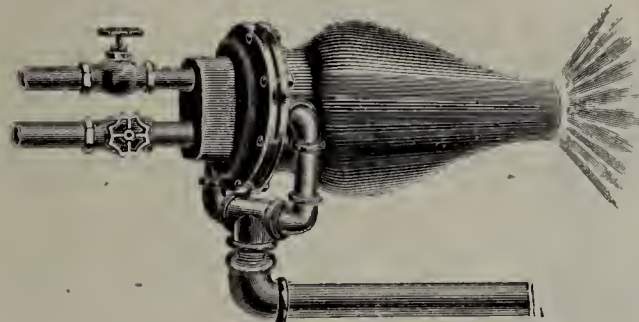
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MAKES LESS NOISE THAN ANY OTHER  
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daily capacity ten thousand brick. Size of  
box 8 3/4 by 4 1/2. Also several Miller hand presses.  
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in all methods of making. Knows how to handle  
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WANTED. Position as manager in enamel  
brick works by a thorough, practical man.  
Glazing, enameling and burning white and colors,  
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SUPERINTENDENT WANTED. For a claywork-  
ing factory in the East. Production, archi-  
tectural terra cotta, building brick, fire brick, etc.  
Must be a first-class man. Answer stating age,  
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FOR SALE Very cheap. Two Clay Pulverizers  
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FOR SALE. One Grand Automatic Brick Ma-  
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boiler and engine; one lot of kiln doors and grate  
bars, cheap, and in good condition.  
Address, X,  
6 4 c Care "Clay-Worker."

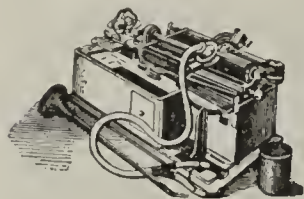
FOR SALE. One 40 h. p. engine, one 20 h. p.  
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Machine of the C. W. Raymond make, of Dayton,  
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The works having been completed, and the busi-  
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Cast Iron Water Pipe and Special castings, we have  
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	Pitch.	Teeth.	Bore.	Face.	Diam.
1 Spur Wheel	2 1/4 in.	100	4 7/8 in.	5 1/2 in.	6 ft.
2 " "	2 1/4 "	56	2 7-16 "	3 "	42 "
2 " "	2 1/4 "	56	4 7/8 "	5 1/2 "	42 "
1 " Pinion	2 1/4 "	14	3 7-16 "		12 "
1 " "	2 1/4 "	14	2 15-16 "	5 1/2 "	12 "
1 " "	2 1/4 "	17	3 11-16 "	5 1/2 "	14 "
1 " Wheel	2 1/4 "	66	4 7/8 "	5 "	50 "
1 " "	2 1/4 "	53	3 11-16 "	5 1/2 "	40 "
2 " "	1 1/2 "	66	2 15-16 "	4 "	32 "
2 " Pinions	1 1/2 "	16	2 15-16 "	4 "	9 "
1 " "	1 1/2 "	15	2 7-16 "	4 "	8 "
1 No. 6 38 in.					
1 " 7 40 "					
2 " - 31 "					
B. F. Sturtevant Blower, Boston, [Mass.]					
1 Steadman Pulverizer, 44 in x14 in. cage.					
1 Carload scrap iron, one-half wrought, one-half cast.					
6 Side dump cars, capacity about 3/4 yard clay.					
1,500 ft. rails (20 lb. to yard) 50 splices, 200 ties, also spikes					
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31 1/2 bbls. manganese, about 800 lbs. per bbl.					
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1343 in. x15 ft. boiler flues. 13 3in. x12ft. boiler flues.					
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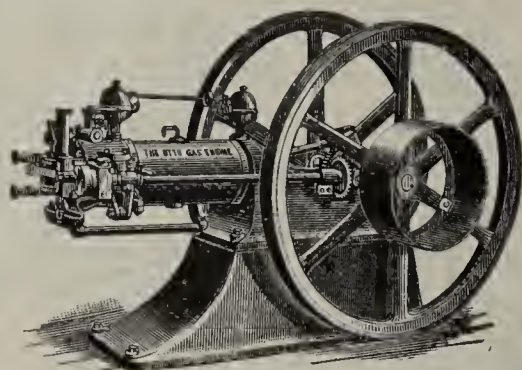
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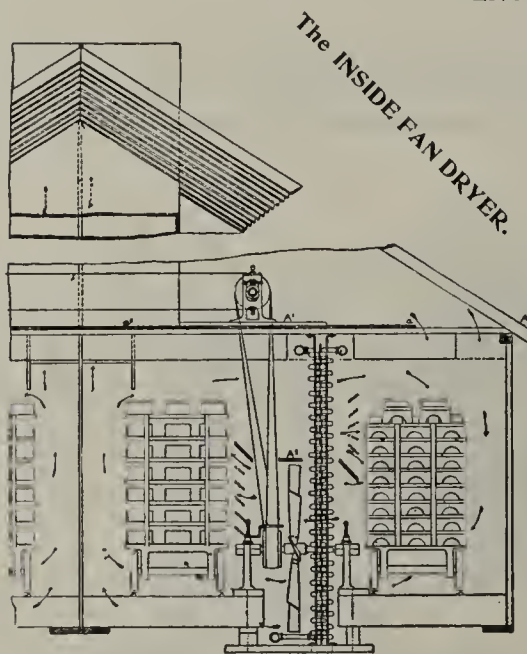
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Solid "Air Dried" Bricks Easily Secured in From Five to Ten Hours, Saving Attendance and Use of Live Steam at Night.



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British Pat. Mar. 31, 1891. No. 5,520.  
Canadian Pat. May 30, 1892. No. 39,025.  
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This "Air Surface Condensation" wastes no heat (as in water cooling), because the air that cools the pipes is used for drying.

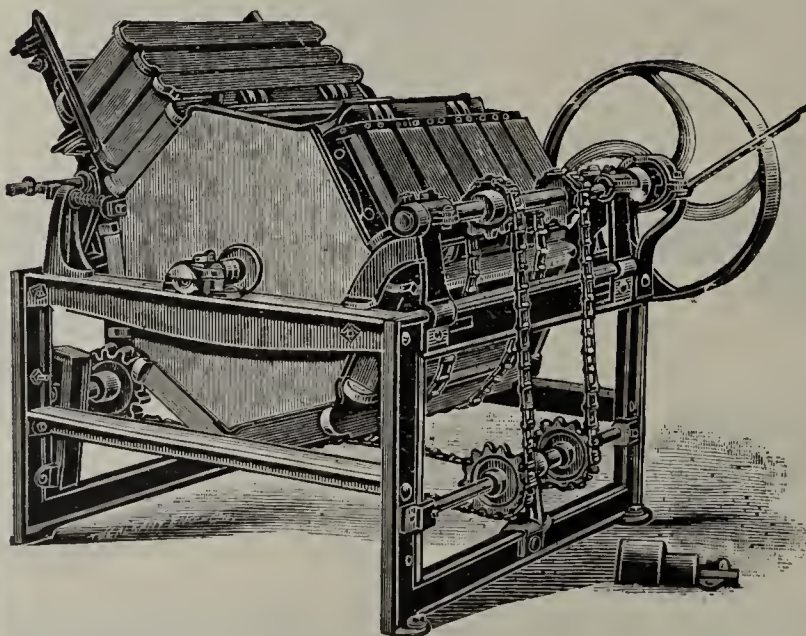
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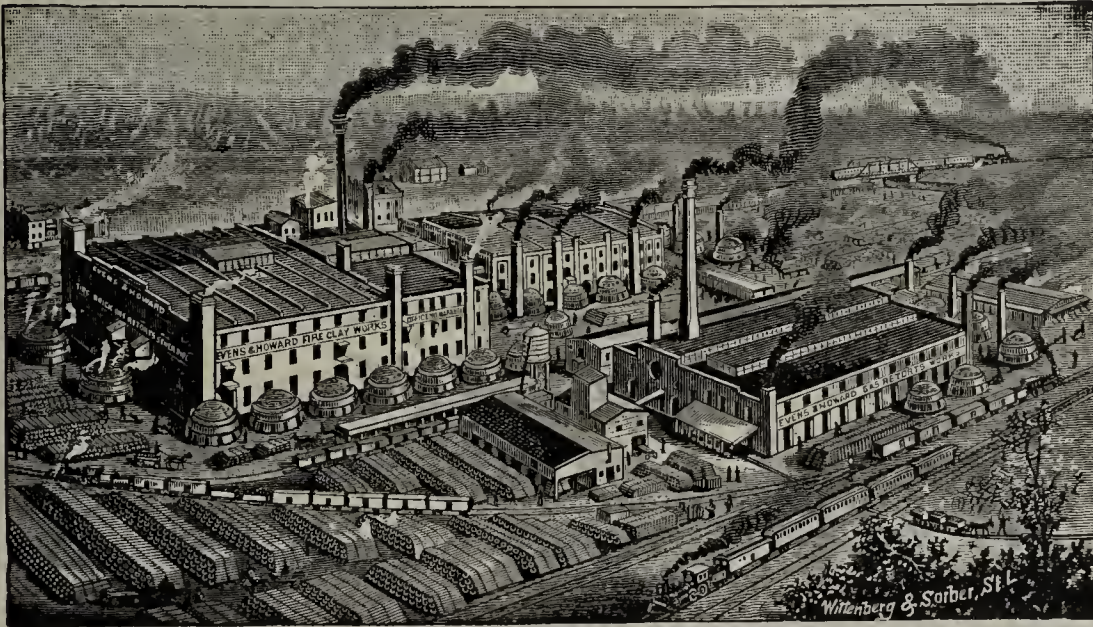
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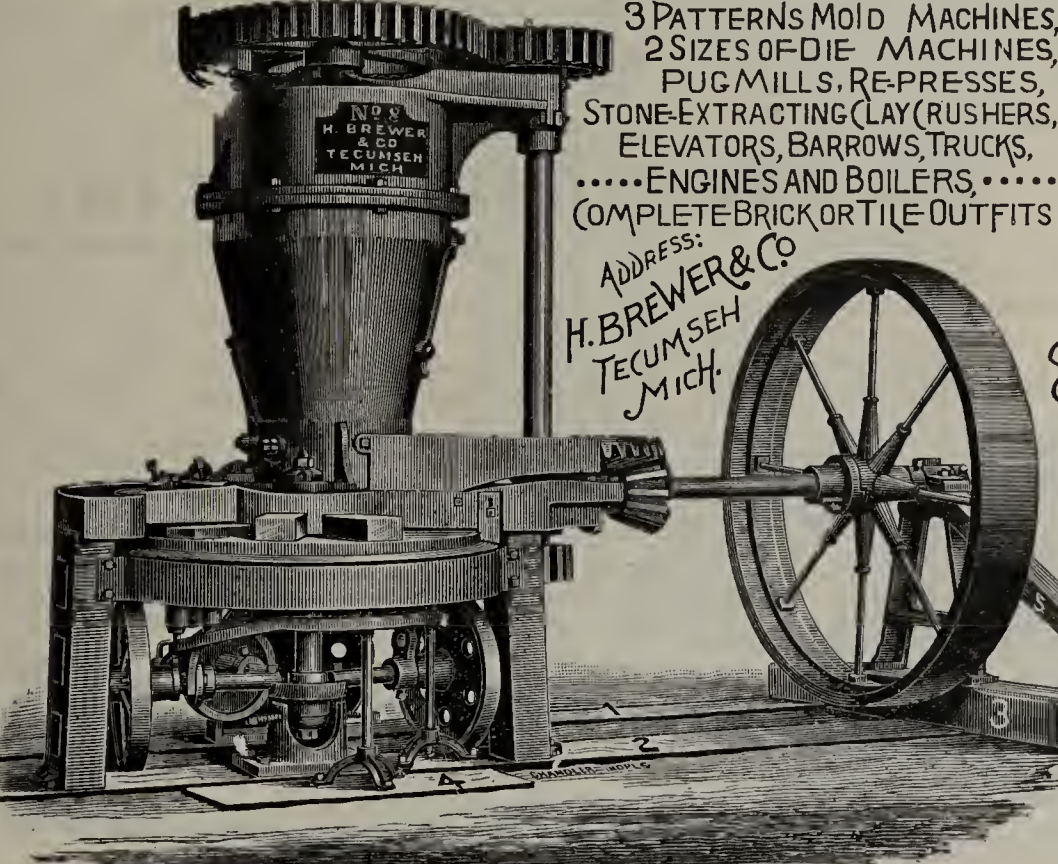
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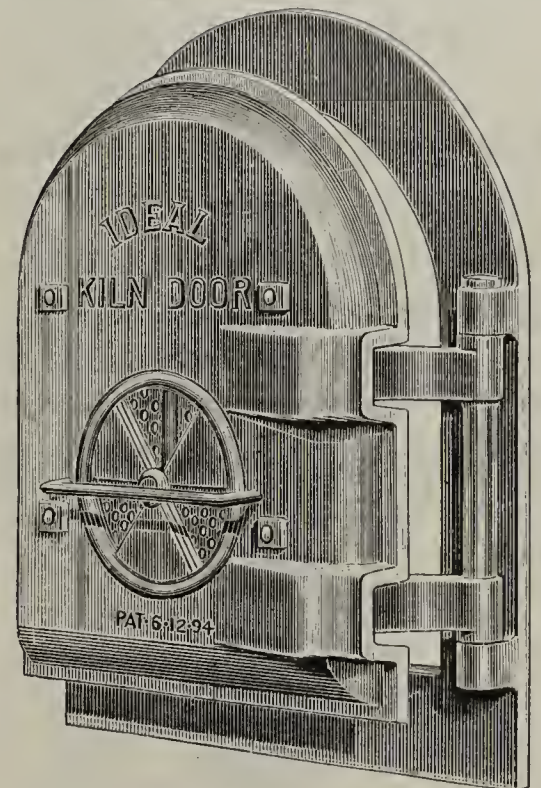
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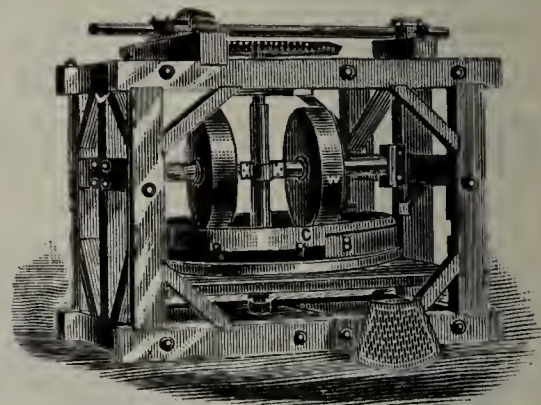
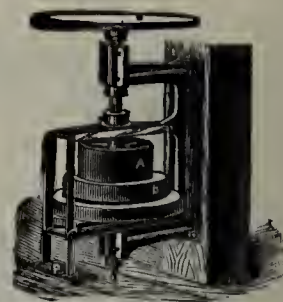
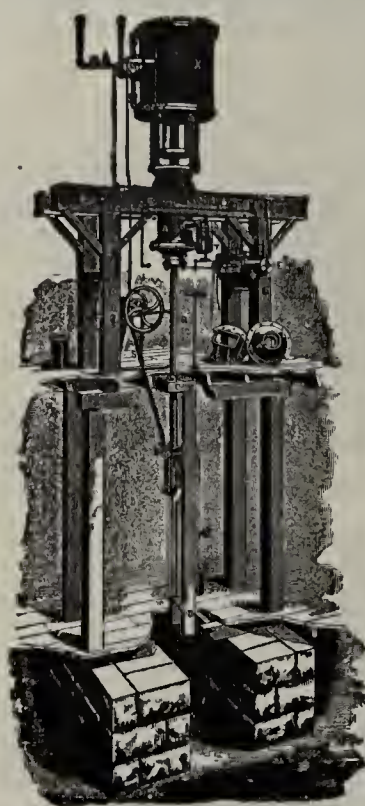
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General Machinists.

Clayworking Machinery a specialty.

Builders of Double Acting, Direct Steam, Brick Press.



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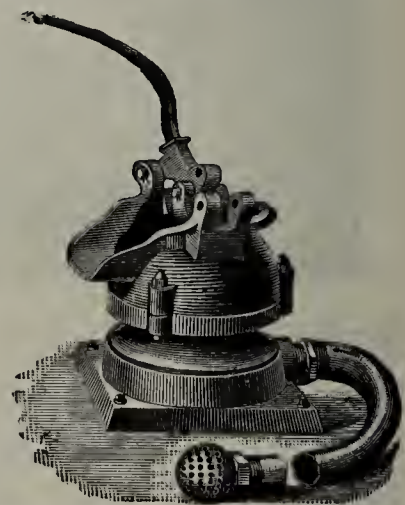
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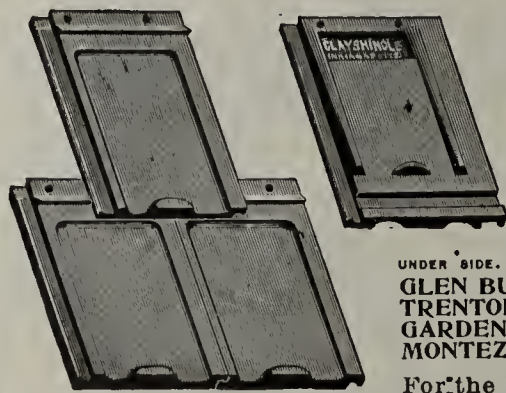
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Steam and Horsepower.

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These machines are sold on their merits, guaranteed to do first-class work.

Brick moulds for hand and machine a specialty.

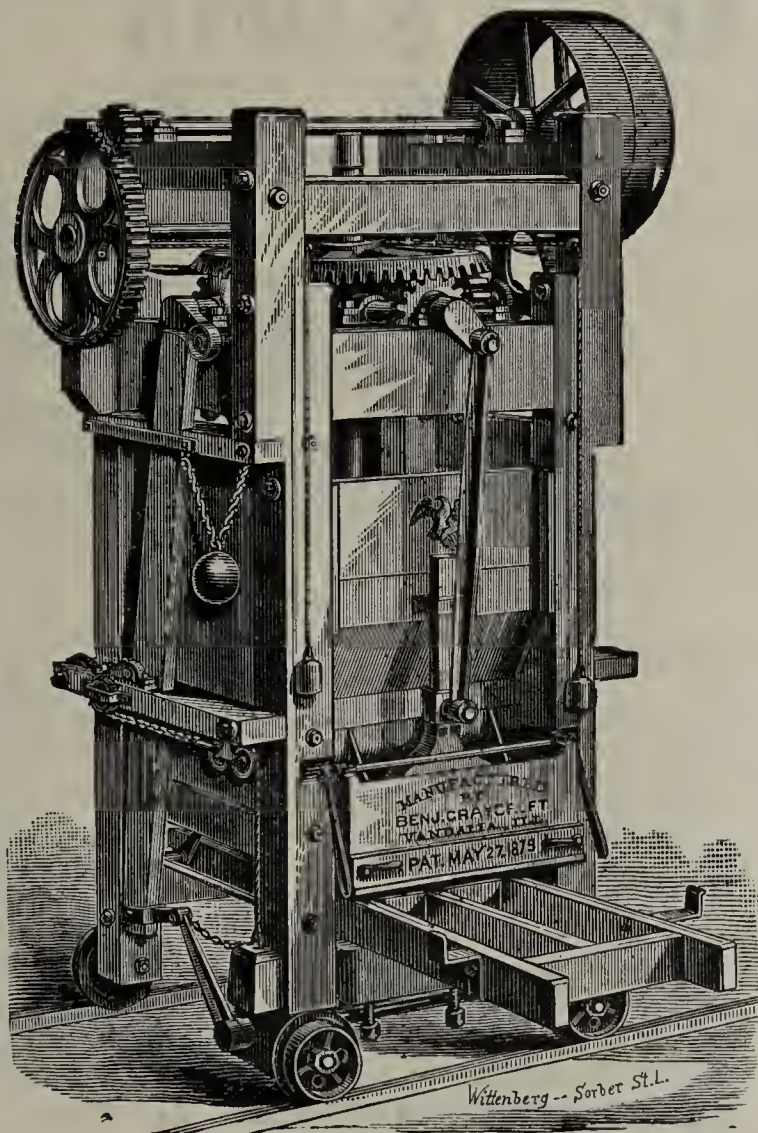
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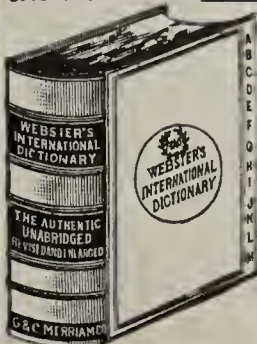
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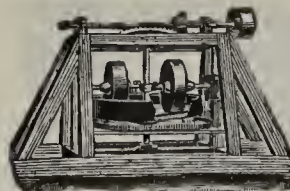
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The Baltimore and Ohio Southwestern Railway has arranged a series of Home-Seekers' excursions to points in Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi and Louisiana at one fare for the round trip.

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Direct connections to and from all points in the United States and Canada. Trains arrive and depart from the Indianapolis Union Station as follows:

### DEPART.

No. 20 Passenger..... 7:05 a. m.  
\*No. 22 Passenger..... 1:20 p. m.  
No. 24 Passenger..... 7:00 p. m.

### ARRIVE.

\*No. 21 Passenger..... 10:30 a. m.  
No. 23 Passenger..... 2:50 p. m.  
No. 25 Passenger..... 6:20 p. m.

Trains not marked run daily except Sunday \*daily, †daily except Saturday.

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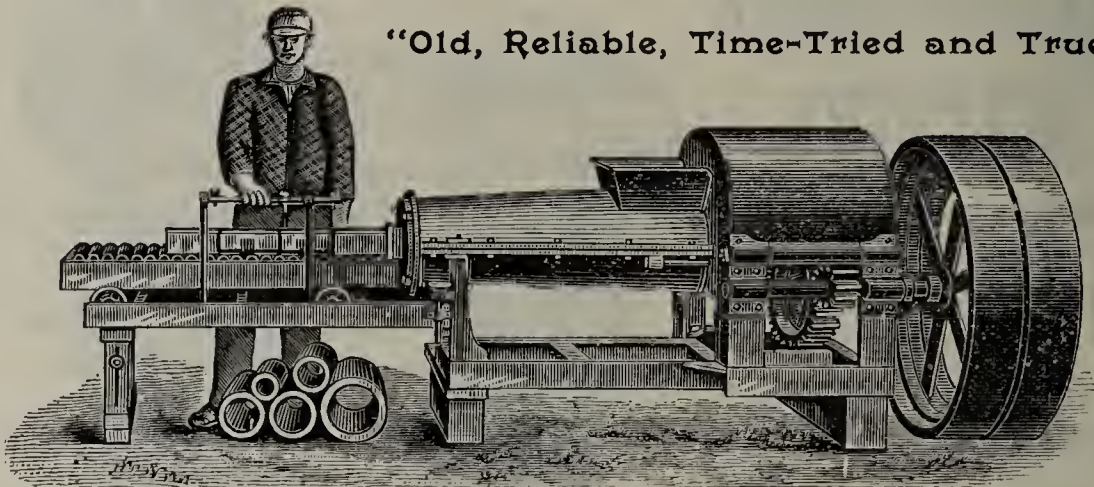
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### P. H. Kells, the Original Inventor of the Auger Machine.

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We have made an improvement on our No. 1 Machine by which we can make tile from 3 inches up to 12 inches and on our No. 2 Machine we can make tile from 2½ up to 10 inches.

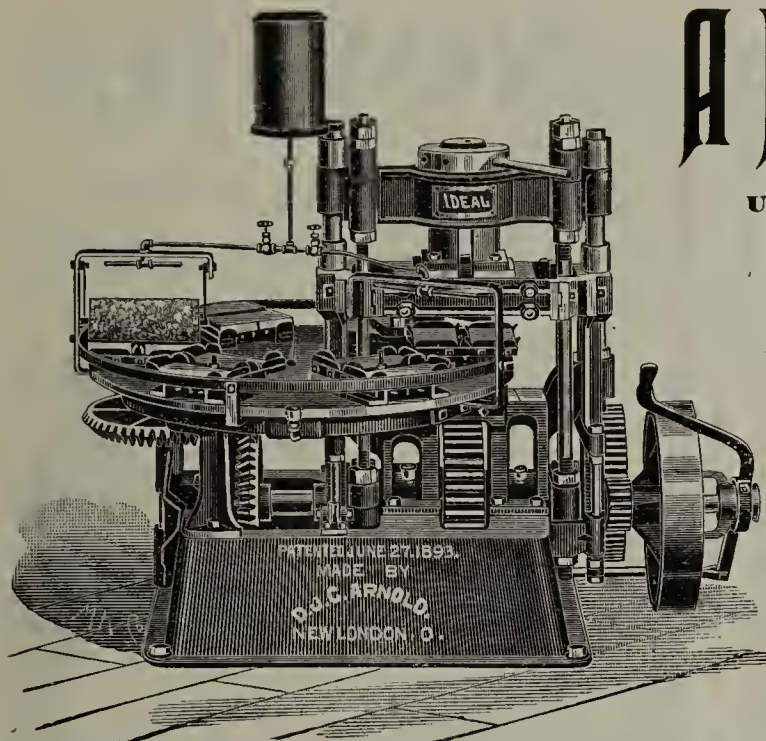
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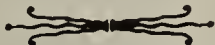
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ORIGINAL IN DESIGN.

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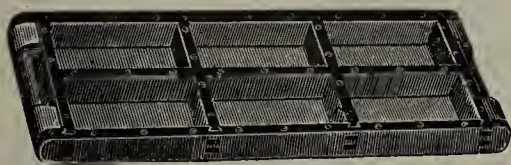


## BRICK MOULDS.

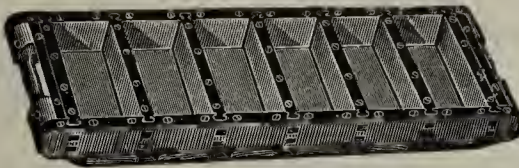
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6 Brick Hand Mold.



6 Brick Machine Mold.

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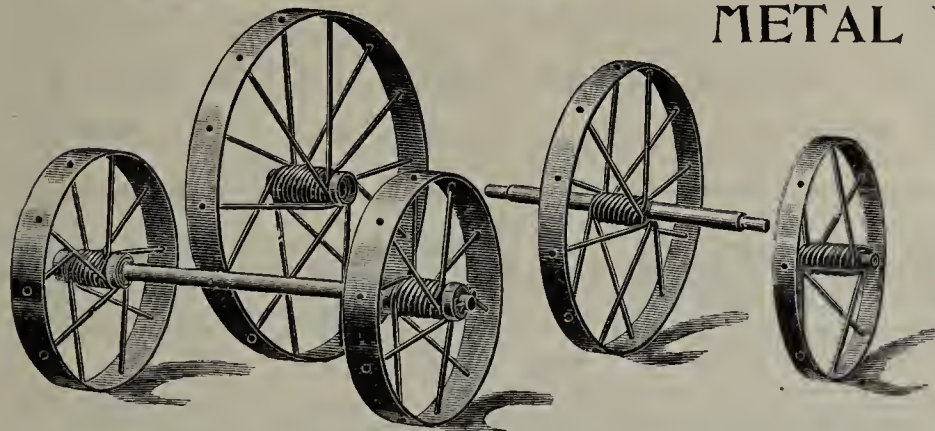


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About the same  
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## METAL WHEELS.



Specially adapted to  
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OUTPUT UNIFORM AS TO TIME  
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The fires remain in one division ONLY  
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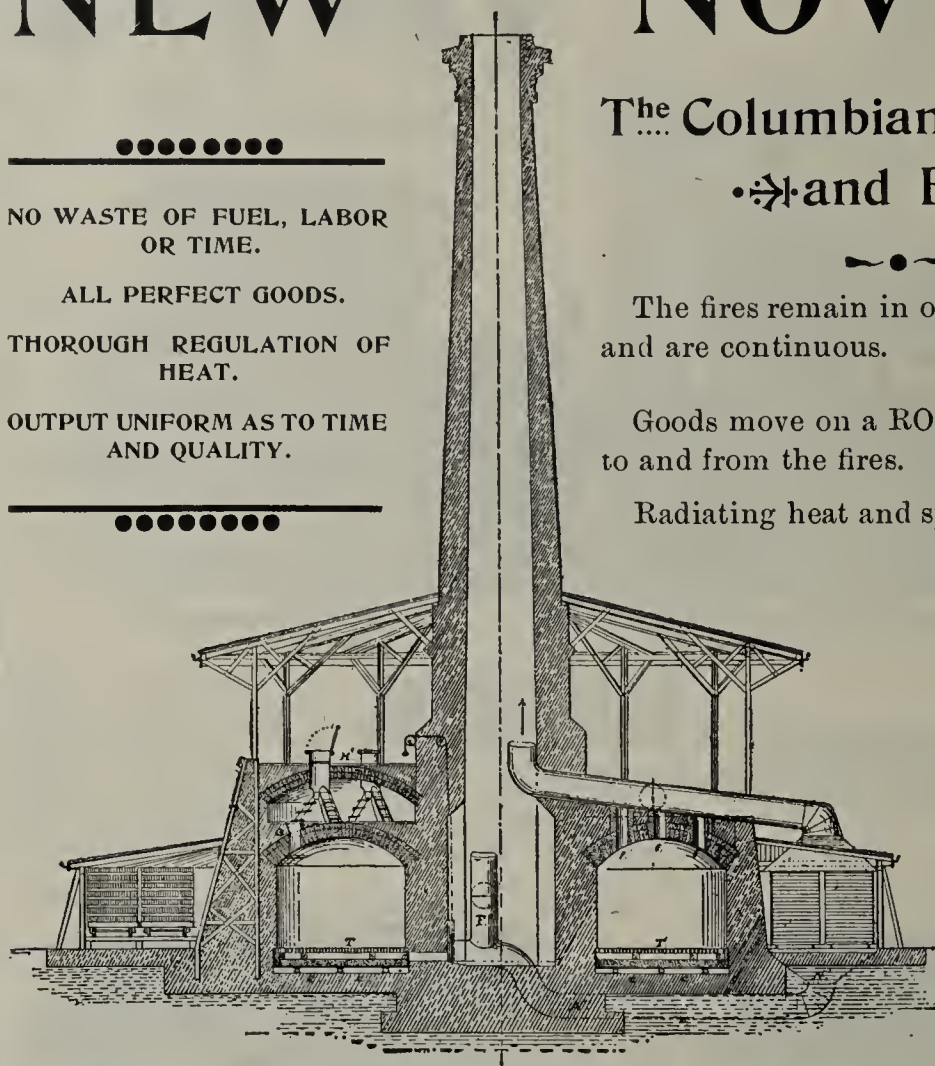
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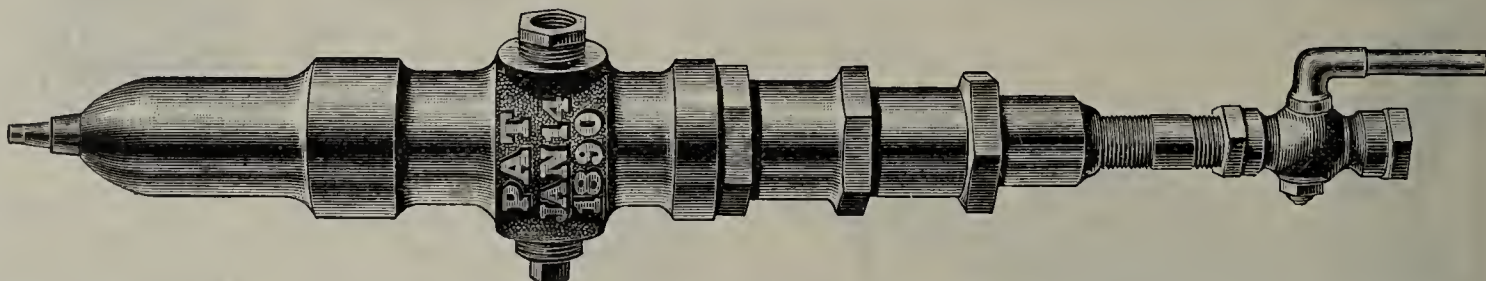
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## PATENT (ADJUSTABLE) OIL BURNER

Office Waters Pierce Oil Company.

HYDRAULIC PRESS BRICK CO., CITY. St. LOUIS, July 21st, 1894.

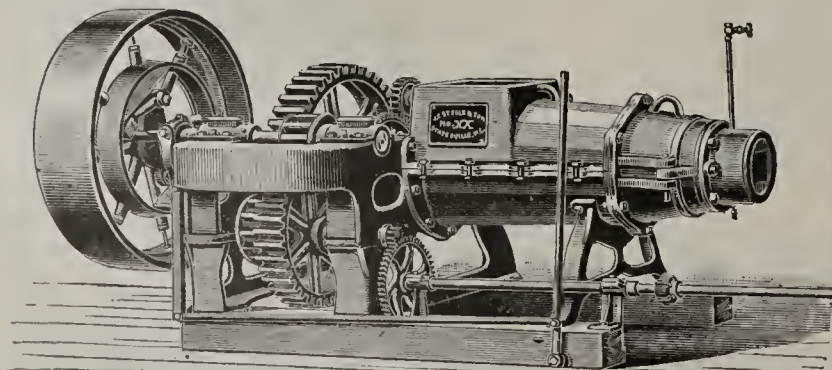
GENTLEMEN:—Thinking you would like to know, we advise you  
that the Graves Patent Fuel Oil Burner furnished us by you, effected  
a saving of about 16 per cent. in consumption of fuel oil over other  
burners we have been using and experimenting with. We will take  
pleasure in saying a good word for it whenever opportunity permits.  
Yours truly, (Signed) A. M. FINLAY, Vice-President.

Used by Hydraulic Press Brick Companies at Findlay, O.,  
Chicago, Ill., Toledo, Ohio, Waters Pierce Oil Co., (Standard),  
St. Louis, Mo., and others.

For particulars write

HYDRAULIC PRESS BRICK CO.,

The Best and Most Economical Burner in the Market. ST. LOUIS, MO.

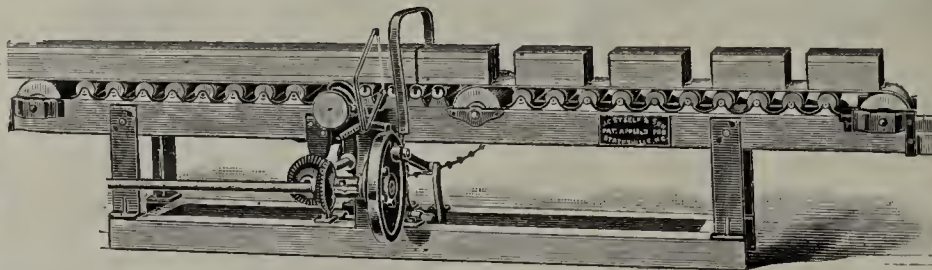


The New South XX.

[Mention the CLAY-WORKER.]

## THE NEW SOUTH

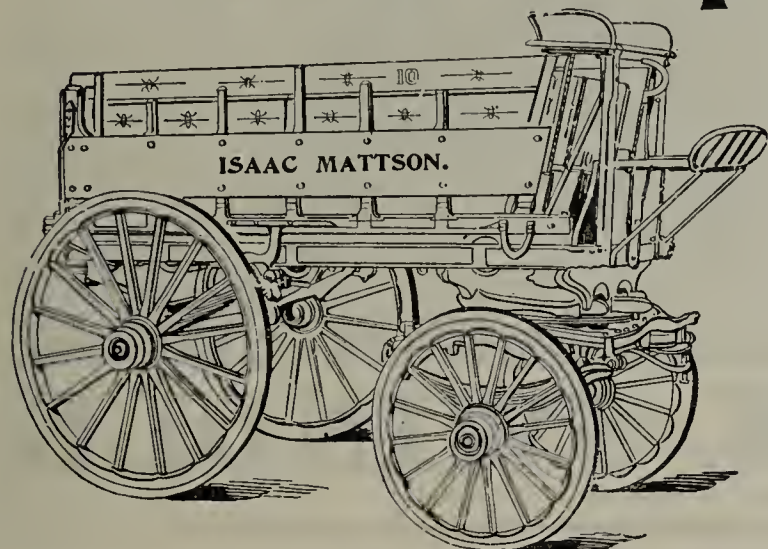
Write to us for catalogue and prices of our New  
South X and New South XX with or without our  
novel Automatic Cutting Table, and Steam Dies,  
also Winding Drums, Clay Cars, Crushers, Switch-  
and Frogs, and our Improved Brick Truck or other Brickyard Supplies, Etc.



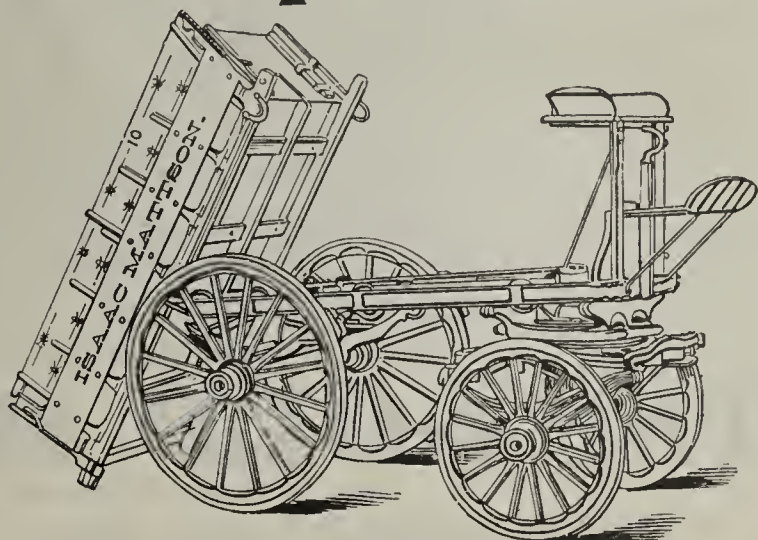
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# Mattson's Improved Dump Wagons



FOR  
BRICK,  
STONE,  
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SAND,  
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WEIGHT about 2,500 pounds, light running, strong and durable, consequently the best wagon made for brick. Made to carry from 1,000 to 2,000 brick and can be handled as easy as a two-wheel dump cart. The body runs back on rollers. Also manufacture a line of carts, wheelbarrows and brick yard supplies. Send for price list, etc.

**ISAAC MATTSON, Wagon Builder,** Northeast Corner Gray's Ferry Road and 30th St., Philadelphia, Pa.

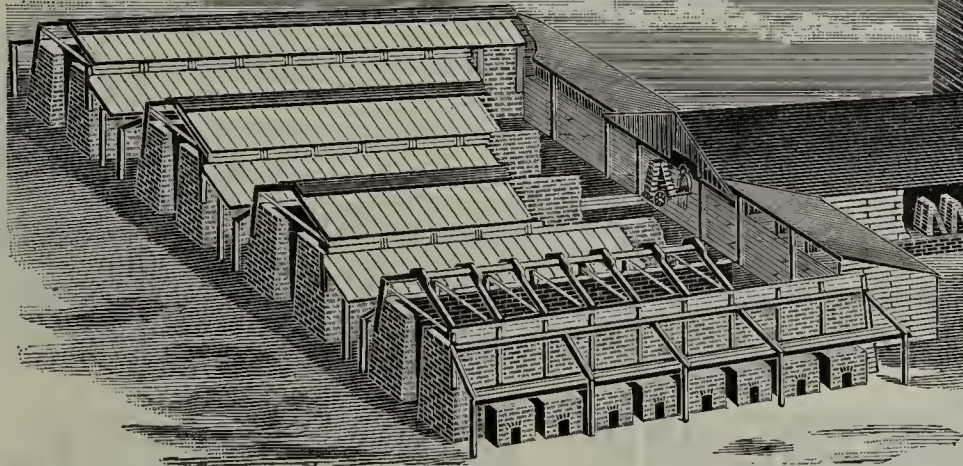
## The Mock Portable Rack and Pallet System <sup>FOR HANDLING BRICKS.</sup>

The Most Expeditious, the Safest and Easiest Method of Handling Brick from Machine to Kiln.

**IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.**

What Users say of the  
MOCK SYSTEM.

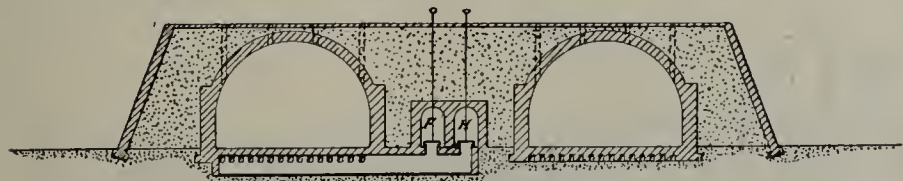
Mr. J. C. Adams, Indianapolis, Ex-Pres. of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for four seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."



WE are prepared to furnish complete plans and specifications for the erection of brick works of any desired capacity and solicit correspondence from those desiring further information relative to our system of handling brick.

**MOCK BROS., Muncie, Ind.**

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**Marks a Great Advance in the Art of Continuous Burning**

Accuracy of results reduced to a certainty.  
Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.  
Under ordinary circumstances the kiln pays for itself in six months.  
Do not decide on kilns before making a thorough investigation.  
Choose a kiln that is fully guaranteed as to results.  
Read what some of the users say about Youngren's Continuous Kiln and be convinced.

**PETERSEN BRICK COMPANY,  
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Yours truly

SAN JOSE, Cal., Aug. 25, 1893.

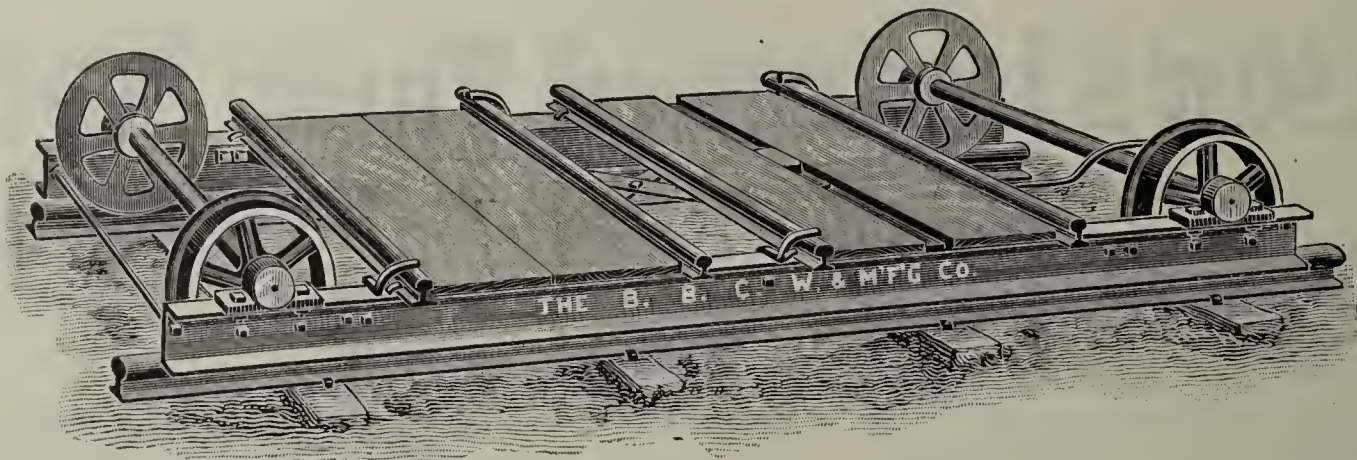
PETERSEN BRICK CO.,

Per H. M. STAMMER, Superintendent.

For particulars address

**P. L. YOUNGREN, Oakland, Cal.**





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# The GOLD BRICK SWINDLE

Has no more reason to kick himself than the man who buys

Cast Iron Brick Drier Cars.

Be wise and  
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**ALL STEEL CARS,** Strongest,  
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Please mention The Clay-Worker.

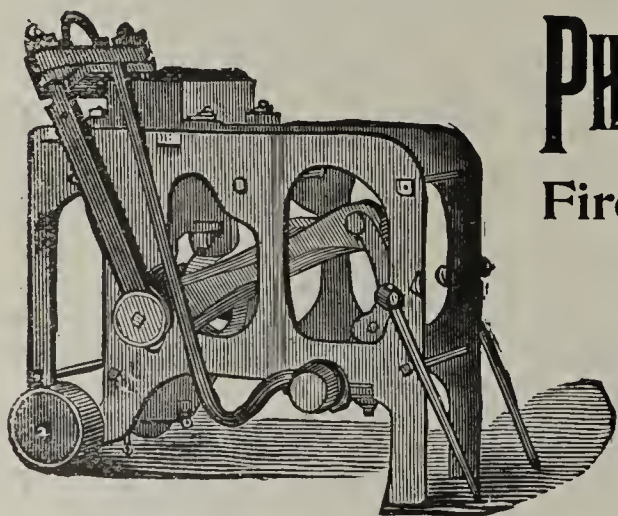
**Brick Machines,  
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...OF THE **L**ATEST  
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COMPLETE OUTFITS A SPECIALTY.

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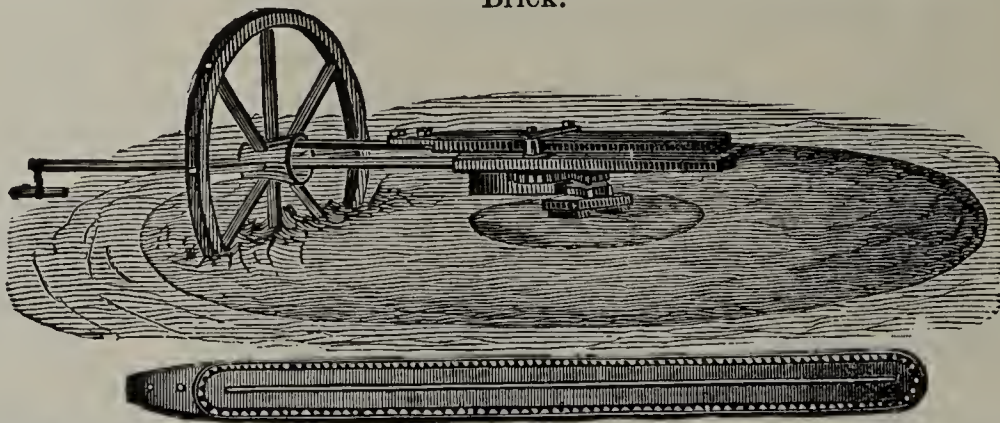
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Fire and Red Brick Presses all sizes.

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Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red  
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These Tempering Machines can be driven either by Steam or Horse Power. The latest improve-  
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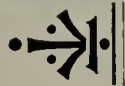


# The BOSTON BRICK ASHLAR.

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

ROCK FACE.

TOOLED FACE.



FISKE, HOMES &amp; CO., Boston.

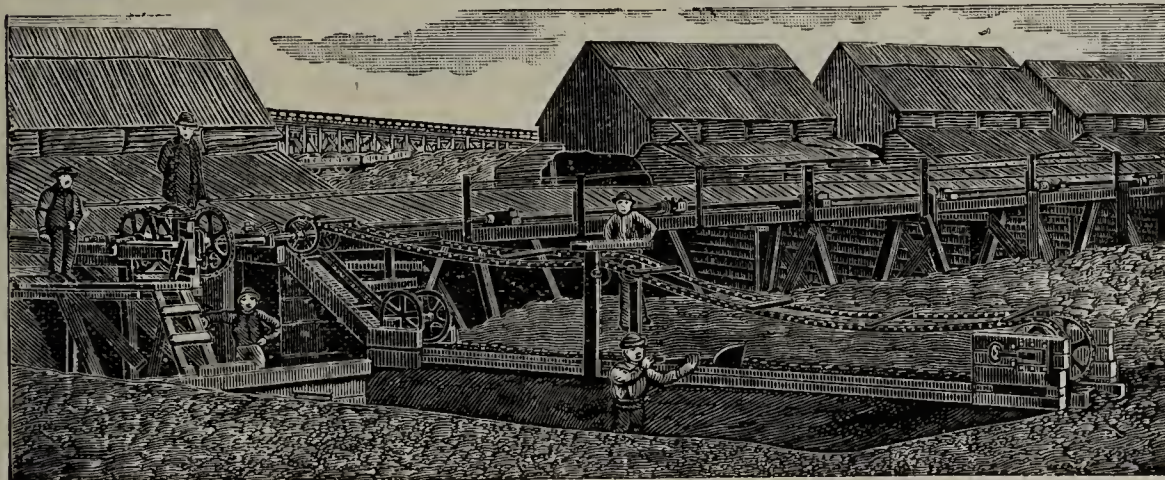
NORTHWESTERN TERRA COTTA CO., Chicago.

LICENCEES.



Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed at a glance by every practical brickmaker.



Mey Patent Clay Elevator.

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### Elevating, Conveying & Transmission of Power

64 to 68 Columbia St., BUFFALO, N. Y.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

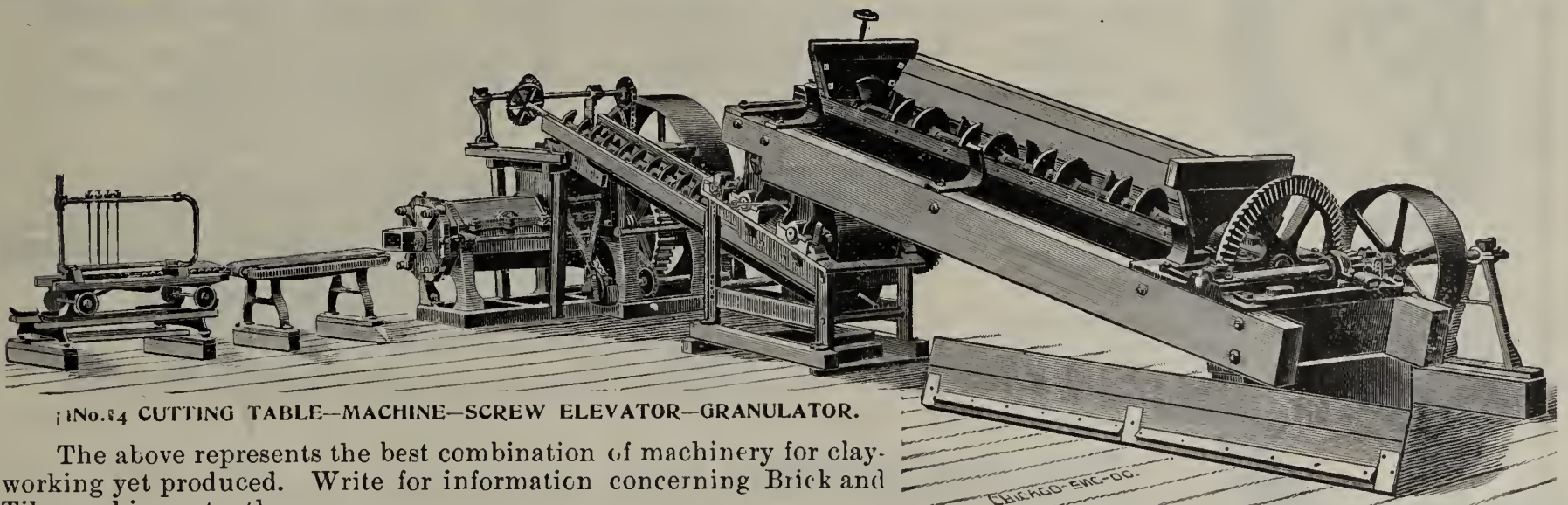
### Make Many More Thousands

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
PRICE LIST.



# ADRIAN BRICK AND TILE MACHINE CO.



No. 14 CUTTING TABLE-MACHINE-SCREW ELEVATOR-GRANULATOR.

The above represents the best combination of machinery for clay-working yet produced. Write for information concerning Brick and Tile machinery to the

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STEAM ENGINES.  
STEAM BOILERS,  
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If so, don't forget that we furnish forms and molds for all shapes. Our molds are all made to gauges, and are interchangeable. Send us cuts of the shapes wanted, and we will mail you prices on same. All work guaranteed.  
Send for Catalogue.

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DESIGNERS AND MANUFACTURERS OF

Special Machinery and Tools for all Purposes.

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PRESSES AND DIES FOR  
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SHEET METAL WORK.

DRY BRICK PRESSES,  
SINGLE RE PRESSES,  
DOUBLE RE-PRESSES.

## THE STANDARD BRICK MACHINES

MANUFACTURED BY

# A. M. & W. H. WILES,

Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



# BRICK

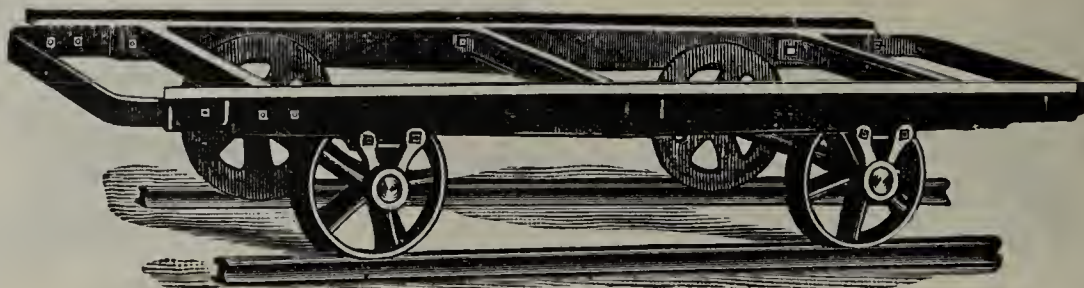
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Also  
Turn Tables,  
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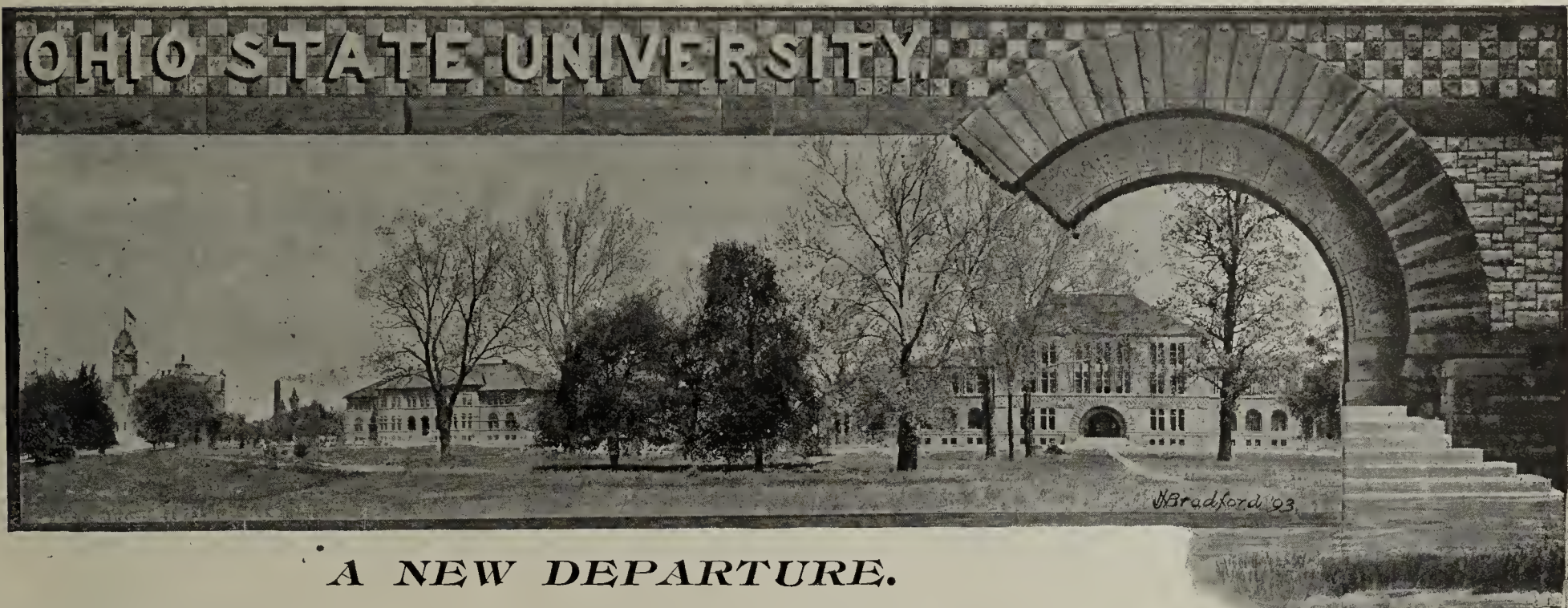


STYLE 25.

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## A Technical School for Clayworkers,

WILL BE OPENED SEPTEMBER 12, 1894.

Education such as is most suited to the needs of all classes of clayworkers, with special provisions for teaching the chemistry and theory of clayworking.

**TUITION FREE. EXPENSES LOW. ADMISSION EASY.**

Write for circulars and information to

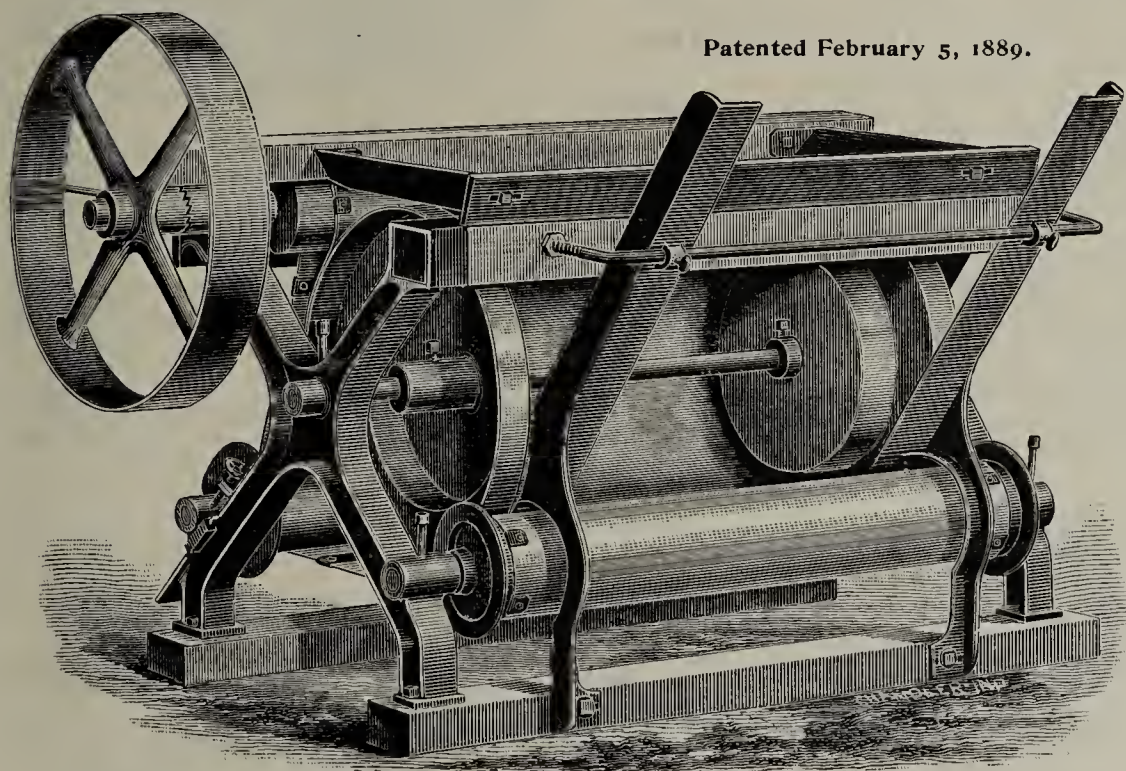
Prof. EDWARD ORTON, Jr.,

Ohio State University, COLUMBUS, OHIO.

Director Department Ceramics and Clayworking.

## The Potts Mould Sander.

Patented February 5, 1889.



Conrad Clippert & Son,

MANUFACTURERS OF

**STOCK BRICK.**

Detroit, Mich., June 11, 1894.

C. & A. POTTS & CO., Indianapolis, Ind.,

Gentlemen:—You will please find a draft for \$— in payment for the two sanders. We have run these two machines almost a month, and can say they do all you claim for them, for which we are very much pleased, and would not be without them.

Yours truly,

C. CLIPPERT & SON.

We claim this sander will sand the moulds better than can be done by hand, that it does not waste or spill the sand that a sixteen year old boy can operate it. It is simple in construction, strong and durable.

**C. & A. POTTS & CO.,**

Mention CLAY-WORKER.

Indianapolis, Indiana.



# THE BEST KILN ON EARTH.

Is none too good, and for that reason, if your wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has **MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.**

Read the following testimonial, then come and judge for yourself:

ST. LOUIS, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

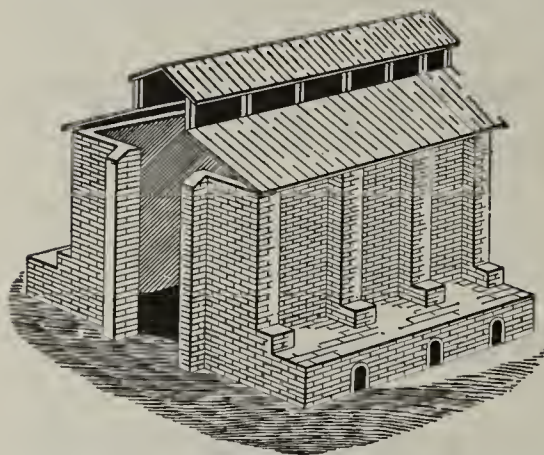
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

WM. & S. H. ALSIP,

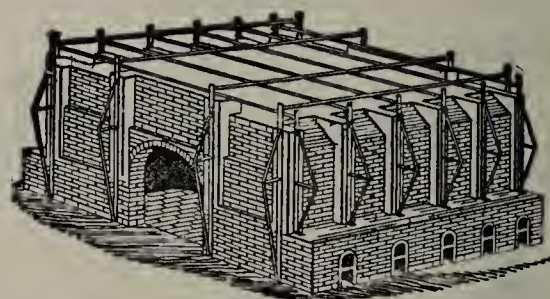
[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.



## LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be **THE BEST KILN IN THE MARKET.**

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns.

I do not hesitate in offering it as the

**MOST DURABLE, COMPLETE AND EASILY MANAGED**

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

.. .. VITRIFIED PAVING BRICK. .. ..

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

### TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, Mo., July 17, 1892. }

H. REPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }  
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,  
COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

LOUIS H. REPELL,

1,913 Indiana Ave.

KANSAS CITY, MO.



# IMPORTANT IMPROVEMENTS

## IN BURNING ALL KINDS OF BRICK.

**B**RICKMAKERS before deciding upon putting in new kilns or altering old ones, should write to the following address for information. We control the Patents of the **W. A. WILFORD** which holds the lead, also, our Up and Down Draft to meet the requirements of They can be built for one half the cost of any other kiln of the same capacity, and, ness and color, and with from 50 to 75 per cent. less fuel. Easy and simple to handle, by the burner while burning, therefore, leaving no excuse for bad burns. Results The leading Brickmakers are using our Kilns with complete success. Our charges builders and burners for same.

should write to the follow-  
**CONTINUOUS KILN**,  
all Brick and Tilemakers.  
burns all of uniform hard-  
as every brick can be seen  
are guaranteed or no money.  
are low. We keep expert

OFFICE OF

**BRUSH BROS.,**

MANUFACTURERS OF

**ALL KINDS OF BUILDING BRICK.**

OFFICE: No. 2 Builders' Exchange.

WORKS at East Buffalo.

Wilford Patent Kiln Co., Toronto.

W. A. Wilford, Man.

DEAR SIR:—Having seen your Kilns in operation, which, in our opinion, meets the requirements of Brickmakers in bringing out uniform burns, with a small amount of fuel, we have decided to put in one of your large size kilns, and herewith enclose order for same, with the amount charged, and ask you to come on at once, and superintend erection of same.

Yours truly,

**BRUSH BROS.**

Write us for Information and Testimonials.

**The Wilford Patent Kiln Co.,***Correspondence Solicited.***TORONTO, CANADA.**

# The KAUL Continuous Brick Kiln.

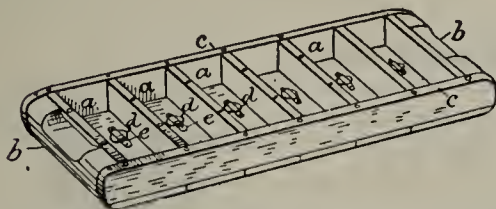
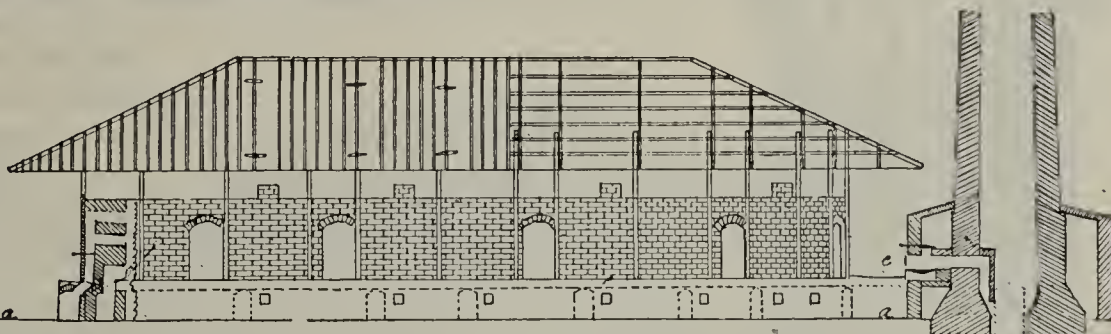
Patented March 23, 1892.

**T**HIS Kiln can be erected at less cost than any other continuous kiln. It can be made of any desired capacity and is suitable for any kind of a yard.

Parties who contemplate the putting in of any new kiln, should not fail to correspond with me. In corresponding, state the capacity of the yards, and I will furnish an estimate of the material which is necessary to the erection and the cost.

This Kiln has been in use the past year and has proven a success in every respect. It will burn the brick evenly from top to bottom and from side to side. It saves labor, and fuel—coal or cord wood.

I cordially invite parties who contemplate any improvement in their brickyard to see this Kiln in operation at my yards in Madison, Nebraska. It will be in operation from May 15th until late in October of each year.

**KAUL'S PATENT BRICK MOLD**

Something New, Practical and Profitable.

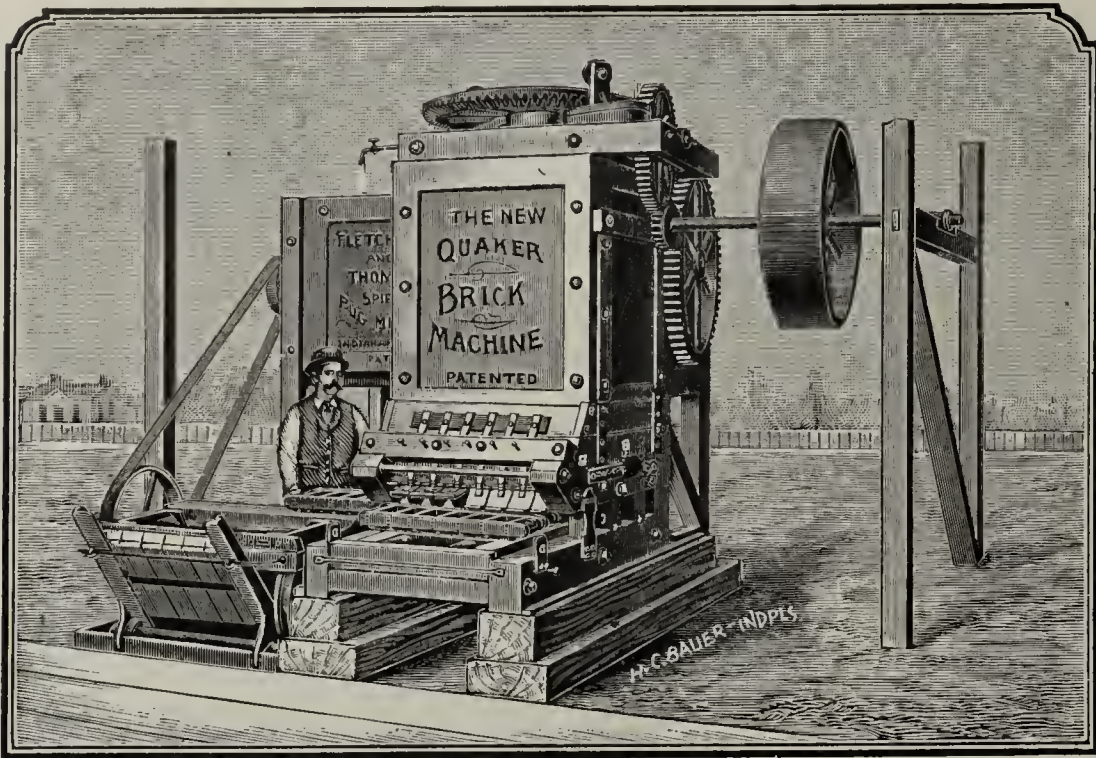
In the bottom of each chamber of this mold is a valve by which air is admitted when emptying the mold. Thus the brick leave the mold freely, insuring better edges and truer brick. It not only admits of more rapid and better work, but saves a great deal of sand which cannot run through the bottom as in the old way. It keeps the slats or rollers of

machine clean as it also does the table when molding by hand. By the use of this mold brickmakers can improve their product and save time and money. For full particulars, etc., etc., address

**CARL F. KAUL, Madison, Neb.**

Mention the Clay-Worker.]





EXTRA HEAVY, COMBINED OUTFIT CAPACITY 40,000 TO 50,000 PER DAY.

LATEST IMPROVED  
**Brick Machinery and...**  
**Brickmakers' Supplies.**

SPECIALTIES:

The NEW QUAKER and MONARCH

Tempered Mud Machines and

The NEW DAYTONIAN

Stiff Mud Brick and Tile Machines.

Paving Brick, Fire Brick, Building Brick, Repress Machines, Disintegrators, Pug Mills, Mold Sanding Machines, Molds, Barrows, Trucks, Engines, Rollers, Shafting, Pulleys, Belting, etc., Dump Brick Wagons, Clay Carts, Kiln Doors, Grate Bars, Steam Pumps.

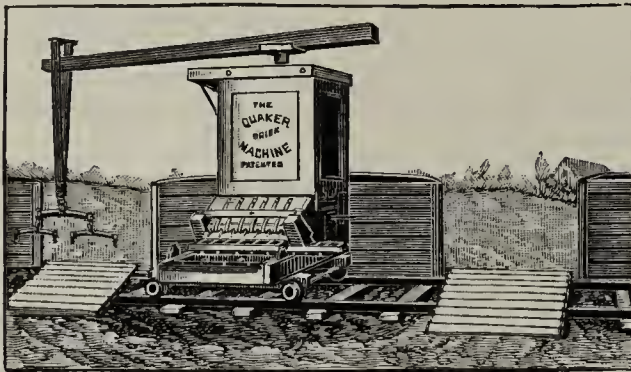
THE NEW MODEL

**QUAKER**

HORSE POWER.

The best machine for the man of moderate means ever used.

Capacity 15,000 to 20,000 per day.



WE CONTRACT TO ERECT AND EQUIP

PLANTS COMPLETE IN EVERY DETAIL.

Send for Illustrated Catalogue and Special prices before placing your order, as we can save you money.

**S. K. FLETCHER,** General Agent,  
Successor to FLETCHER & THOMAS,  
INDIANAPOLIS, IND.



# "Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours, I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our class of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

**MAIN BELTING CO.,**

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

**Thompson's Water-Proof Belt Dressing for**  
**Leather, Rubber and Canvas Belting.**

No user of Belting can afford to be without it.





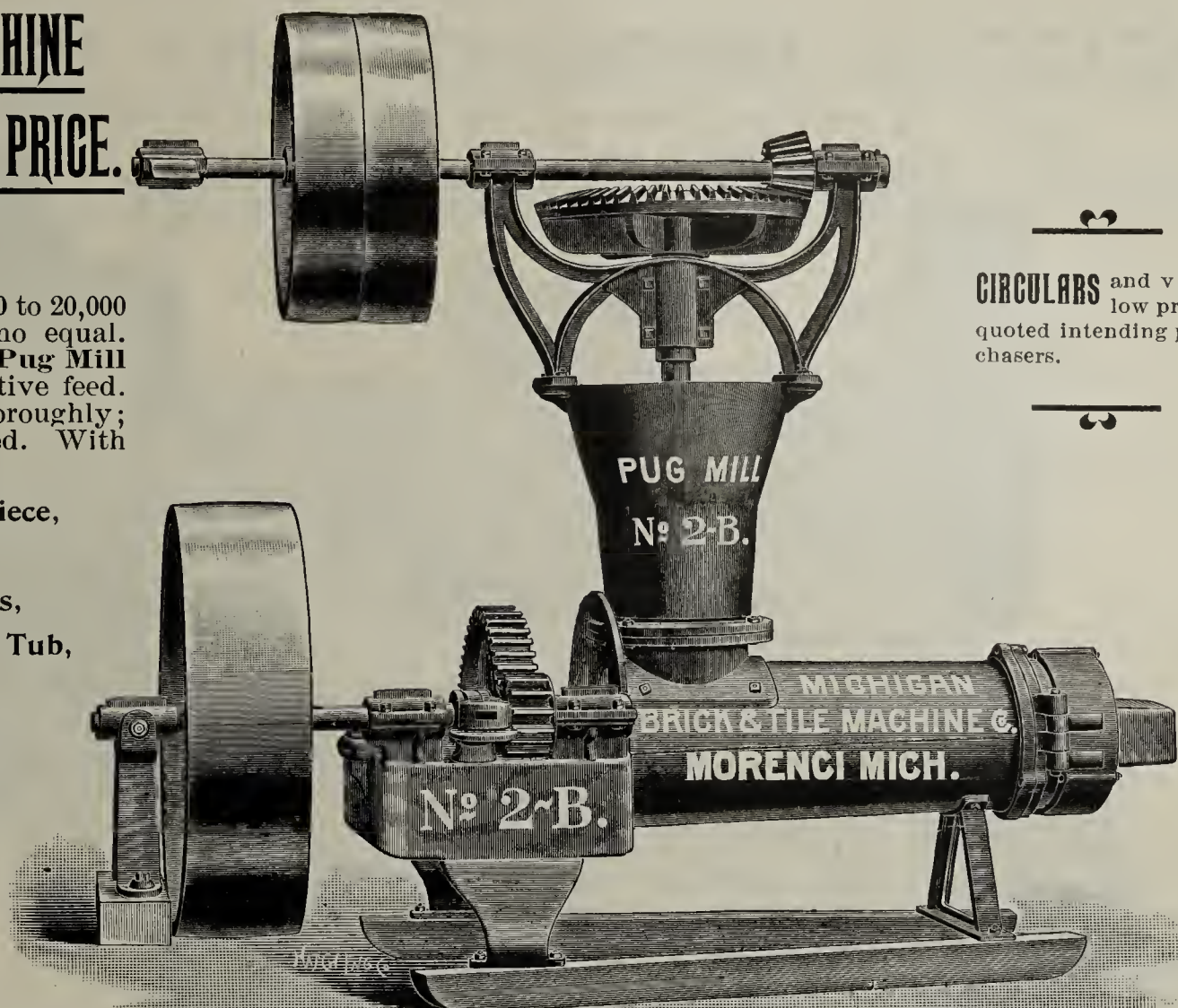
## A SMALL SIZED MACHINE AT A VERY LOW PRICE.

FOR a daily output of 12,000 to 20,000 first class brick it has no equal. For tile it is superior. With Pug Mill as shown in cut it has a positive feed. Mixes and pugs the clay thoroughly; making the output unexcelled. With

Safety Hinged Nose Piece,  
Steel Shafts,  
Extra Long Bearings,  
Solid Main Frame and Tub,

And many other important improvements; it is a very desirable machine to have. Address the Manufacturers,

MICHIGAN BRICK AND  
TILE MACHINE CO.,  
Morenci, Mich.



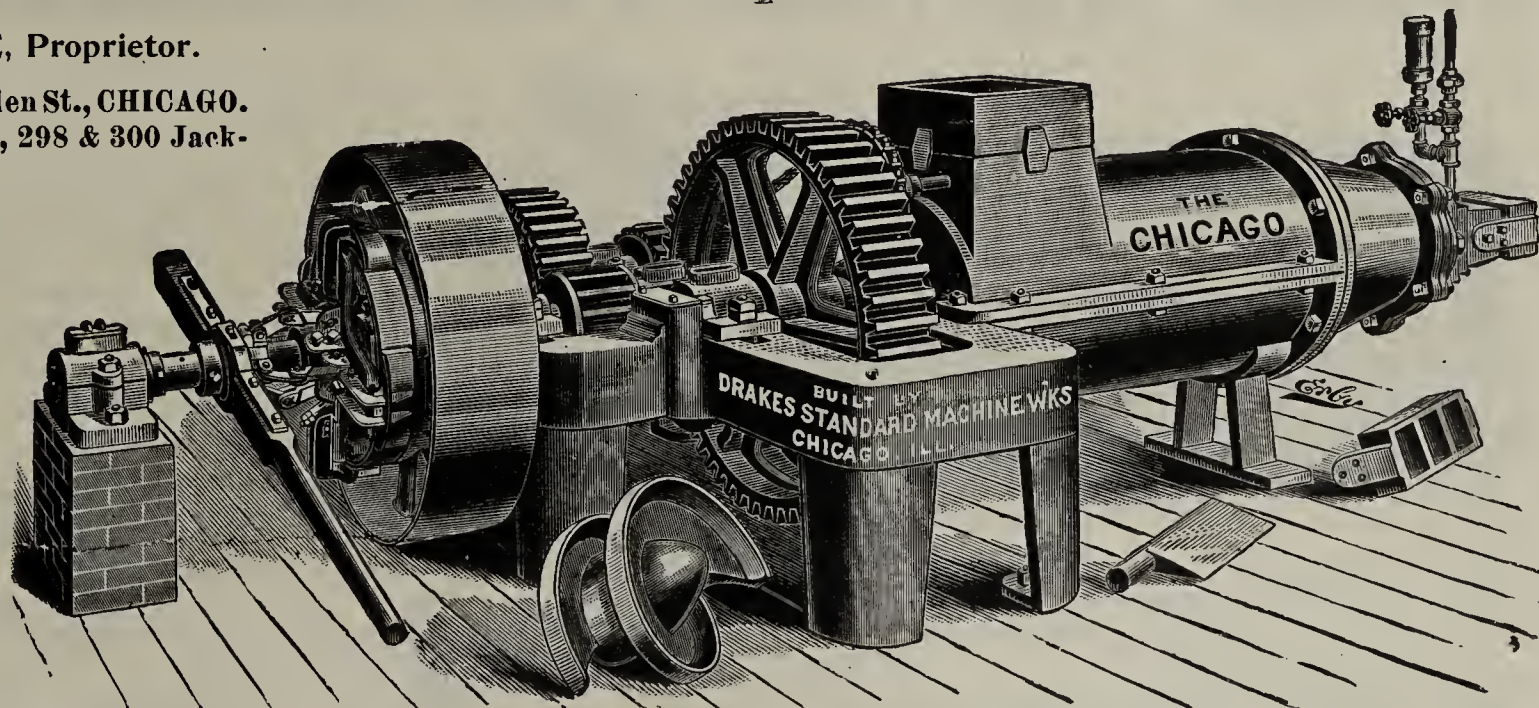
CIRCULARS and very low prices quoted intending purchasers.

# DRAKE'S STANDARD MACHINE WORKS,

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY.

C. T. DRAKE, Proprietor.

Factory, 7 & 9 Garden St., CHICAGO.  
Office & Salesroom, 298 & 300 Jackson Boulevard.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 50,000 brick per day. Surpassed by none. References: Turner Brick Co., Turner, Ill.; John Mooney, Highland Park, Ill.; A. H. Maynard & Son, Waukegon, Ill.; Myers & Toll, Chicago, and others.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, CLAY CRUSHERS, HAND REPRESSES, ETC., ETC.

Our "GRANULATORS" are the leaders in Chicago. So says Alsip Brick Co., who are running 11 Granulators; also Hayt & Alsip May, Purington & Bonner Brick Co.; Purington-Kimbell Brick Co.; Purington Brick Co., and many others.

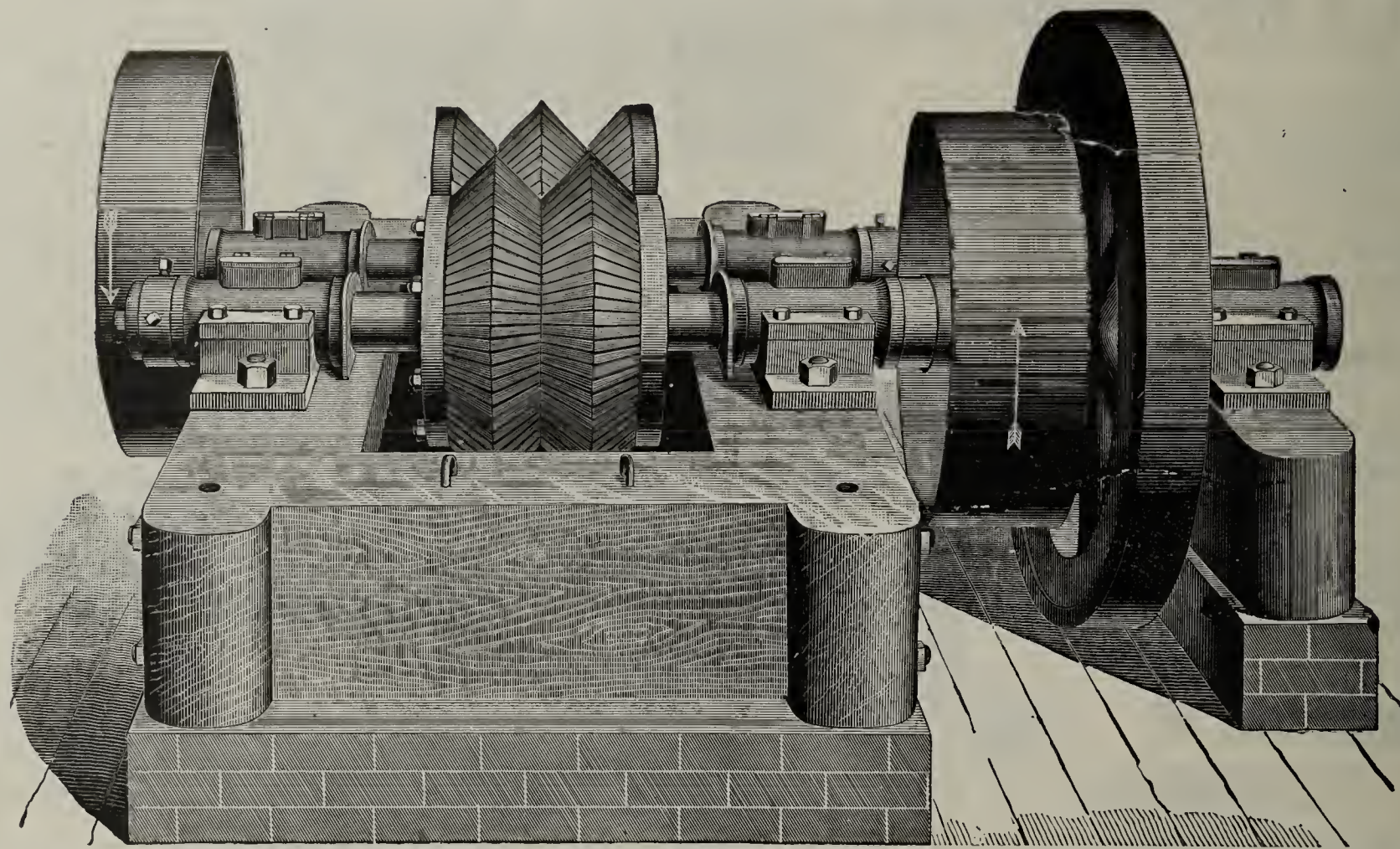
**PRICES REASONABLE.**

**CORRESPONDENCE SOLICITED**



# NEWELL IMPROVED CLAY PULVERIZER

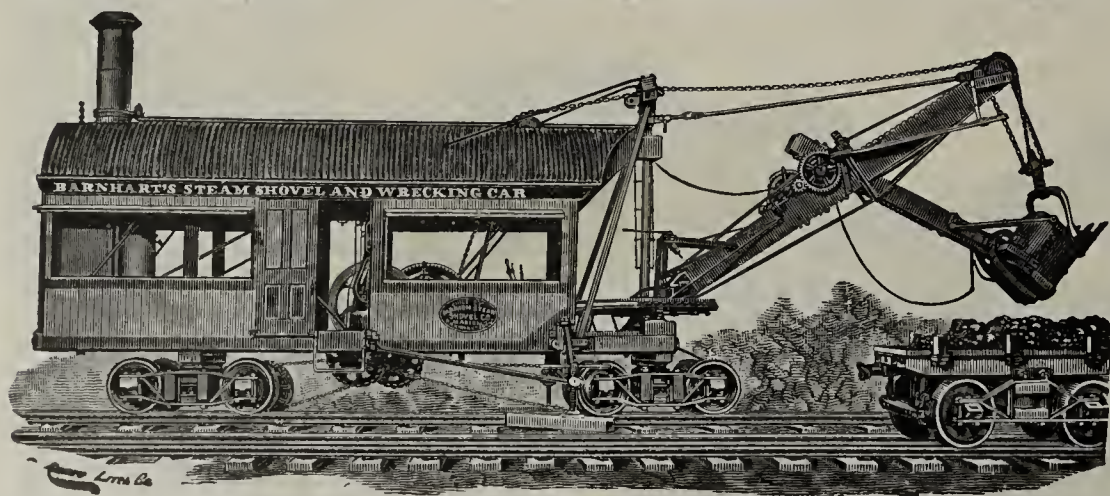
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeyer Building, New York, U.S.A.  
26 Cortland and 21 Dey Streets,

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A-1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

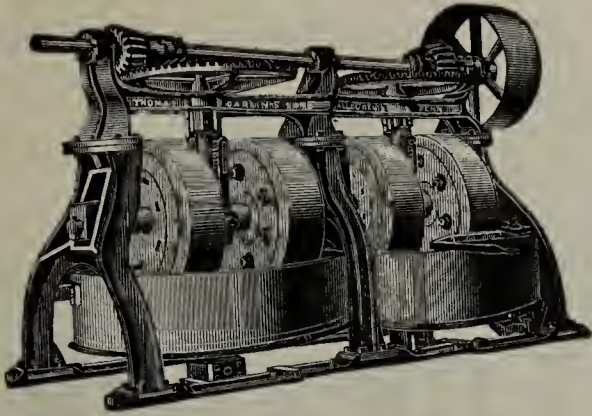
**The Marion Steam Shovel Co.,**  
603 West Center Street,  
**MARION, OHIO.**



STYLE C-¾ YD

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick





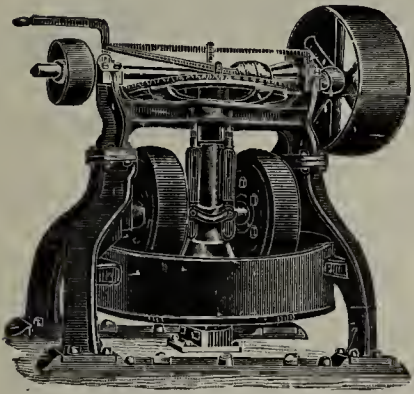
OUR SPECIALTY.

## GRINDING AND MIXING PANS

Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

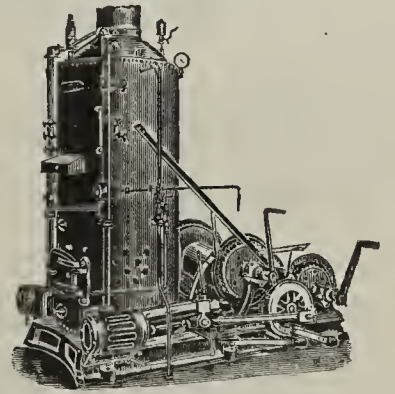
PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.



Thomas Carlin's Sons,  
 ALLEGHENY, PA.

One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

IN STOCK: { One 8 foot Wet Pan.  
 Eight 3 foot gauge Dump Cars.



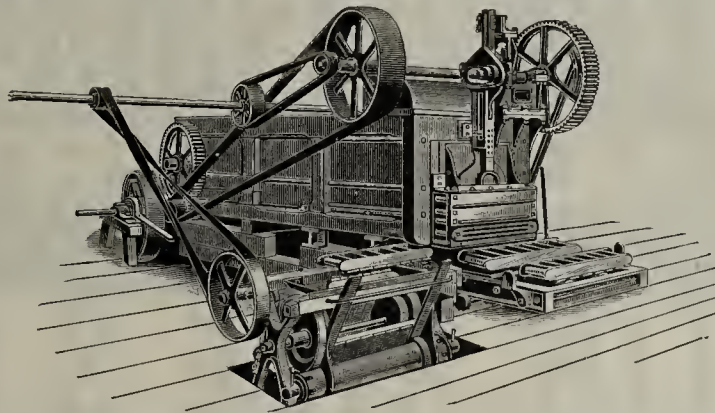
## THE POTTS

HORIZONTAL  
STOCK BRICK  
MACHINE.

• • •  
 Made with either Wood or all Iron  
 Pug Mill.

The Wood Frame Machine is the  
 Largest and Heaviest of its Class.

• • •



• • •  
 The all Iron Machine has no equal  
 it is the most complete machine  
 of the kind ever offered the trade.

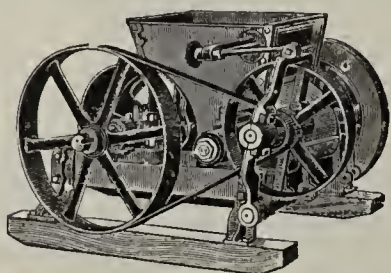
• • •

The Horizontal machine will work any clay direct from the bank without the use of an extra pug mill. It has no equal for making straight brick which have clean sharp corners and smooth surfaces. It fills all parts of a six brick mould evenly.

Write for prices and terms.

~~~~~  
C. & A. POTTS & CO.,
 INDIANAPOLIS, - - - INDIANA.

If you are Using a Vertical Machine and are troubled with Hard Dry Lumps of Clay or Stone, try a



POTTS DISINTEGRATOR

It will grind the clay and grind or separate the stone. Try a

PUG MILL



this will temper your clay better than you can do by any other process, at the same time it will save from \$3 to \$5 per day. For further information write

~~~~~  
C. & A. POTTS & CO.,  
INDIANAPOLIS, - - - - - INDIANA.

MANUFACTURERS OF  
IMPROVED

# CLAY WORKING MACHINERY

OF EVERY DESCRIPTION

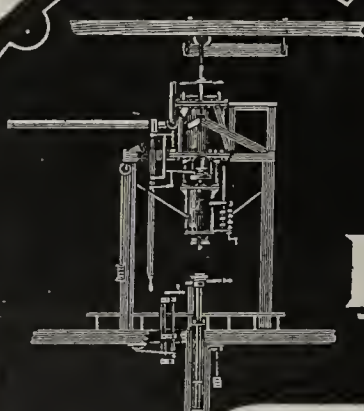
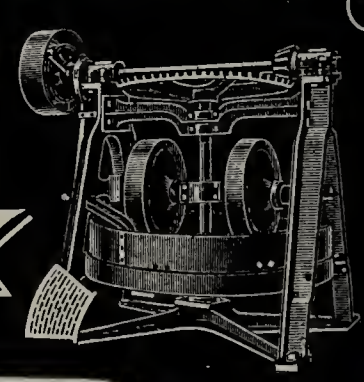
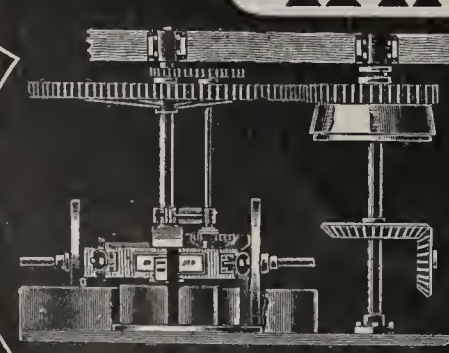
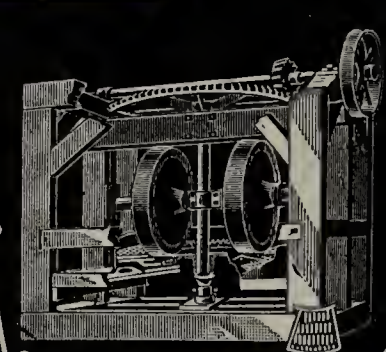
## TAPLIN RICE & CO.

CLAY MILLS,  
STEAM SEWER PIPE PRESS,  
DRY & WET PANS, DIES, CLAY BLOCKERS,  
POTTERS' WHEELS AND  
MACHINERY OF ALL KINDS.

# AKRON, OHIO, U.S.A.

PROMPT ATTENTION  
& DISPATCH GIVEN  
TO ORDERS

SEND FOR  
CATALOGUE  
A



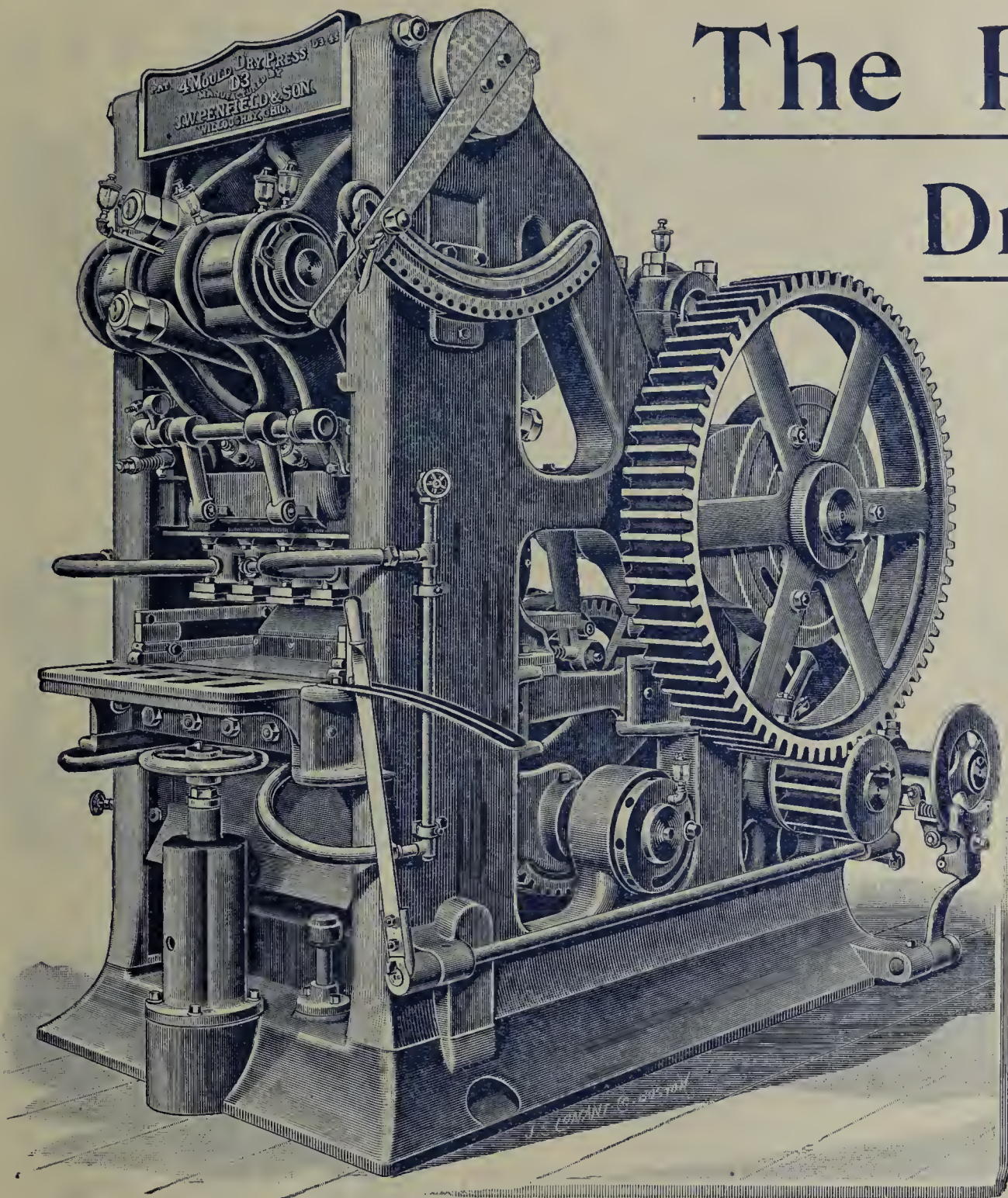
J.W. PENFIELD & SON,  
WILLOUGHBY, O.

# The Penfield

## Dry Press

## Brick

## Machine



(THE PENFIELD 4-MOLD PRESS, Model D3.)

Accomplishes all that other dry press machines do, and then goes ahead and gives the brick an extra pressure with increased force and length of stroke, making the brick denser, stronger and more perfect in every way.

It puts more clay into a brick of a given size than is done by any other machine on the market.

Strength of pressure, length of pressure and repetition of pressure are three of the features which place the Penfield Press and its products ahead of all others.

For particulars, address,

# J. W. Penfield & Son,

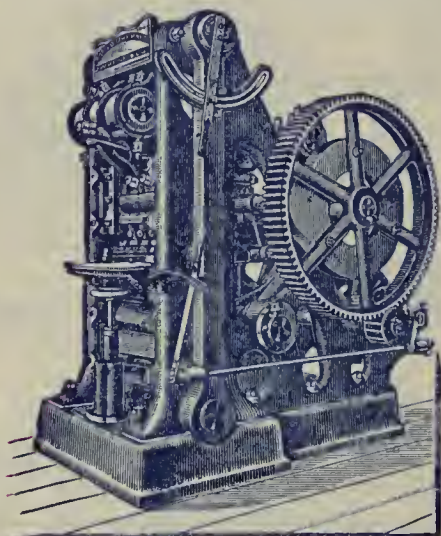
Willoughby, Ohio, U. S. A.

J.W. PENFIELD & SON,  
WILLOUGHBY, O.

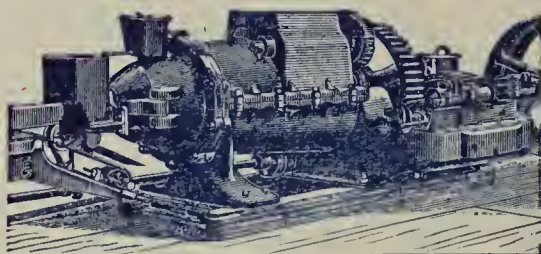


# J. W. PENFIELD & SON, WILLOUGHBY, OHIO, U. S. A.

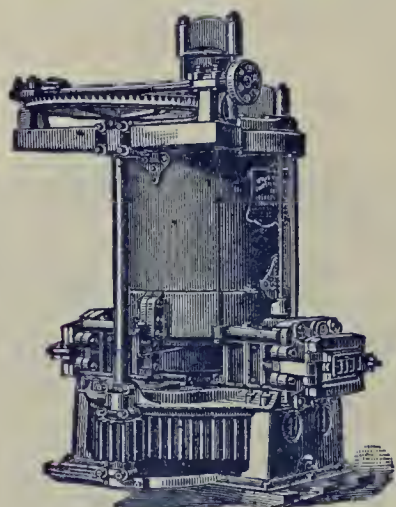
Some Things We Make:



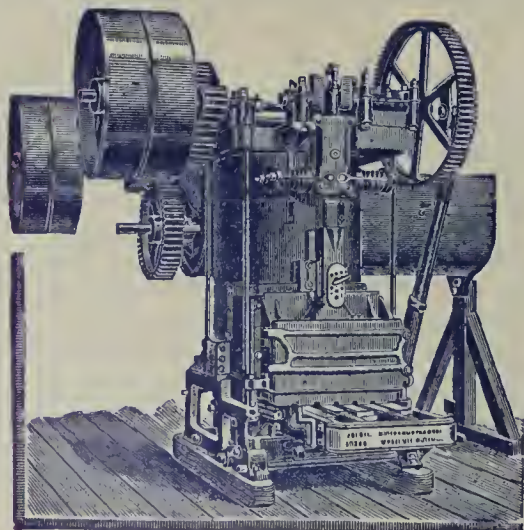
Dry Press Brick Machines.



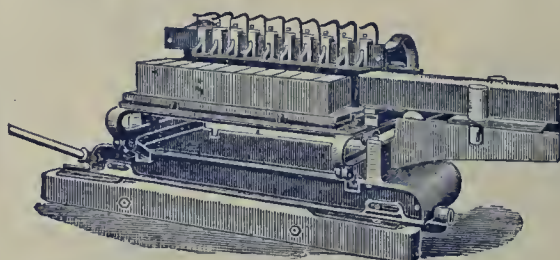
Auger Brick Machines;  
Auger Tile Machines.



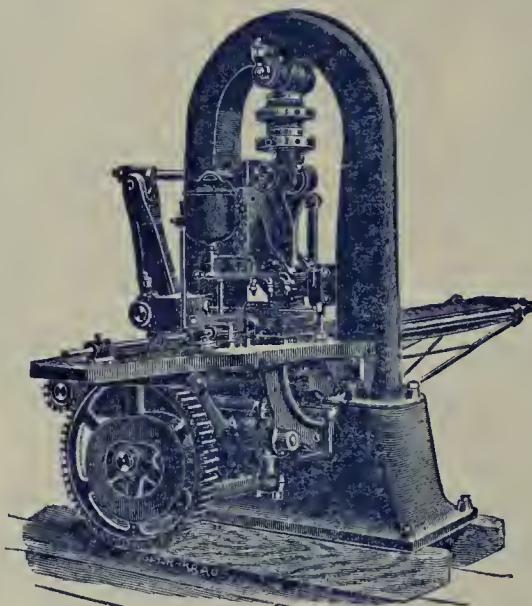
Plunger Brick Machines,  
Also suited for making Tile, Fireproofing, Etc.



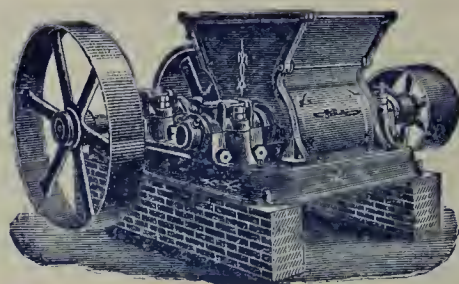
Stock Brick Machines,  
For Sand-Mold Brick.



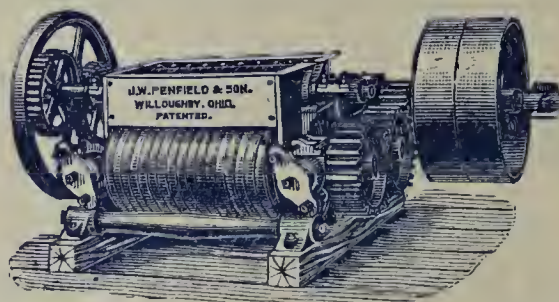
Board Delivery Brick Cutters.



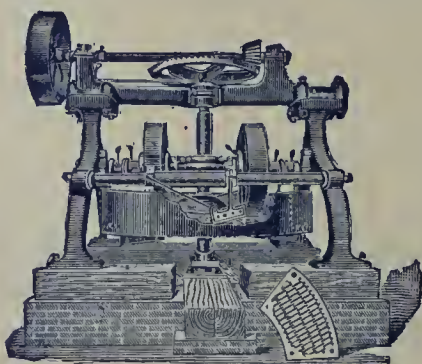
Brick Represses.



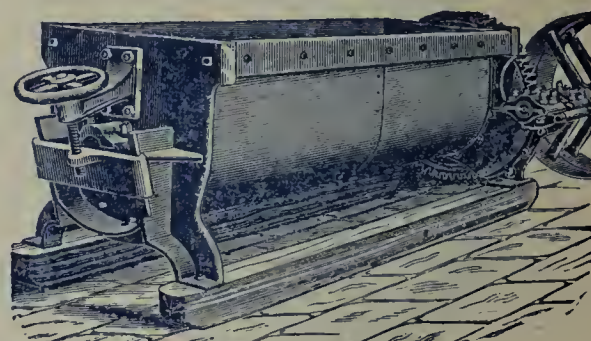
Disintegrators,  
Singly or combined with Crushers or Pug Mills.



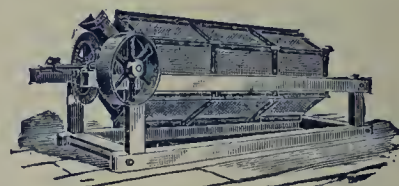
Clay Crushers; Stone Separators.



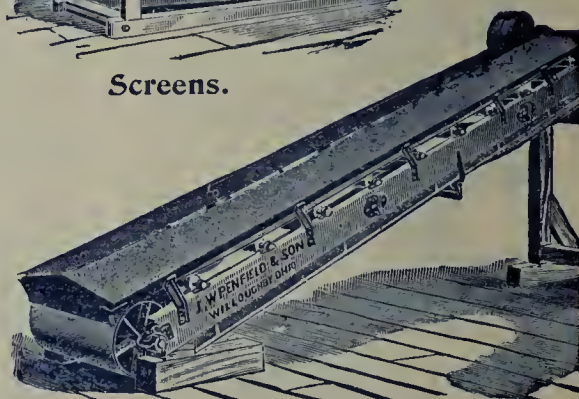
Dry Pans; Wet Pans.



Pug Mills; Granulators.



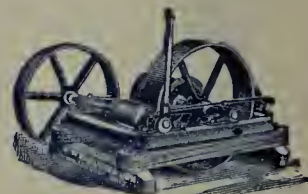
Screens.



Clay Elevators; Conveyors.

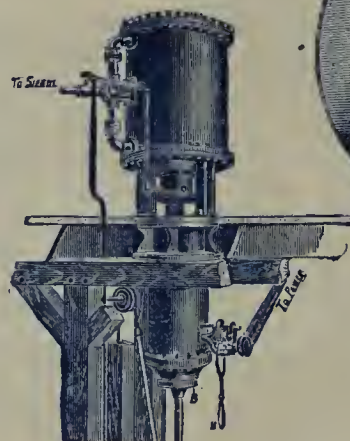


Clay Cars.



Winding Drums.

Barrows; Kiln Castings, Clutch Pulleys,  
Sewer Pipe Presses,  
Etc.

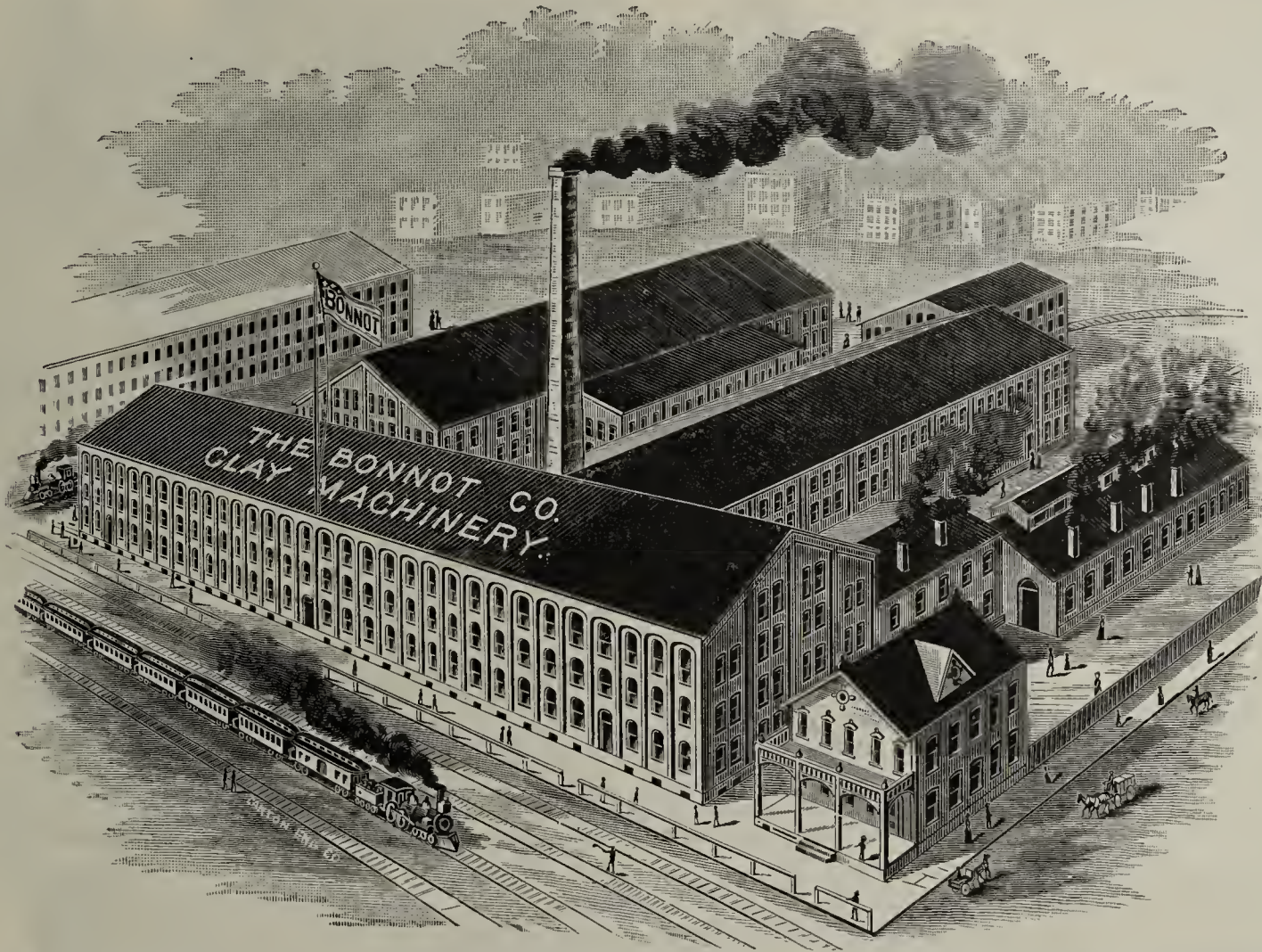


Send for Catalogue.

J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A.



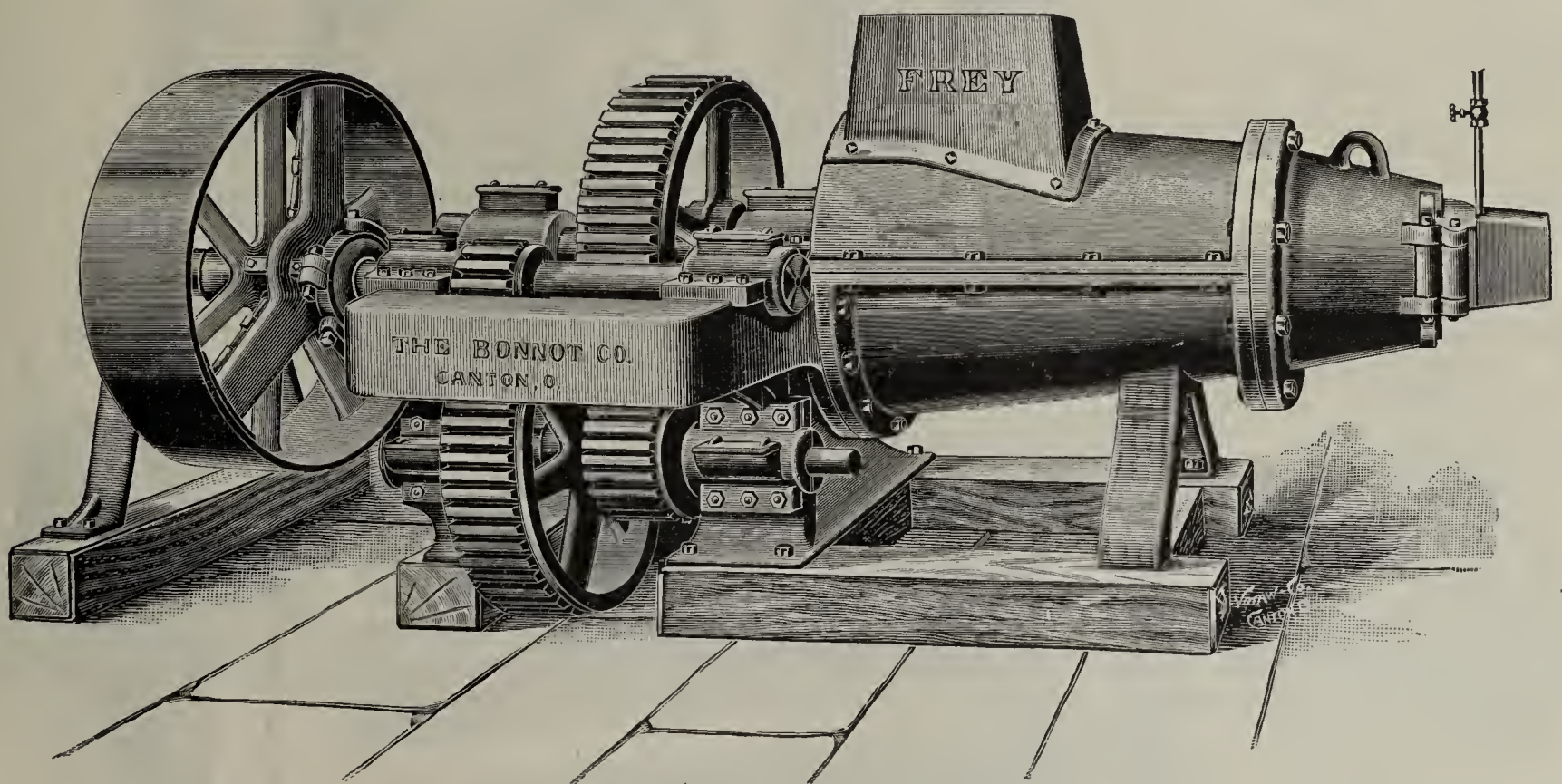
# The Bonnot Co., Canton, Ohio.



## DO YOU WANT THE BEST?

We suggest that you visit Canton. A plant has just been erected at Canton in which every machine is of Bonnot Company make.

*If You see it Work You Will be Convinced.*



## Brick Machines in Three Sizes.

Write for catalogue of brick or pottery machinery.

THE BONNOT COMPANY, = Canton, Ohio.





# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,  
FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

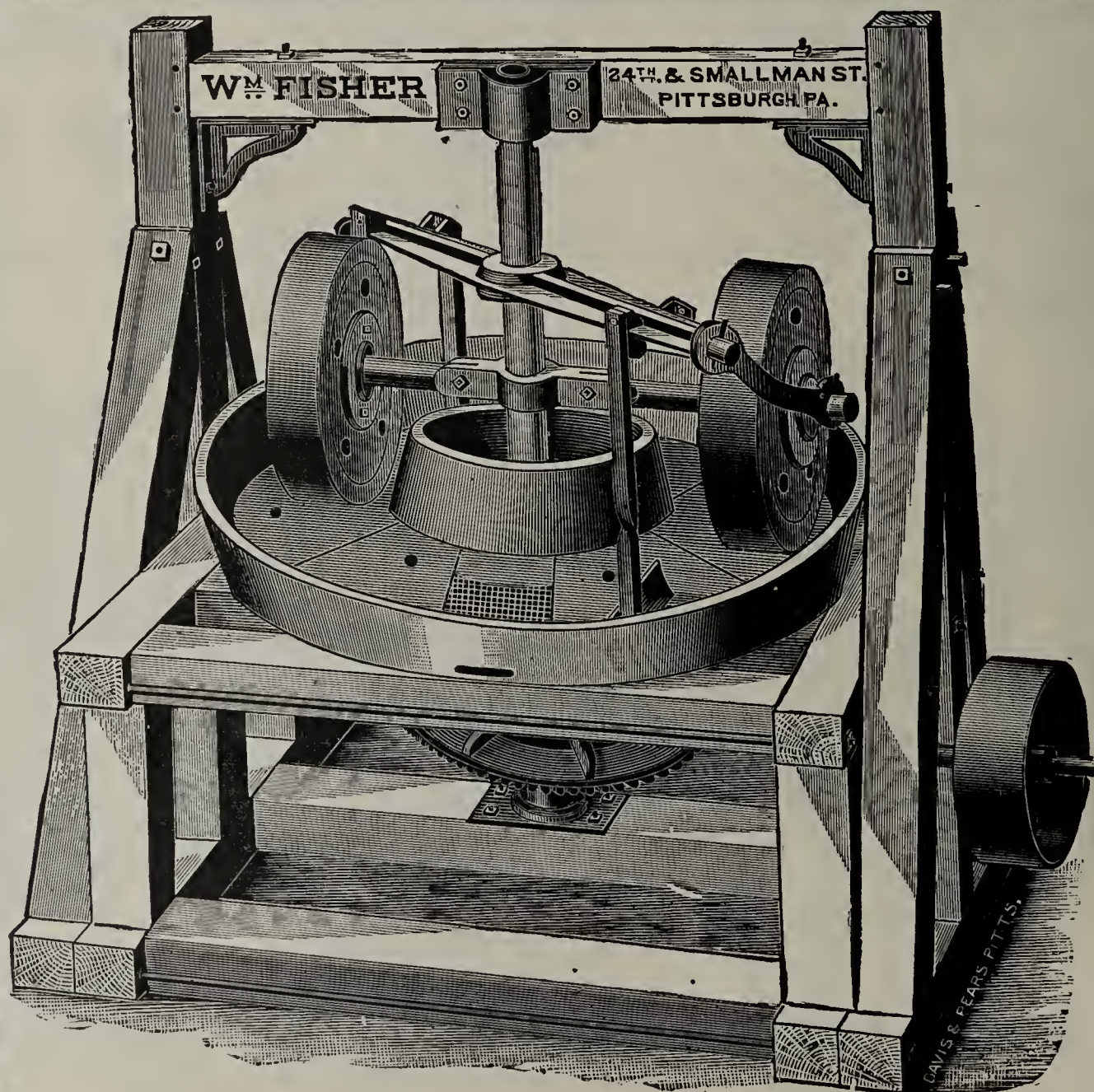
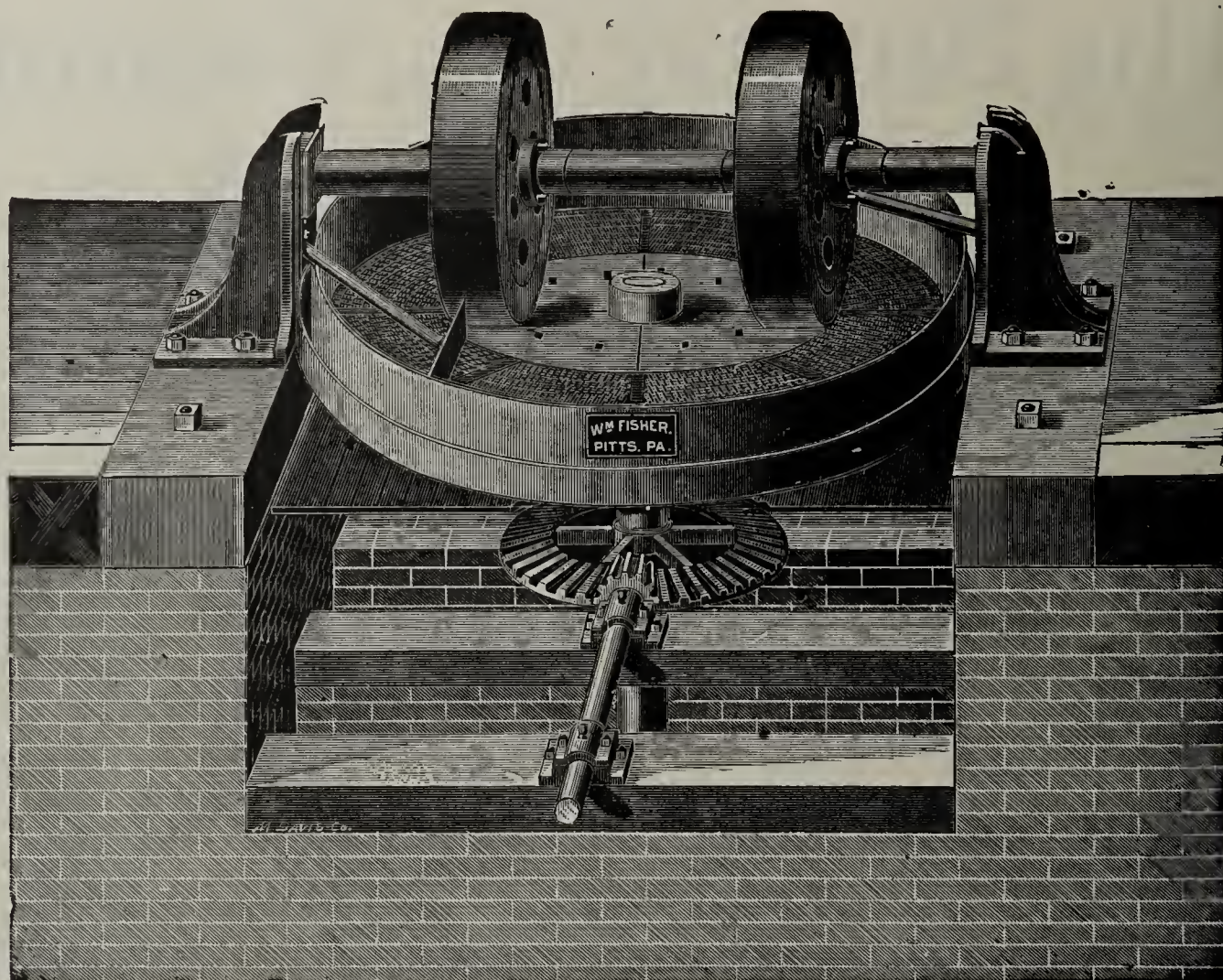
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.

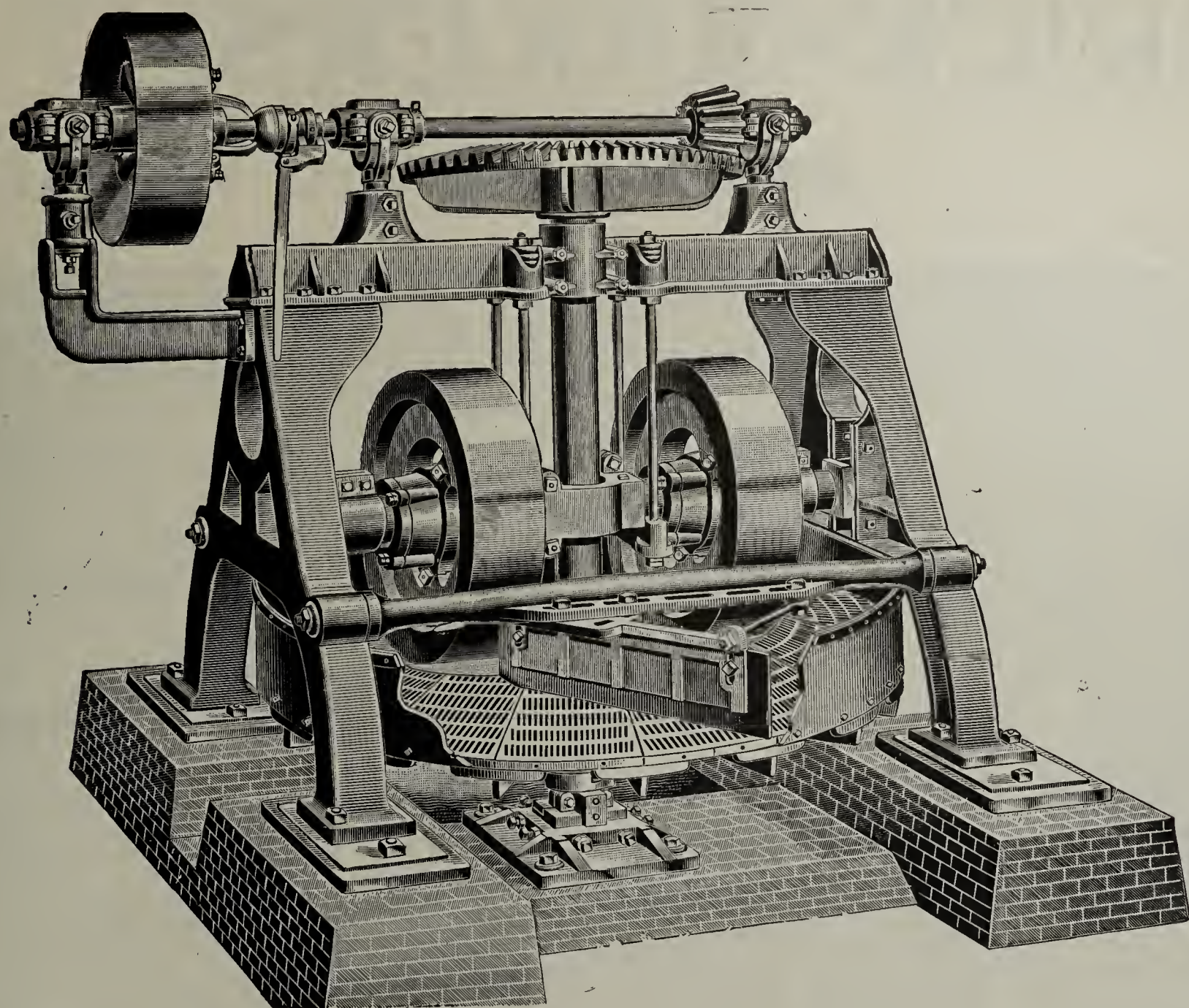


PUG MILLS,  
BLAKE CRUSHERS,  
"BRICK PRESSES.



When writing for prices, state kind of material and capacity required.



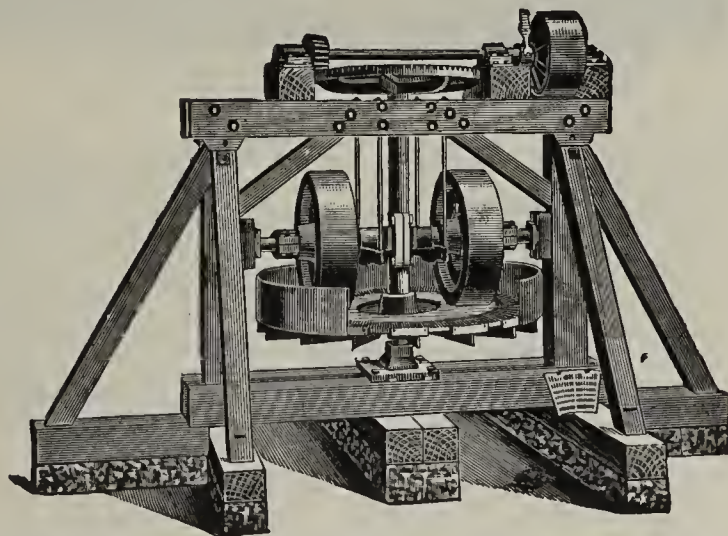
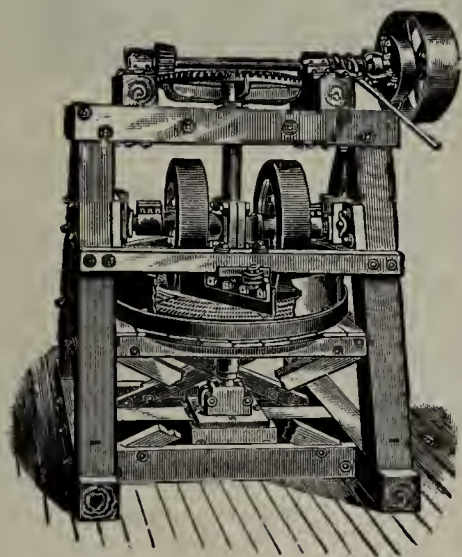


OUR SPECIALTY IS

DRY PANS.

IRON FRAMES,  
WOOD FRAMES.

~~~~~  
All Sizes and Price
to suit
Any Size Plant.
~~~~~



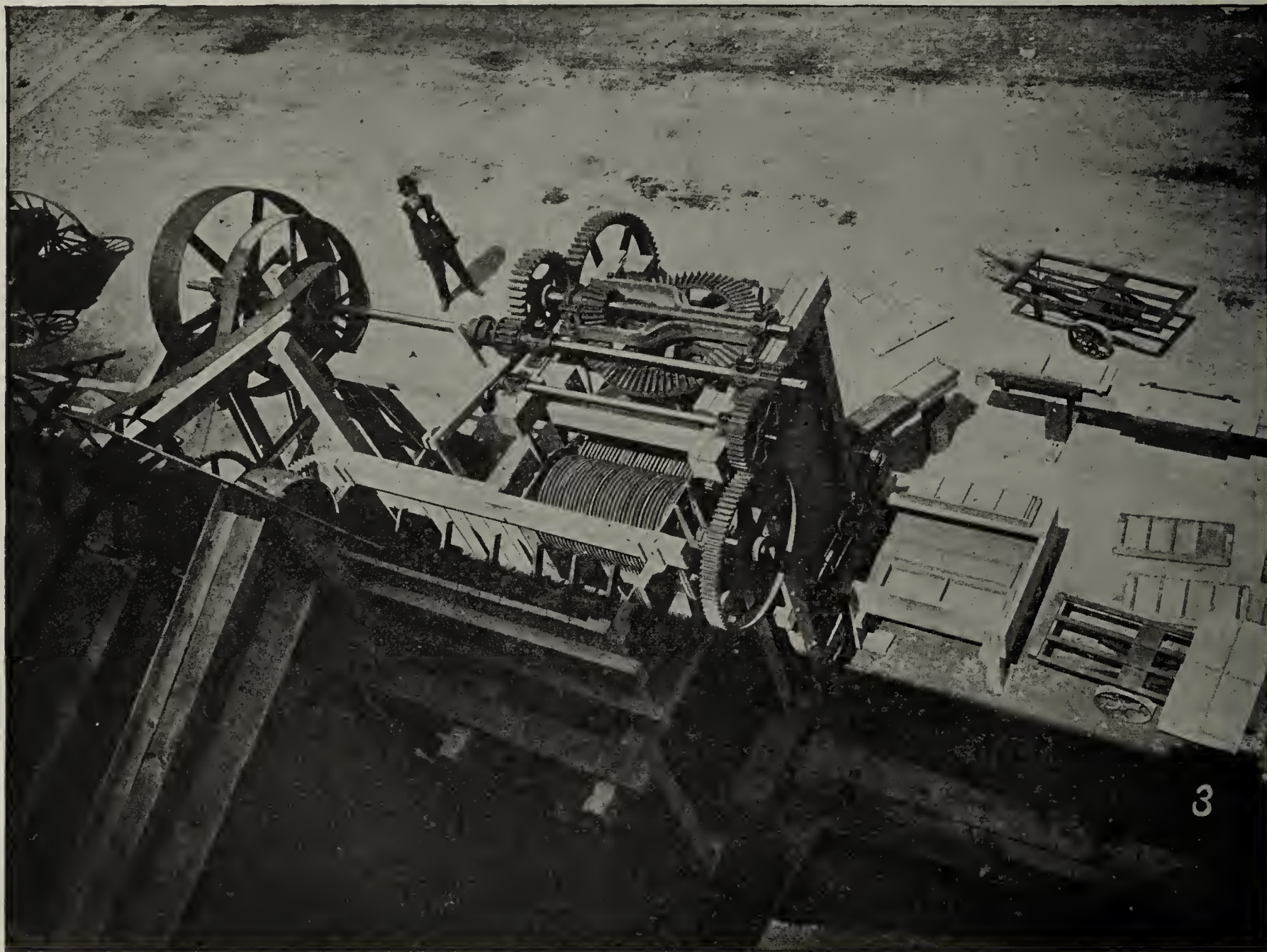
.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

FROST ENGINE CO., Galesburg, Ill.,  
U. S. A.



# BRICK-MAKERS,

◀ Where are We At?



*Strong, Stony, Tenacious Clay cleaned and transformed into first-class Brick.*



*Catalogues, Plans and full information cheerfully furnished on application.*

---

## THE HENRY MARTIN BRICK MACHINE M'F'G. CO.,

INCORPORATED,

The Pioneer Brick Machine Manufacturers.

LANCASTER, PENN., U. S. A.



# A New Departure in Brick Machinery

## THE HORIZONTAL ANDERSON

OUR latest and most complete combination of Brick Machine, Pug Mill and Disintegrator for the price of one Machine. No out side Plunger with bothersome Gibs and Plates. A Machine that will run for years without requiring any adjustment and never leak. **UNEXCELLED** for **GRINDING** and **PUGGING CAPACITY**; simple in construction and durable.

This Machine is self-contained and requires no other Shafting, Pulleys, Hangers or even Foundation, other than that shown in cut. Manufacturers of Brick by the soft mud process will find it to their interest to investigate this Machine before making their contracts for new Machinery. Write for descriptive circular, prices, etc. We can save you money in the beginning, and make you happy in the end. Capacity equal to any other Machine on the market. We extend a cordial invitation to all prospective purchasers to pay us a visit and allow us to show them the Machine in operation.

INDIANAPOLIS, IND., March 20, 1894.

ANDERSON FOUNDRY AND MACHINE WORKS,

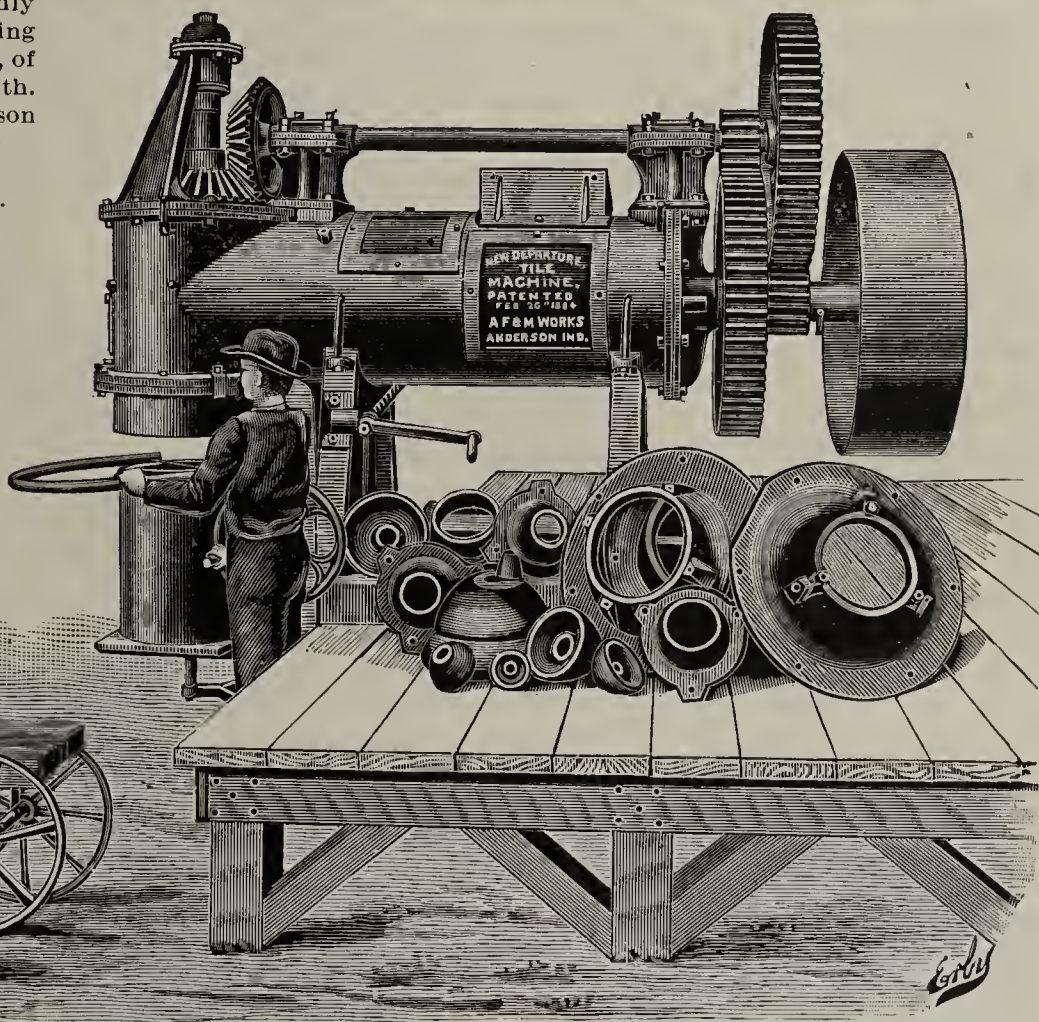
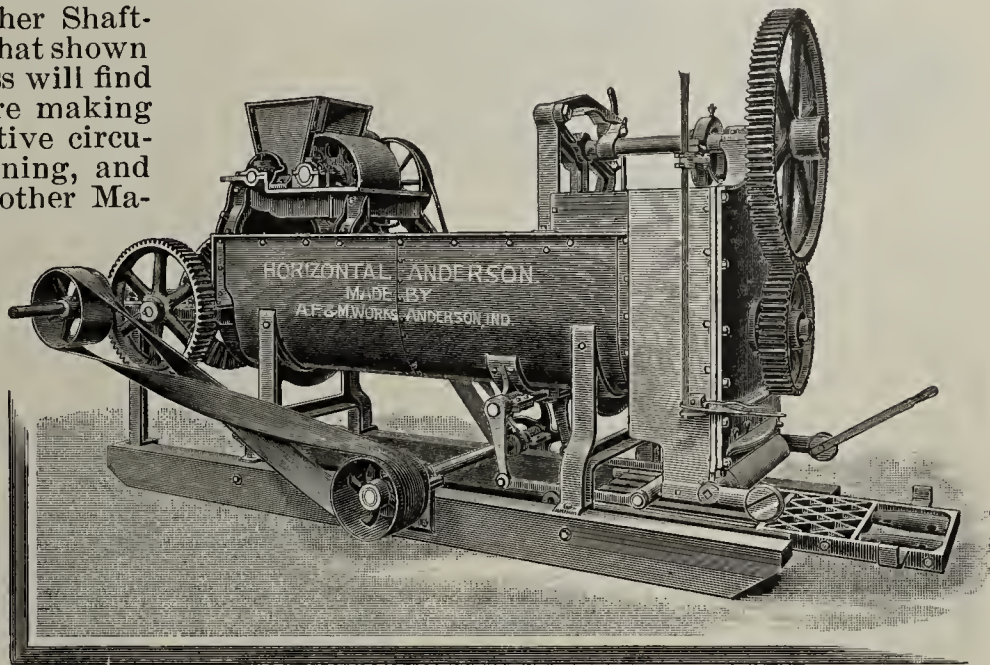
Anderson, Ind.

GENTLEMEN:—It affords us much pleasure to state that the Horizontal Anderson Brick Machine purchased of you last season has given us the best of satisfaction. We have owned and operated eight different Brick Machines previous to this one, and we do not hesitate to pronounce the Horizontal Anderson superior to any and all of them.

We operated the machine during the extremely dry weather of last season and found that no matter how dry and hard the clay was when taken from the bank, the machine thoroughly pulverized and pugged it to the proper consistency for making first-class brick, and at the same time dispose of all stones, of which, unfortunately for us, we have a great many to contend with.

We are willing at all times to show the Horizontal Anderson to our competitors who are in the market for new machinery.

A. BRUNER & CO.,  
Willis Privett, Manager.



## THE GREATEST ON EARTH

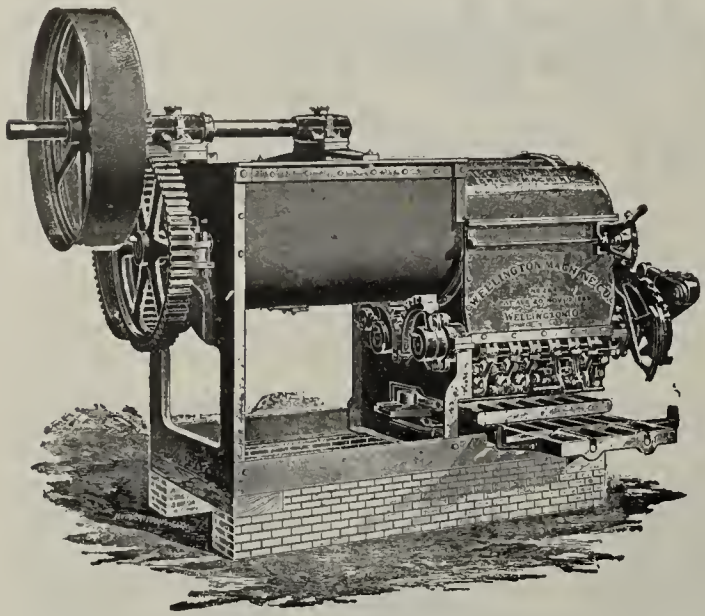
We have imitators but no competitors. The **NEW DEPARTURE** makes all sizes of tile from 3 inches to 24 inches in diameter in a manner that defies competition.

DOWN DELIVERY FOR LARGE TILE.

SIDE DELIVERY FOR SMALL TILE.

THE ANDERSON FOUNDRY & MACHINE WORKS, - - Anderson, Indiana.





# THE "MONARCH"

## Brick Machine.

ALL iron and steel. Takes clay from the bank. Double pug mills. 14 feet. "Up one side and down the other." Most thorough tempering. Presses are entirely "in the mud;" this is the greatest idea of all, for all wear, leakage and friction in the press box is entirely done away with. All bearings outside and "stuffed." Only four gears and none bevel. The acme of simplicity. Runs with much less power than any other of its class. Four years in use and thoroughly proven. Used by 50 of the very best manufacturers. Send for list and "go and see."

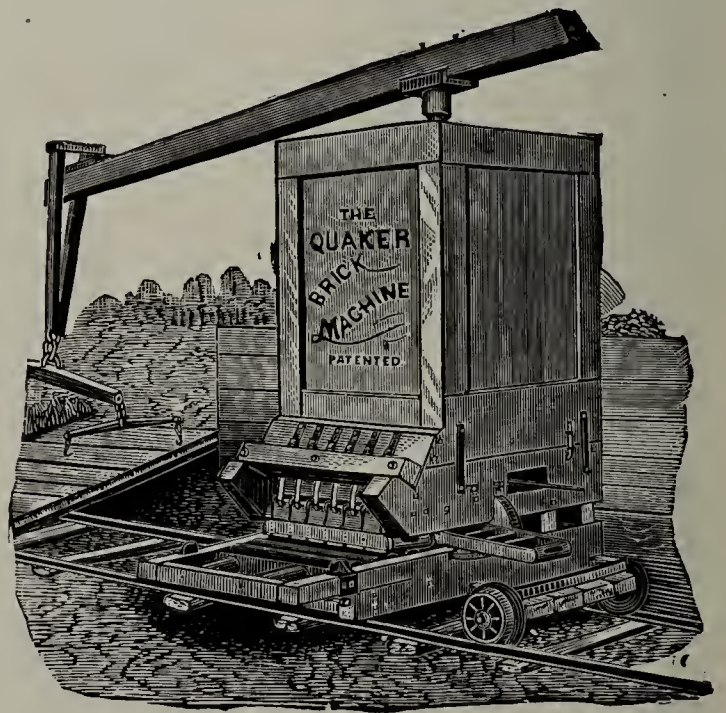
THE MOST ECONOMICAL and LONGEST LIVED MACHINE MADE.

# THE "QUAKER"

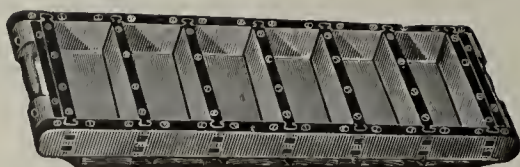
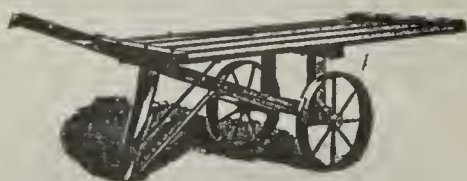
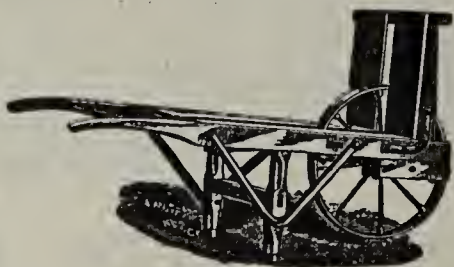
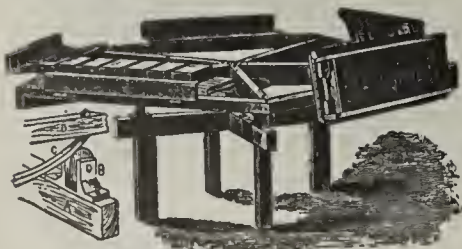
Family of Machines, are the Most Used of Any Single Make of Machine.

## The "New Model Quaker" Horse-Power Machine.

Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



## Two Sizes of Steam Power "Quaker" Machines.



FOUNDERS AND MACHINISTS.)

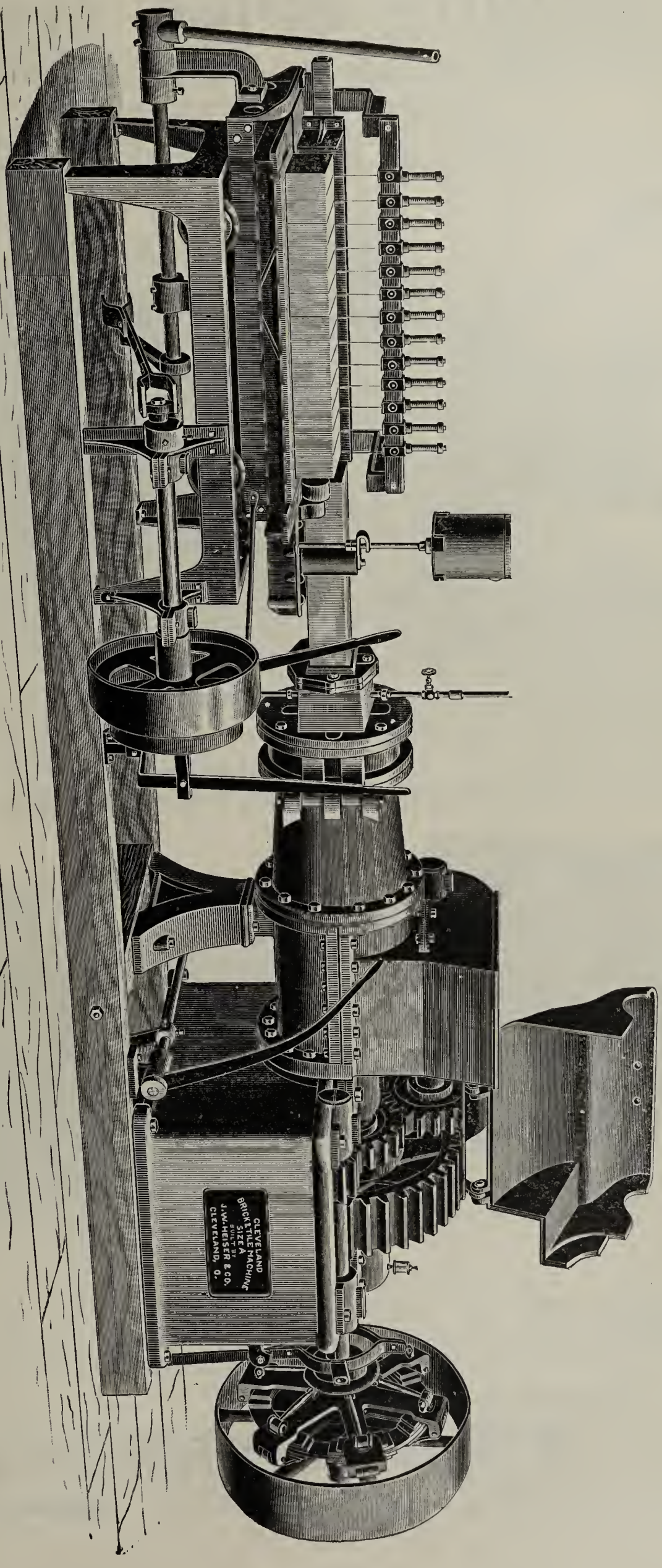
Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

**The Wellington Machine Co.**  
Wellington, Ohio.



# The "CLEVELAND" CLAY WORKING MACHINERY.



Size "A" Machine with Patent Board Delivery Power Cutting Table. Capacity from 25,000 to 40,000 Brick per day.

ALL OF OUR MACHINERY IS BALL AND PIN BEARING AND....  
GUARANTEED FOR ONE YEAR AGAINST WEAR OR BREAKAGE.

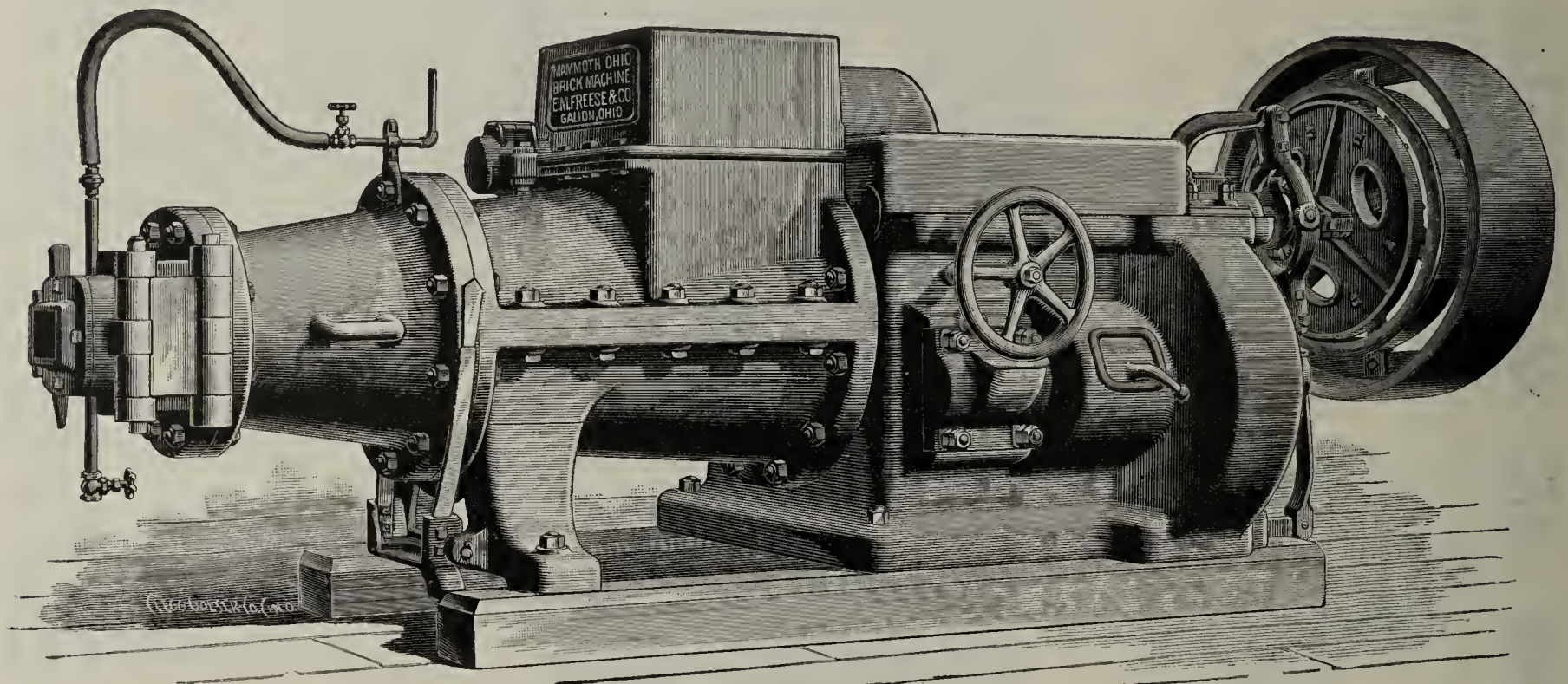
If you want superior machinery, improve your product, save money and have a balance on the right hand side of your Ledger, write to us for Catalogue and description of our machinery.

**J. W. HEISER & CO.,** Manufacturers of CLAYWORKING MACHINERY, Cleveland, Ohio.



# SUPERIOR BRICK MACHINERY.

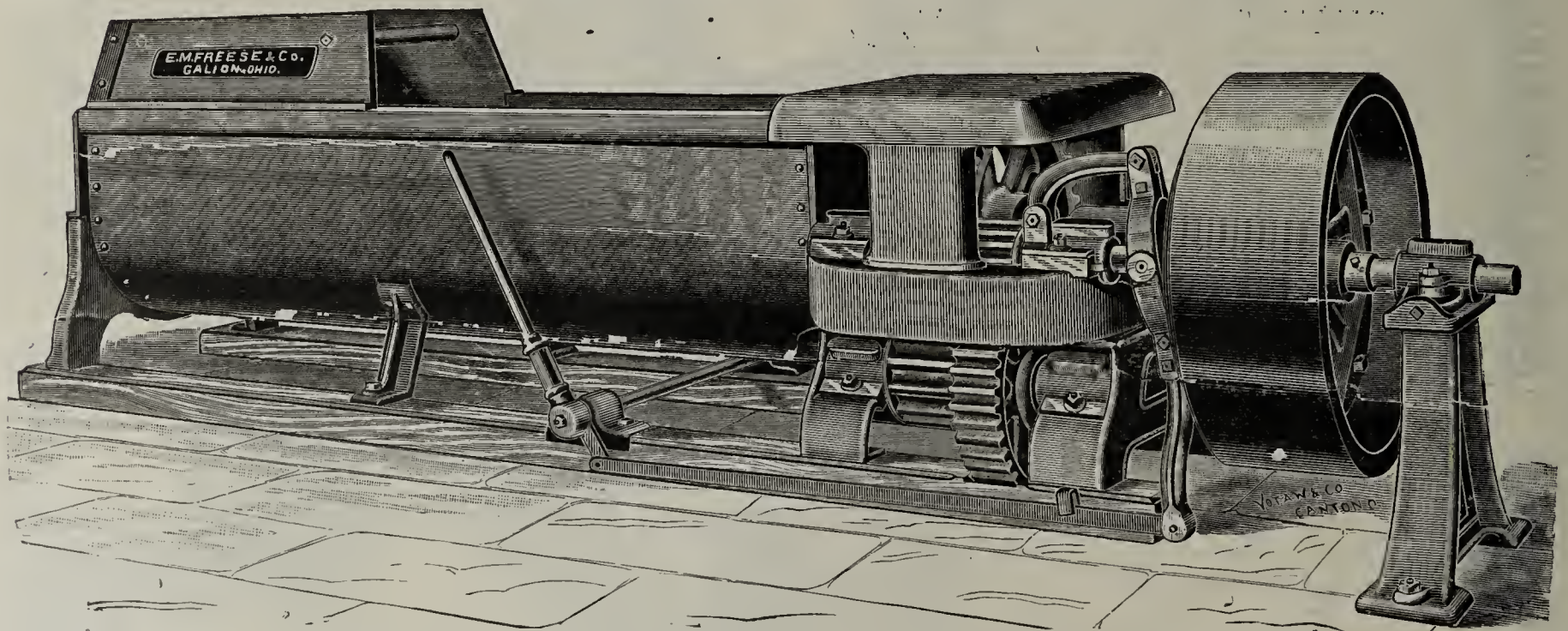
*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

## *PUG MILLS THAT PUG THE CLAY.*



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

IT WILL PAY~~~~~

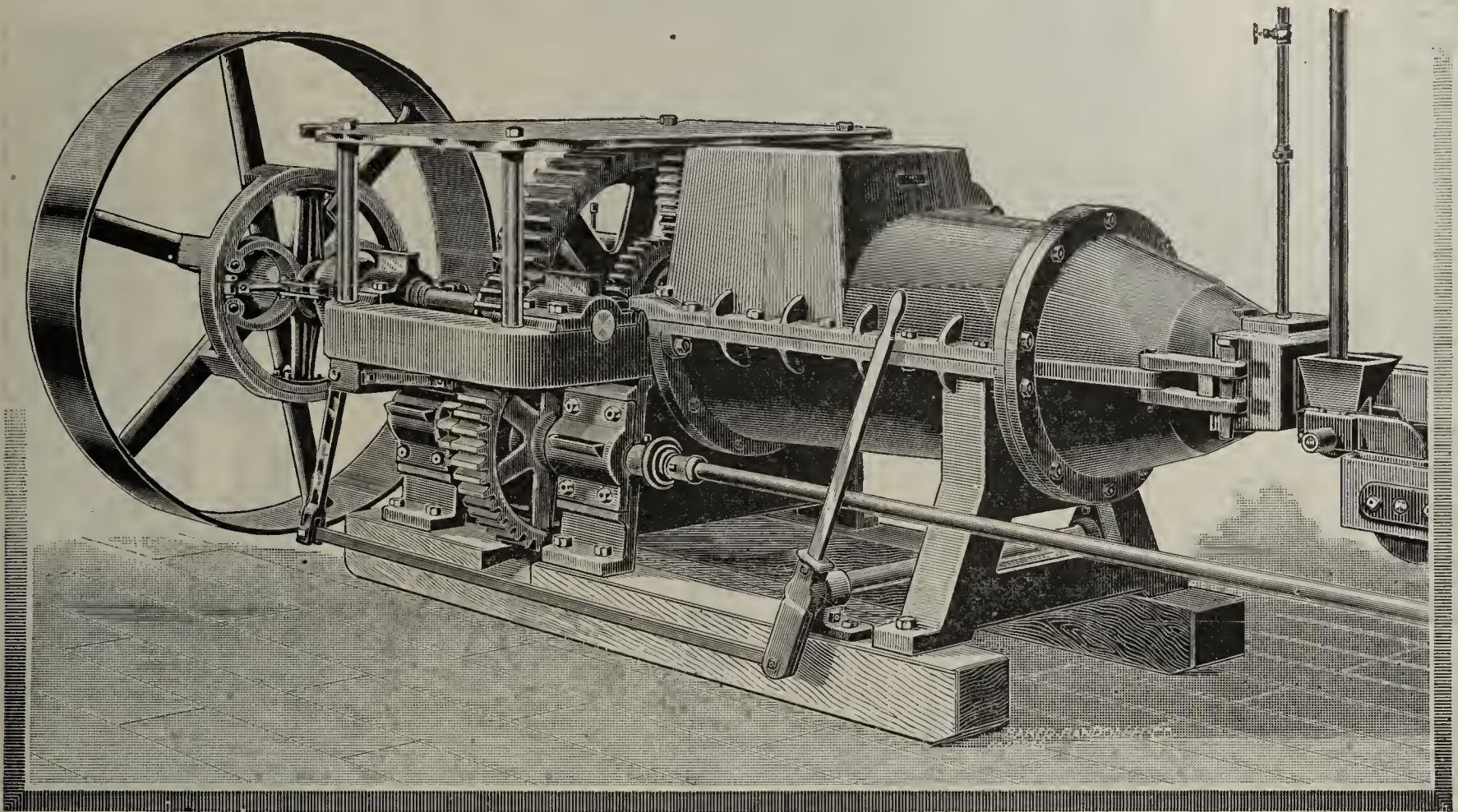
ADDRESS **E. M. FREESE & CO.,**

**GALION, OHIO.**



# IMPROVED BRICK AND TILE MACHINERY,

MANUFACTURED BY  
THE DECATUR LEADER MFG. CO.



Auger Brick Machine.

WHAT THEY THINK OF US AT HOME. . . .

—OFFICE OF—

## The Tuttle Brick Company.

DECATUR, ILL., March 26, 1894.

THE DECATUR LEADER MFG. CO., City:

GENTLEMEN—The outfit of Brick machinery made by you for us gives entire satisfaction. We understand your automatic cutter is a recent design, and we would say that it deserves especial mention for its simplicity and perfect working.

Yours truly,

THE TUTTLE BRICK CO.,  
JOHN DILLER, Manager.

Our line is complete. Send for printed matter.

THE DECATUR LEADER MFG. CO.,

Decatur, Ill., U. S. A.

[Mention the Clay-Worker.]



# NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

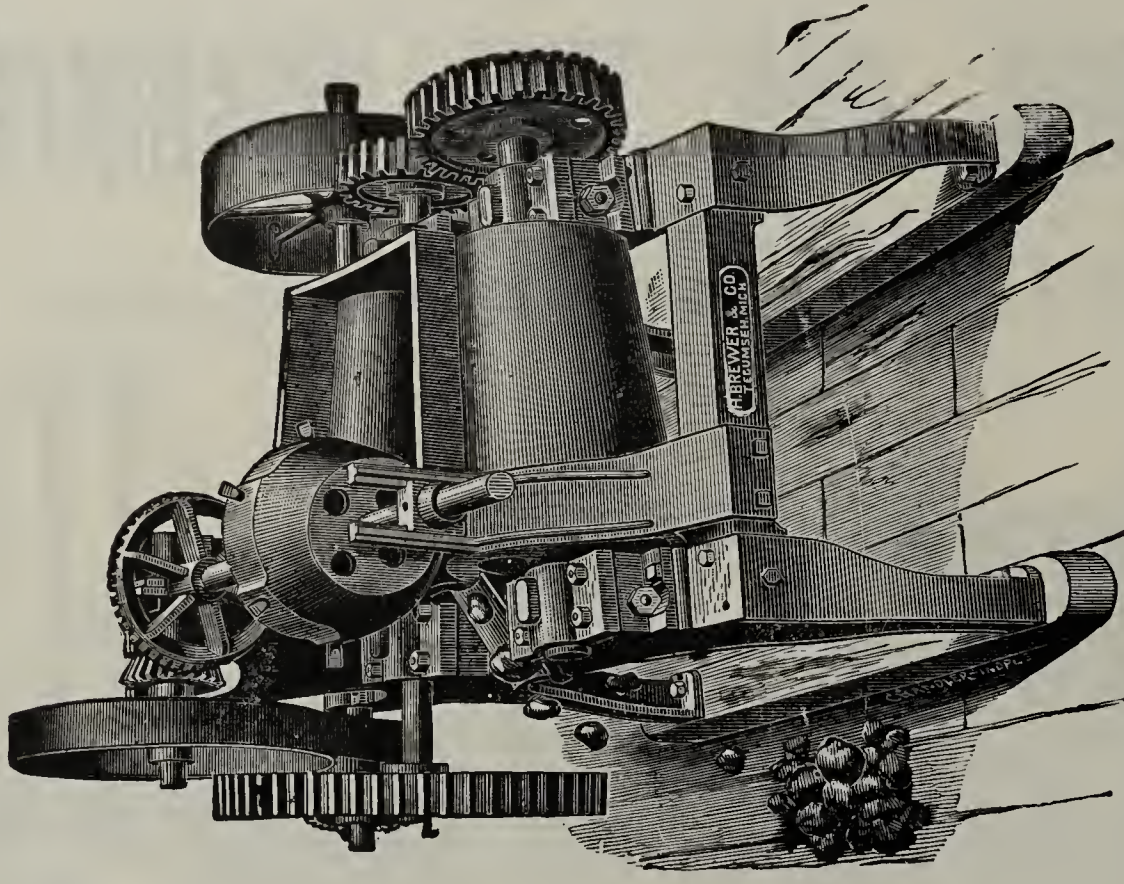
The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

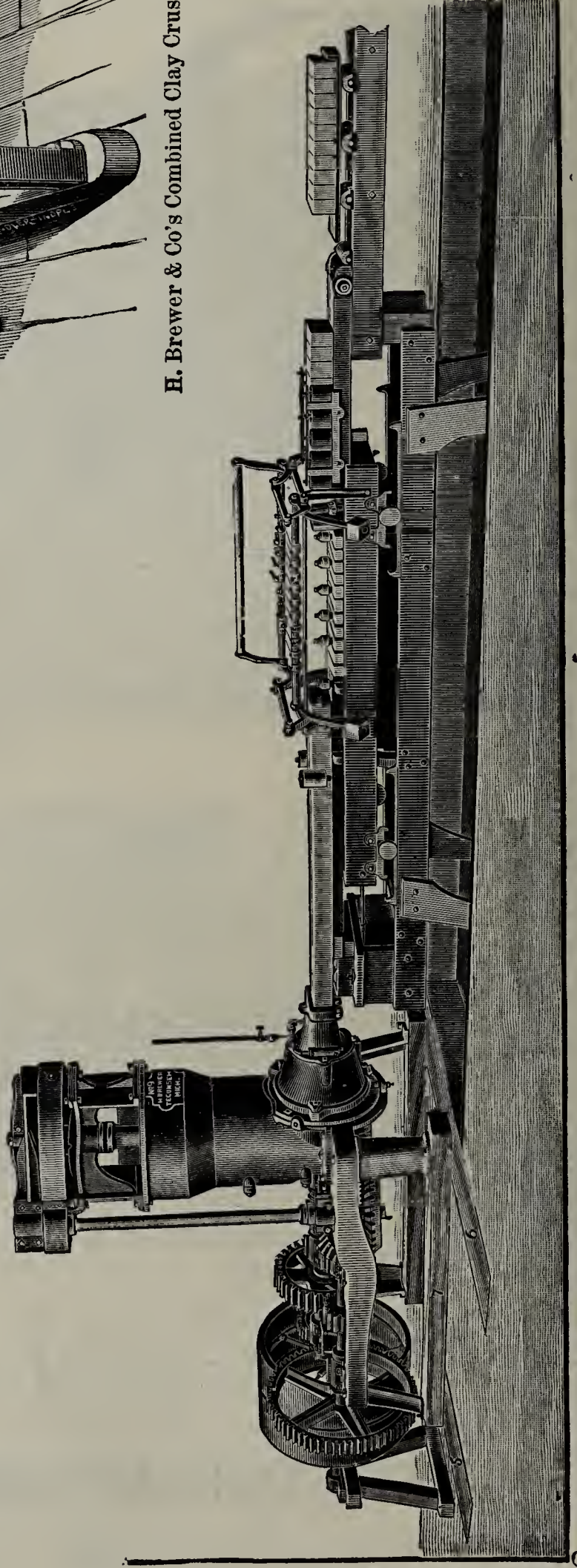
**H. BREWER & CO.,**  
**Tecumseh, Mich.**

[Mention the Clay-Worker.]



H. Brewer & Co's Combined Clay Crusher and Stone Separator.

The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.





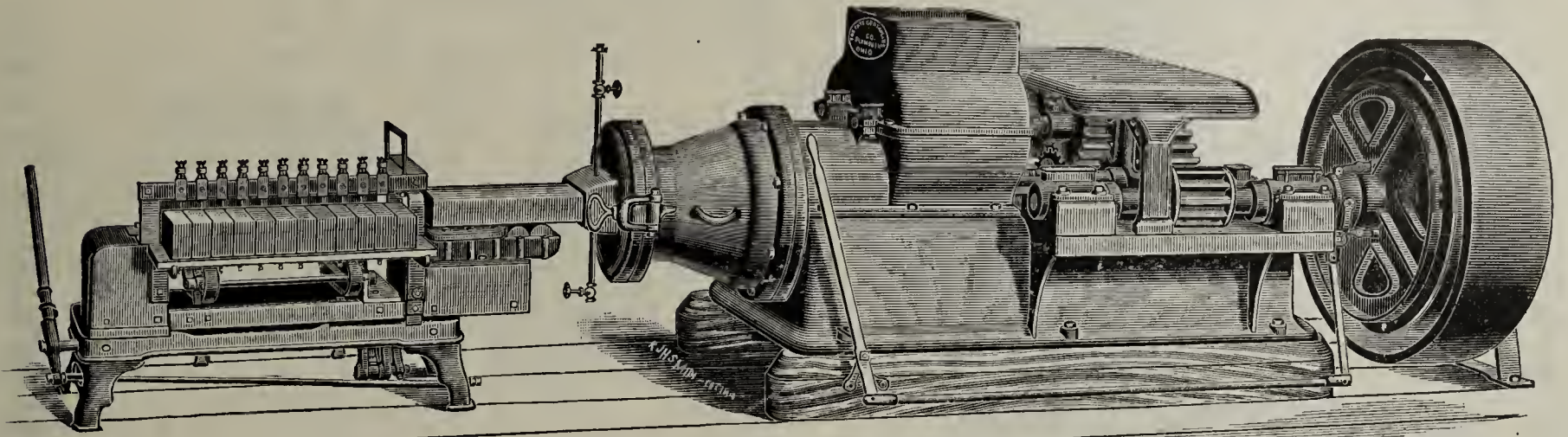
THE  
**“PLYMOUTH”**  
 Brick and Tile Machines.

“The Best we ever saw,” that’s what they all say!!

Kirby, Ohio, June 11, 1894.

Dear Sirs:—The tile machine that I bought of you is a perfect machine. I am running it the second year. This year I bought the automatic self-cutting table and it is the best thing I ever saw. It saves one man, also cuts them true, every tile is like the other.

GEORGE FISHER.



“A” Machine, with Board Delivery Cutting Table.

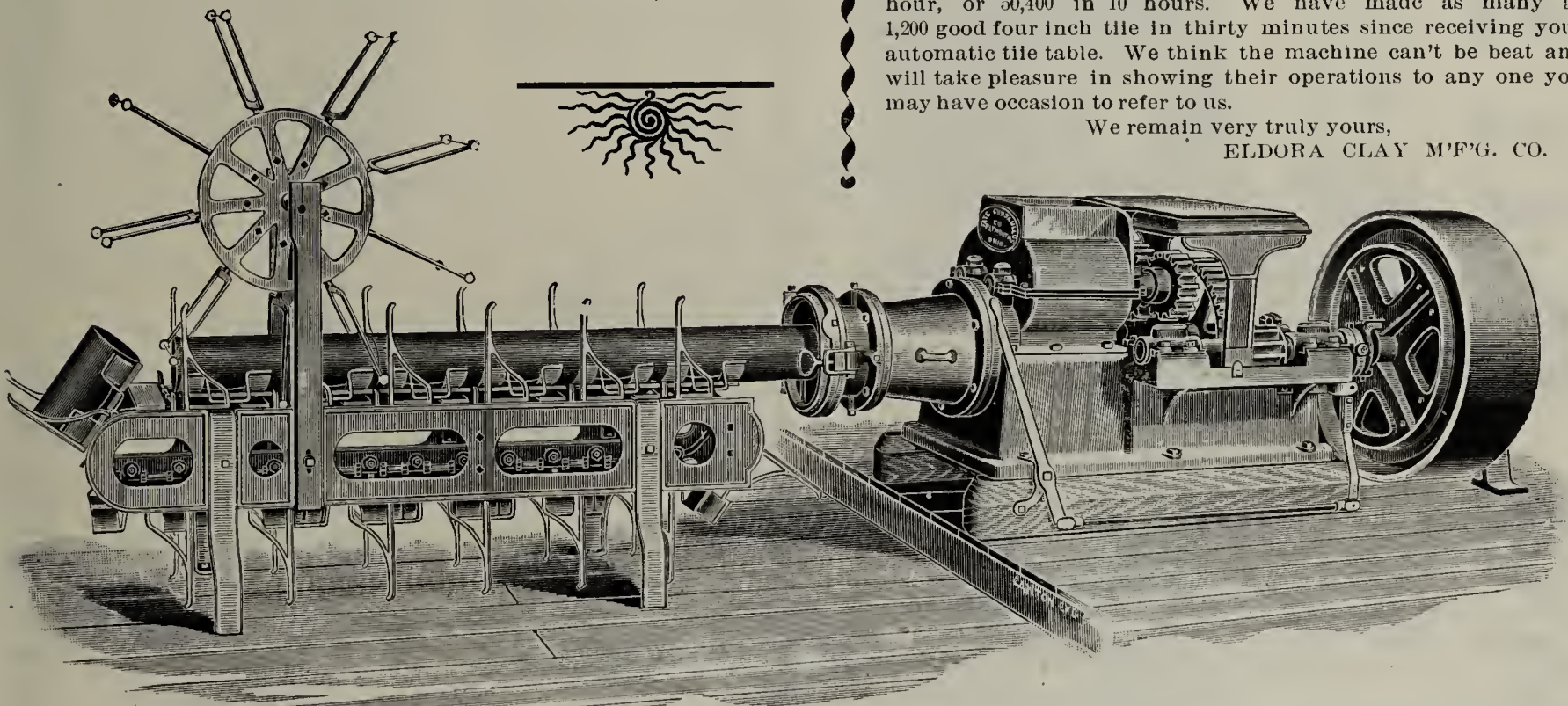
IT PAYS . . .

To buy our machines because they save you money, time, labor and a vast amount of annoyance.

ELDORA, IOWA, July 16, 1894.

Gentlemen:—In response to your inquiry concerning the Brick and Tile Machines you sold us, we are happy to state we have both in operation and each is giving entire satisfaction, even beyond our expectations or your representations. We easily turn out 30,000 good bricks in ten hours, and 18,000 to 20,000 three inch, three and one-half inch, or four inch tile is our regular 10 hours work. To-day we are making brick and much of the time are making seven cuts per minute, or 84 brick, 5,040 per hour, or 50,400 in 10 hours. We have made as many as 1,200 good four inch tile in thirty minutes since receiving your automatic tile table. We think the machine can't be beat and will take pleasure in showing their operations to any one you may have occasion to refer to us.

We remain very truly yours,  
 ELDORA CLAY M'FG. CO.



“D” Machine, with Automatic Cutting Table. For cutting tile from 2½ to 8 inches; also building blocks.

Write for further particulars and estimates on entire outfits,

The . . .  
**Fate Gunsallus Co.,**  
 Richland Co. Plymouth, Ohio.

KELLEY, IOWA, June 11, 1894.

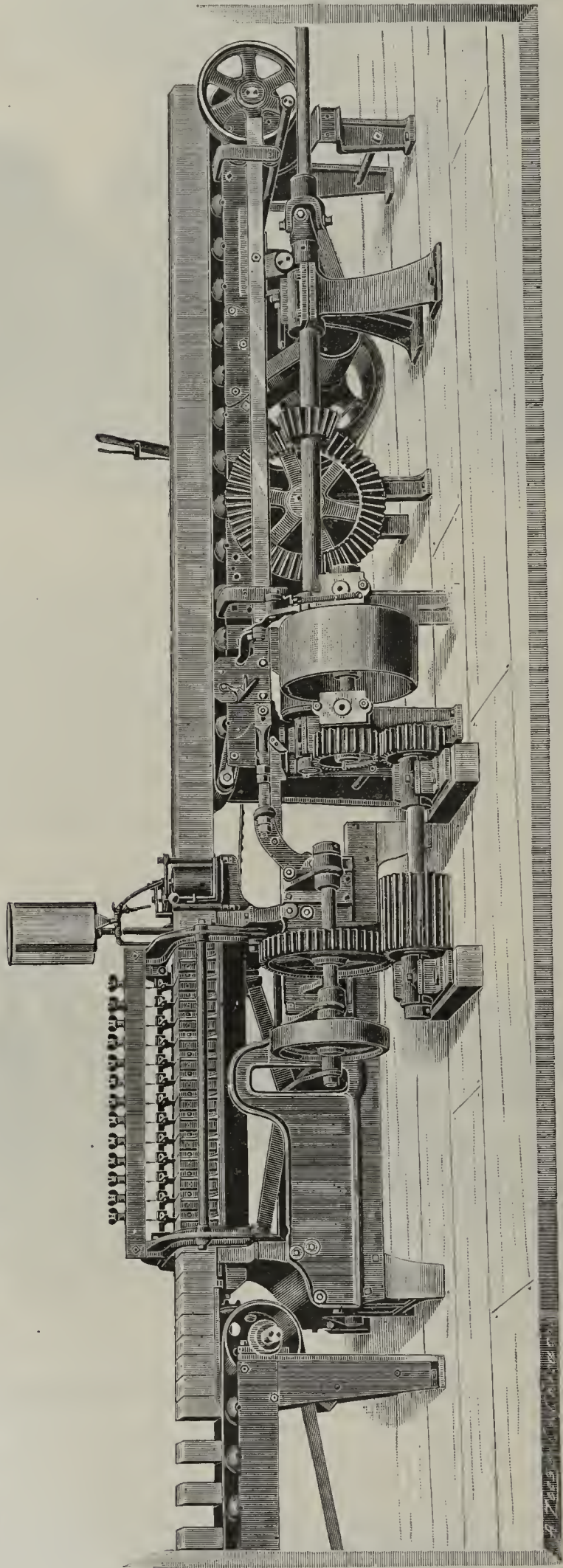
Gentlemen:—The automatic cutting table is working nicely. If I could have had it 10 years ago I would have been a richer man to-day. No tile works ought to run without one.

Respectfully,

J. M. STARK.



# A HOWLING SUCCESS



THE BUCYRUS SIDE CUT AUTOMATIC TABLE.

*The only device of its kind on the Market.  
Now in the most successful operation on TEN first-class yards.*

*Every brick cut perfectly true. No bricks with feathery edges.*

*Simple in construction. Rapid and effective in its work.*

*Every Brickmaker has wished for it. Now we have it.  
If you see it in operation you will buy it. IT CAN'T BE BEATEN.*

Do not fail to write to us or call upon us. We can prove what we say.

THE FREY-SHECKLER CO.,

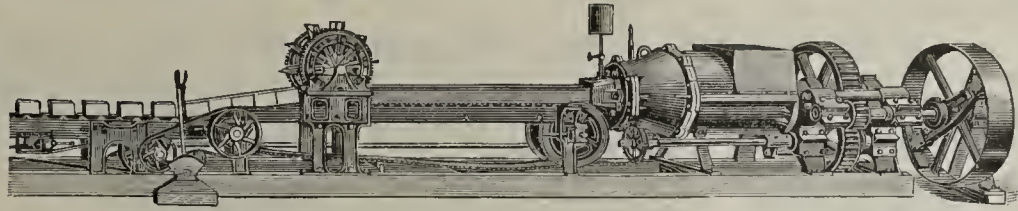
Manufacturers of a Complete Line of Clayworking Machinery and Builders of the BUCYRUS STEAM TUNNEL DRIER.

BUCYRUS, OHIO, U. S. A.



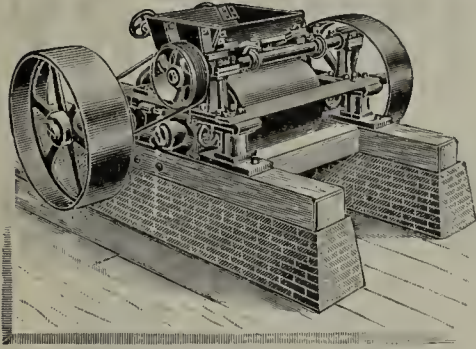
# WE STUDY TO PLEASE.

## A FEW SAMPLES

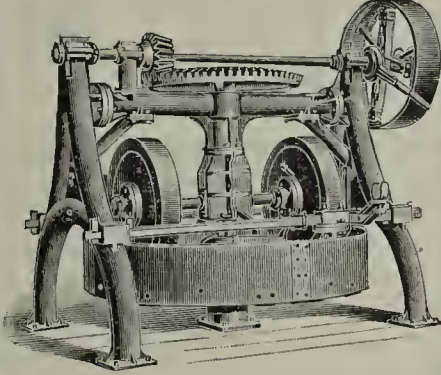


No. 1 Giant Machine and Automatic Table.

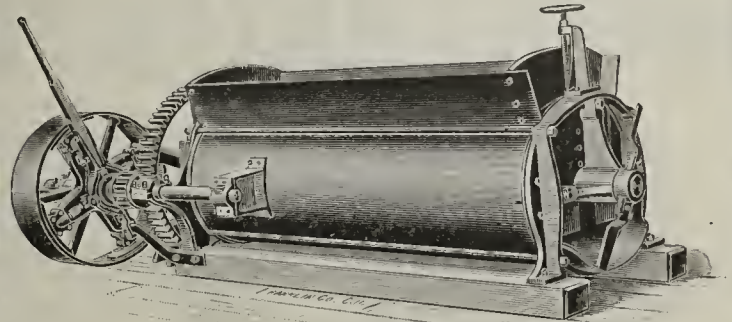
Just to give you  
an idea. That's  
All.



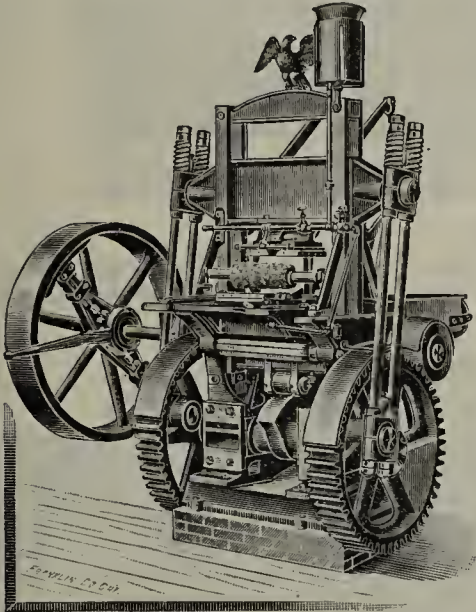
Improved Tailings Crusher.



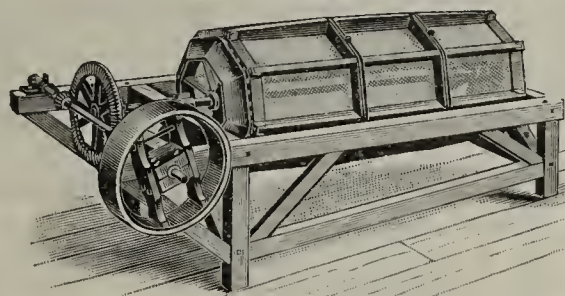
Dry and Wet Pans.



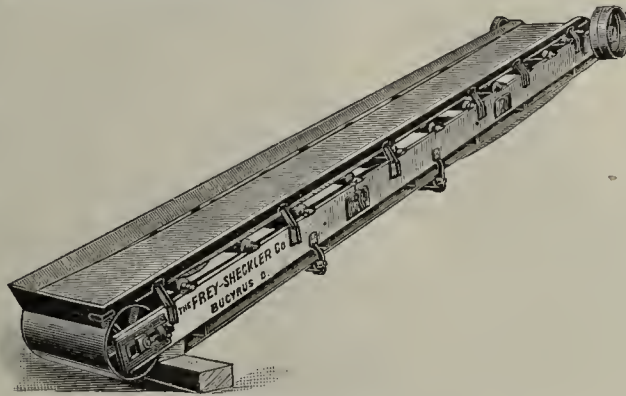
Pug Mills and Granulators.



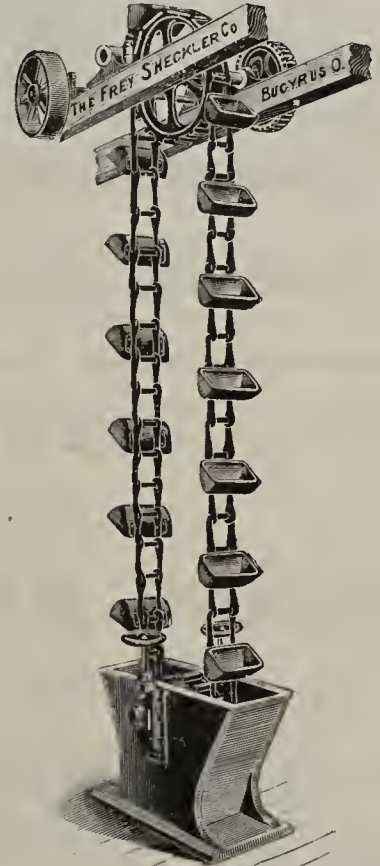
Eagle Steam Power Re-Press.



Octagon Revolving Clay Screens.



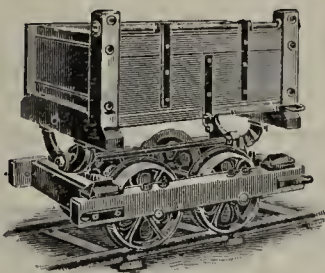
Clay Conveyors.



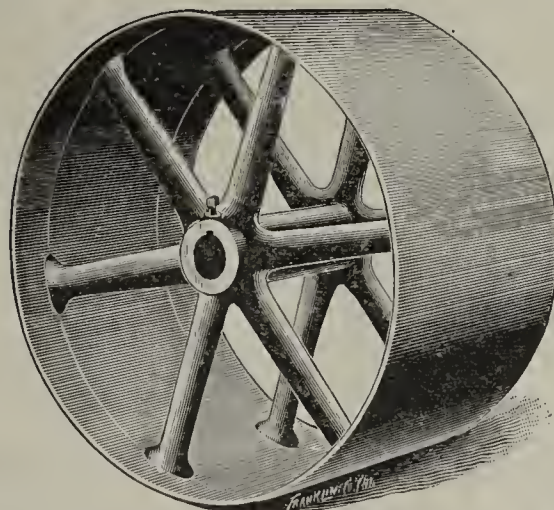
Clay Elevators.



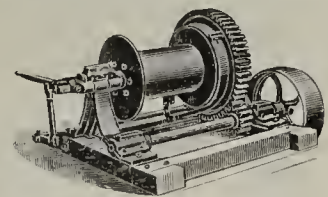
Reduction Mill.



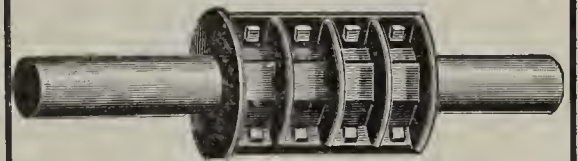
Dump Cars.



Pulleys, Shafting and Belting.



Winding Drums.



Couplings, Hangers, Etc.

**The FREY-SHECKLER CO., - Bucyrus, Ohio, U. S. A.**

Manufacturers of a Complete Line of Clayworking Machinery. Also builders of the Celebrated Bucyrus Steam Tunnel Dryer.

**Send for Catalogues.**

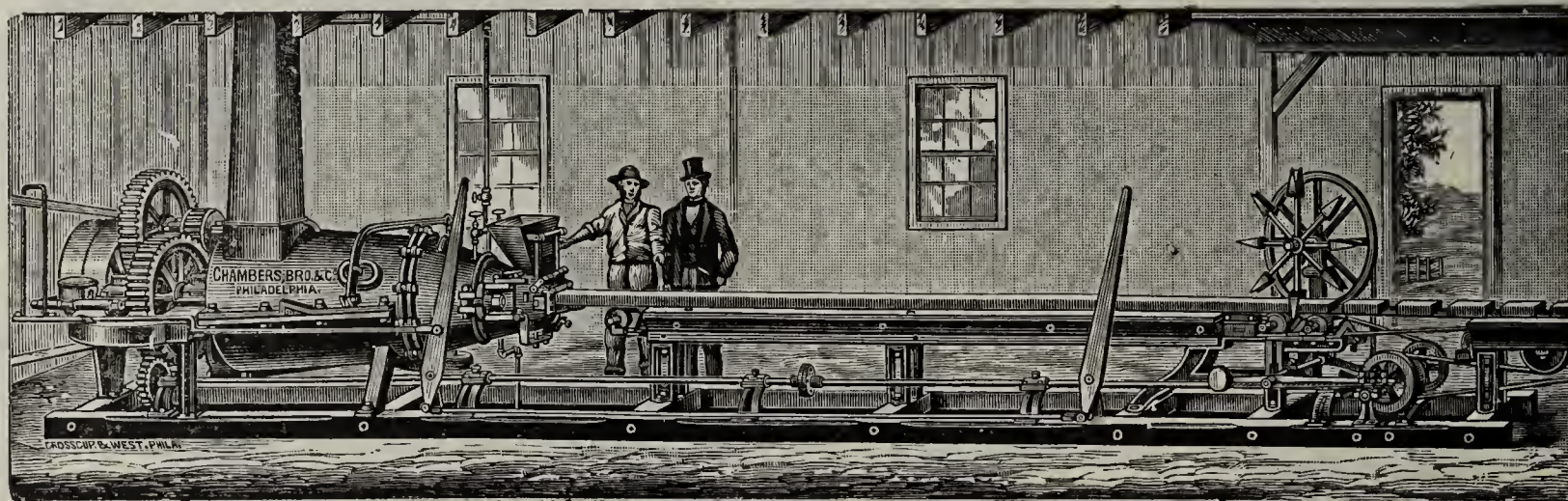


# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

## IMPROVED BRICKMAKING MACHINERY.



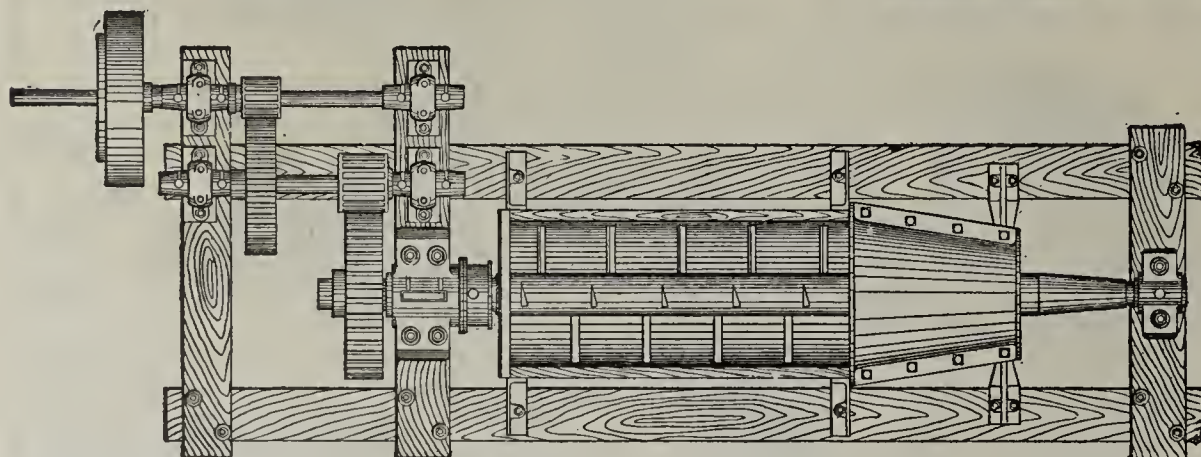
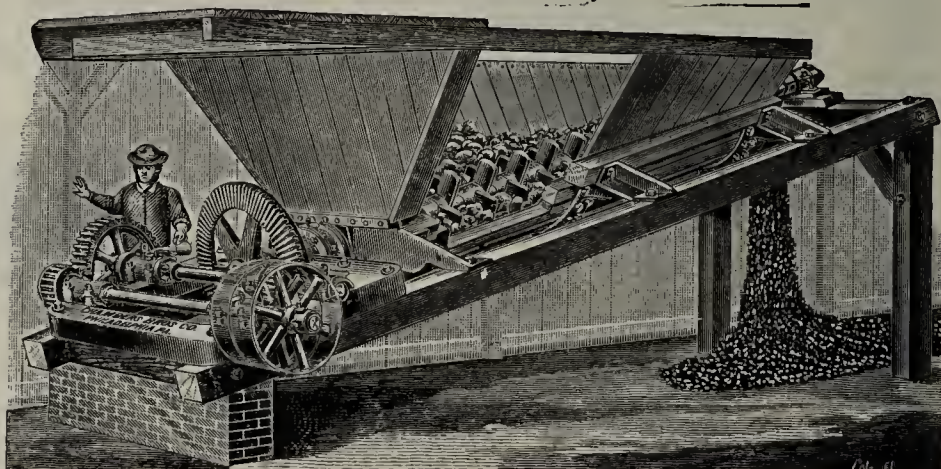
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,  
CLAY ELEVATORS.

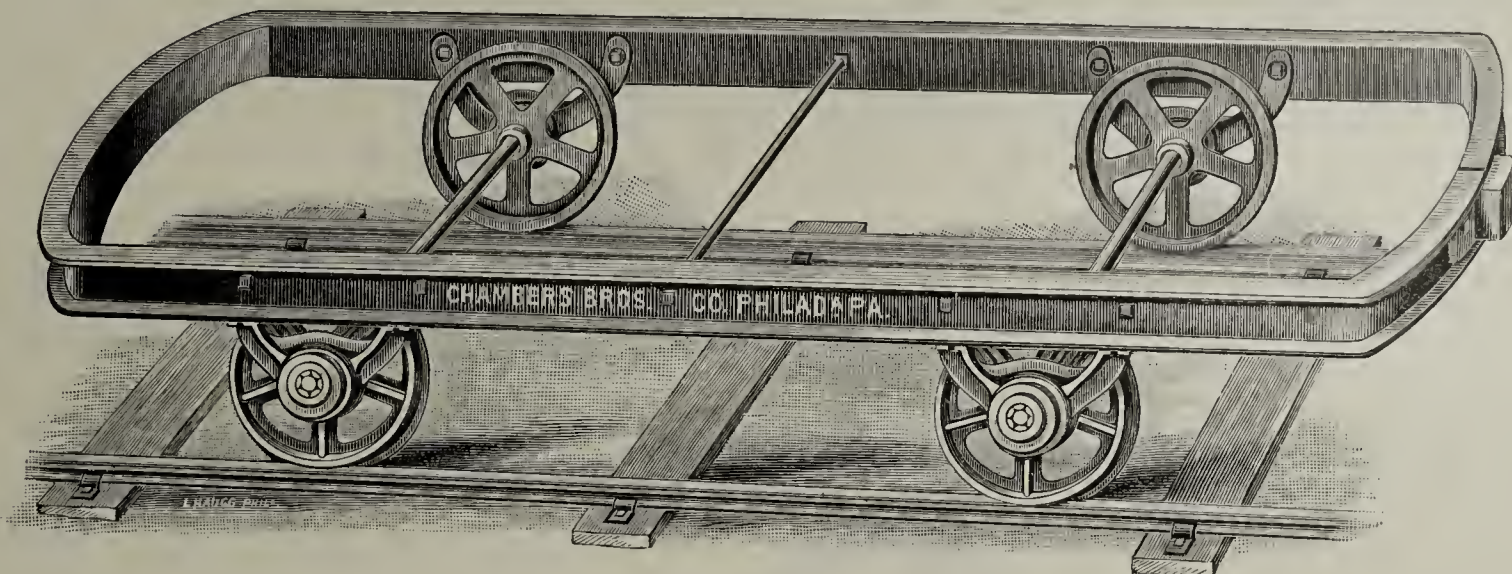
KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



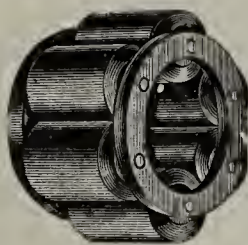
# ❖ DRYER CARS. ❖



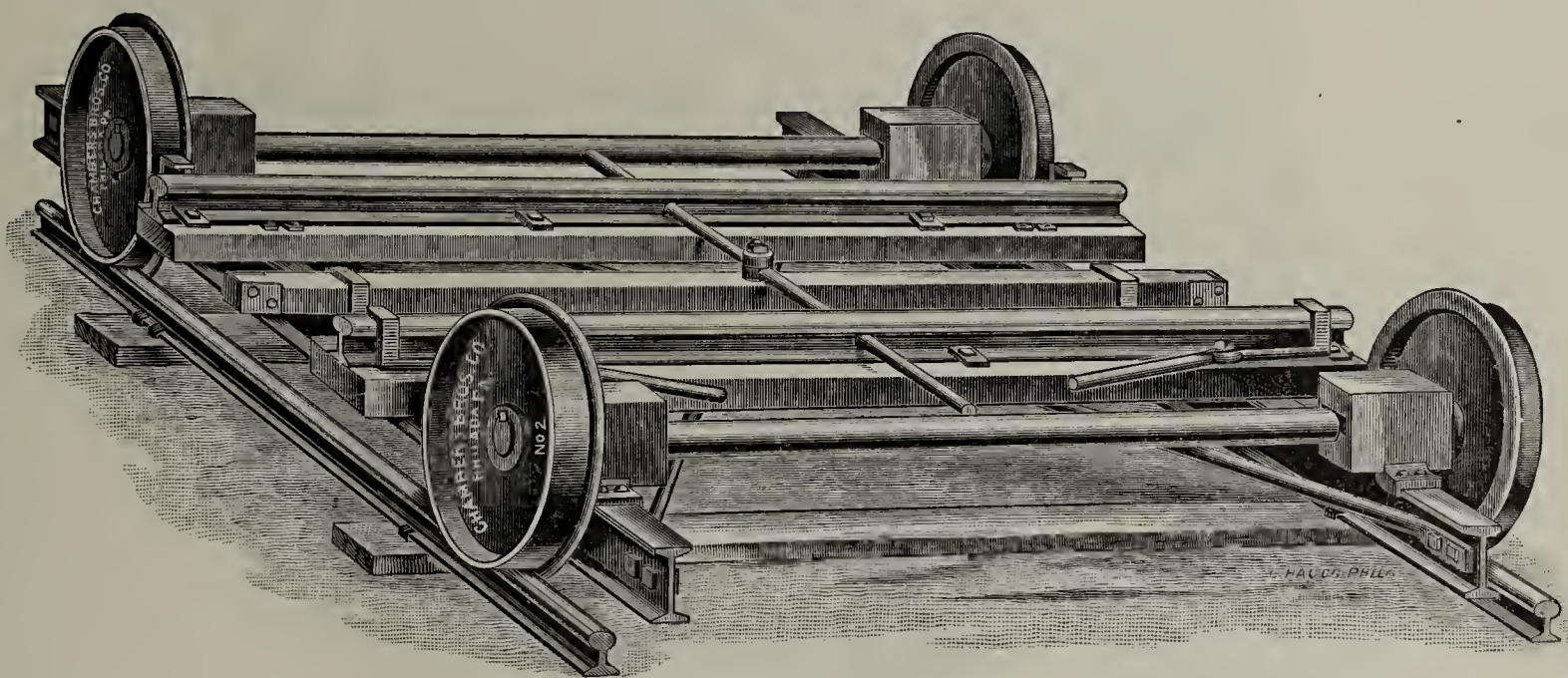
This STEEL CHANNEL FRAME CAR is Without an Equal.

We are prepared to make it of different dimensions, and of gauge to suit customers requirements. The channel section is much stiffer than angle, and being in one piece there are no weakening joints as where cross rails and bumpers are bolted to side frames.

The Anti-friction Cage Roller.



Bearing used on our Cars.



WROUGHT IRON BEAM TRANSFER CARS.

We guarantee these to give satisfaction.

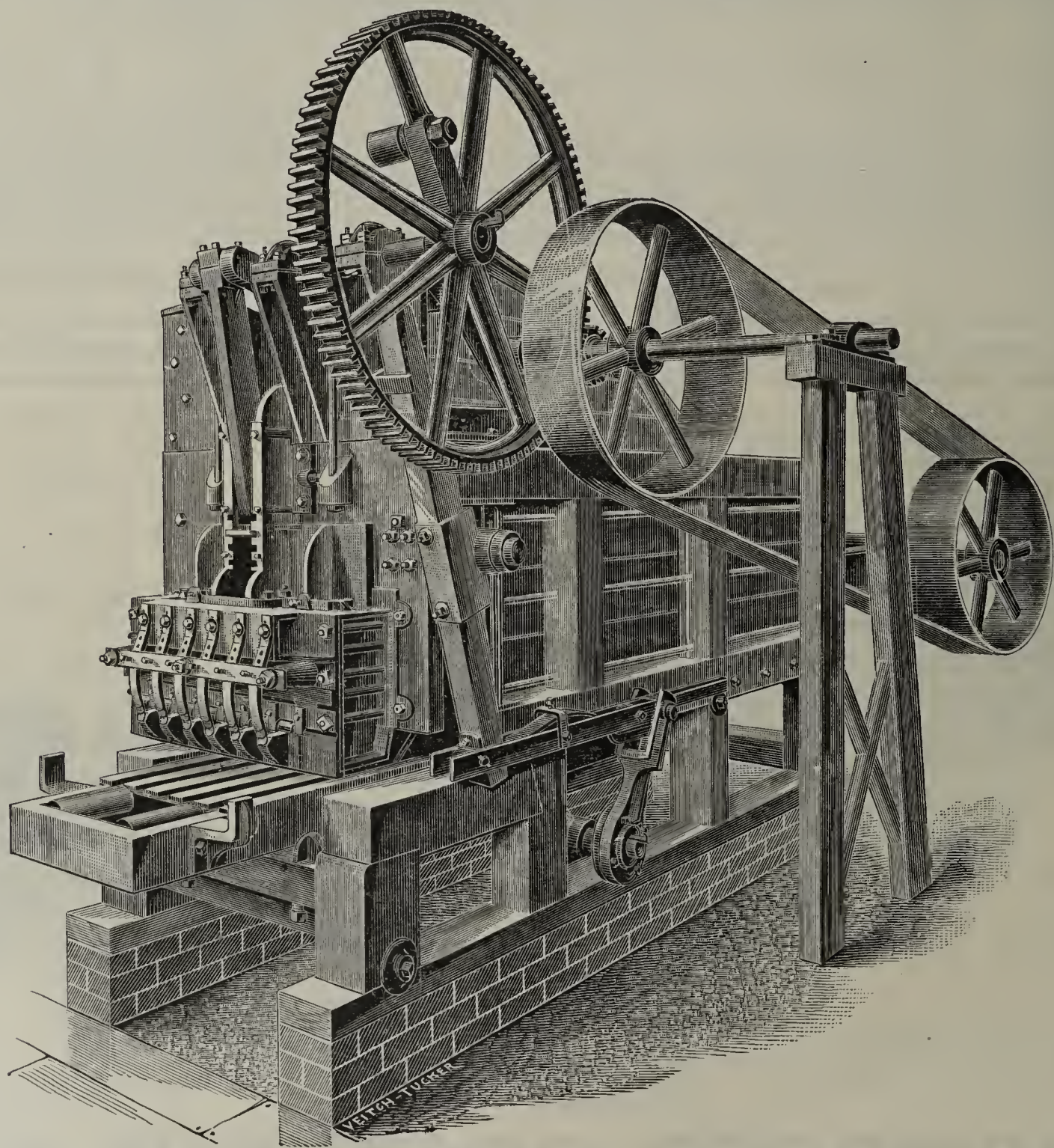
## CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

❖ PHILADELPHIA, PENN. ❖



Simplicity,    
Strength,  
Durability,  
Are Prominent Features. 



The UNEQUALED STRENGTH and POWER of our "New Haven" Brick Machine is fully recognized wherever known, and the increasing sales prove its Popularity.

You can obtain information promptly by addressing

**The McLAGON FOUNDRY CO., New Haven, Conn.**



# Your Destination.

Follow the example of the Collins Brick Company and you will find just what you are looking for ; and if the Big Wonder is not suitable to your conditions, look over the files of your CLAY-WORKER and see what we have offered you from time to time on the inside cover page.

OFFICE OF.....

**Collins Brick Co.,**

56 PEARL STREET

GRAND RAPIDS, MICH., May 23, 1894.

THE WALLACE MFG. CO.,

FRANKFORT, IND.

GENTLEMEN:—Enclosed find balance due on Big Wonder Brick Machine and Cunningham's Automatic Cutting Table. We have given it a thorough test on the hardest clay we have and are satisfied that it is just what we have been looking for.

Yours truly,

COLLINS BRICK CO.

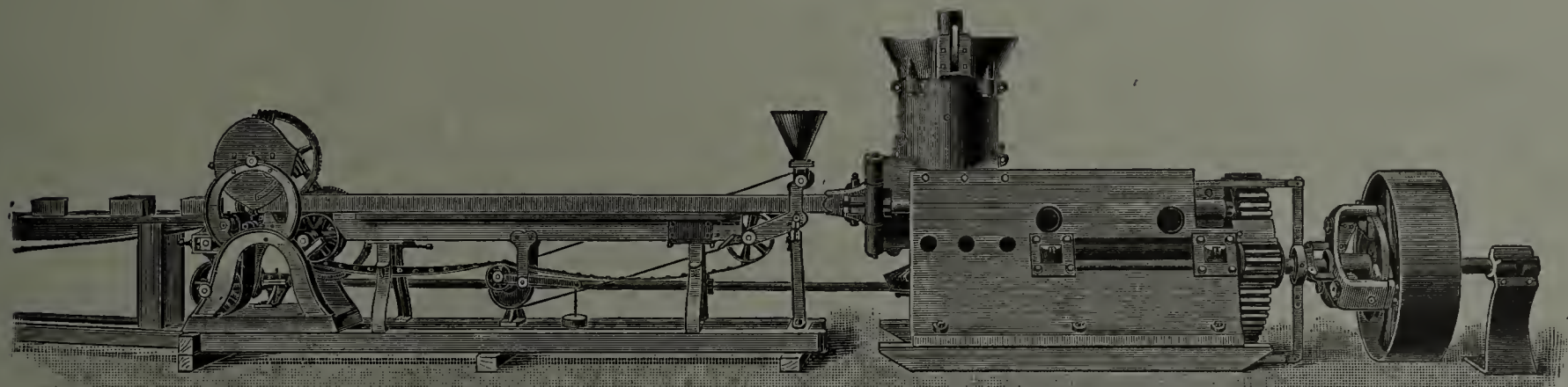


Illustration of Big Wonder with Cunningham's Automatic Cutting Table

Capacity 50,000 to 75,000 brick per day.

"We also manufacture the Little Wonder Brick and Tile Machine and a full line of Pug Mills, Clay Crushers and Stone Separators, Hoisting Drums, Friction Clutch Pulleys, Wheel Barrows and other brick and tile yard appliances.

## The Wallace Manufacturing Co.,

Send for Illustrated Catalogue.

FRANKFORT, IND.



The LATEST IMPROVED



Brick Dryer.

### THE IRON-CLAD

*Still Maintains It's Superiority Over All Others.*

## WHY ?

*Because It Is Founded Upon Nature's System*

. . . . AND . . . .

Is kept abreast of the times by close observation and developments, met by practical inventions, reducing the cost of construction, the time required, and cost of drying to such an extent, that other systems are being displaced all over the country, by the Iron-Clad.

... SECRETARY'S OFFICE ...

**Milwaukee Brick and Cement Co.**

SUITE 1013 PABST BUILDING.

Telephone 1620.

MILWAUKEE, WIS., July 6, 1894.

WOLFF DRYER Co.,  
CHICAGO, ILL.

GENTLEMEN:—Early in the year 1893 we received propositions from a number of builders of brick dryers to set up on our plant a brick dryer with a capacity of at least 66,000 soft mud brick a day. We first accepted a proposition made for a Hot Blast Dryer and found that the performance of their contract fell far below their promises, and we were compelled to discard the same entirely. We then called upon you to place your apparatus on our plant and found that it gives very good satisfaction and is apparently well able to perform the guarantee you gave for the same.

Yours respectfully,

MILWAUKEE BRICK & CEMENT Co.

Per F. C. ESCHWEILER, Sec'y.

Information, Estimates, Catalogues fully furnished.

**WOLFF DRYER CO.,** 358 Dearborn St. **Chicago, Ill.**  
Room 304,





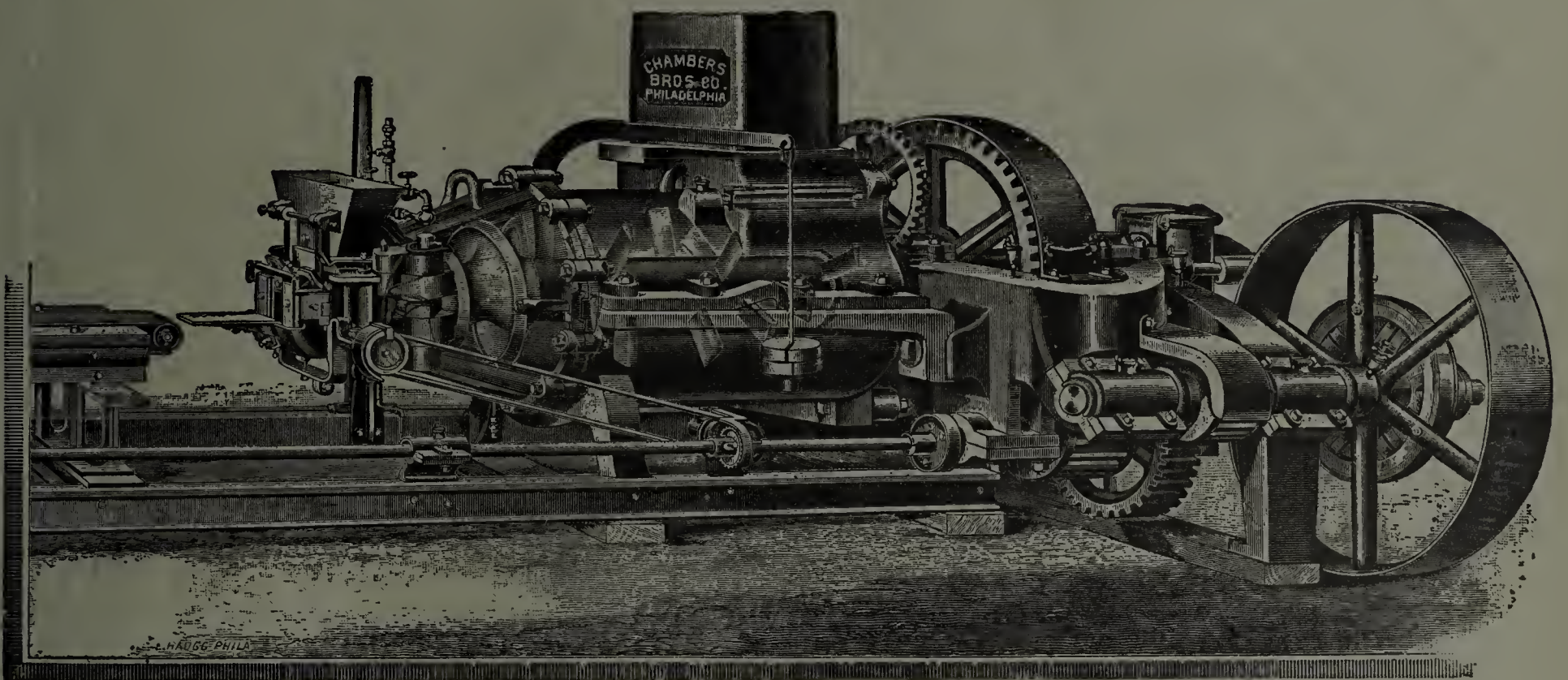
THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXII, No. 3.

INDIANAPOLIS, IND., SEPTEMBER, 1894.

\$2.00 a Year in Advance.

# Brick Making Machinery,



## Chambers Brothers Company,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,

J. E. EASTES, Chicago Agent,  
203 South Canal Street.

PHILADELPHIA, PA.

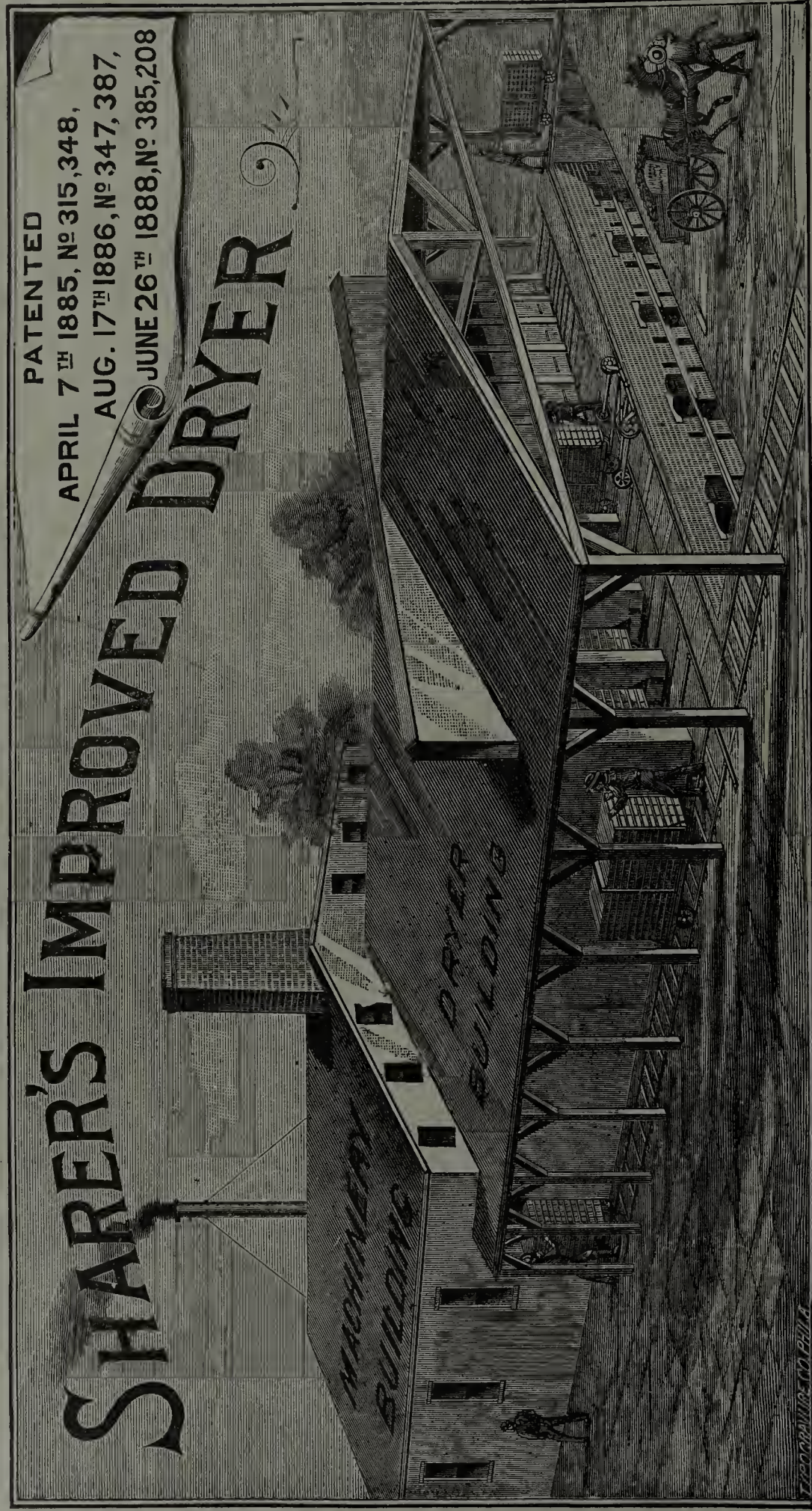
See ads. on pages 302 and 303.



# THE SHARER DRYER AND CONSTRUCTION CO.,

BRICK MANUFACTURING EXPERTS.  
CONSTRUCTING ENGINEERS. ♦ CONTRACTORS AND BUILDERS.  
COMPLETE PLANTS A SPECIALTY.

Builders of All Kinds of Dryers and Kilns for Dry rag and  
Burning any and all Kinds of Clay Products.



Owners of SHARER'S IMPROVED DRYER;  
SHARER'S IMPROVED CALORIFIC KILN.

Manufacturers of Cars, Transfer Cars, Turn Tables, Furnace Castings and Complete Dryer and Kiln Equipments.

.....Dealers in All Kinds of Clayworking Machinery, Engines, Boilers, Shafting, Pulleys, Etc.  
New plants built and equipped complete in every particular. Old plants remodeled and modernized. Clays tested and analyzed. Plans and estimates furnished.  
Information costs you nothing. Send for Catalogue "C."

## SHARER DRYER & CONSTRUCTION CO.,

TORONTO OFFICE: 71 Adelaide, East, Toronto, Ont., Canada,  
HUGH CAMERON, Manager.

Rooms 506 and 507, The Mutual Life Building,  
N. W. Cor. 10th and Chestnut Streets,  
PHILADELPHIA, PA.



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS  
—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

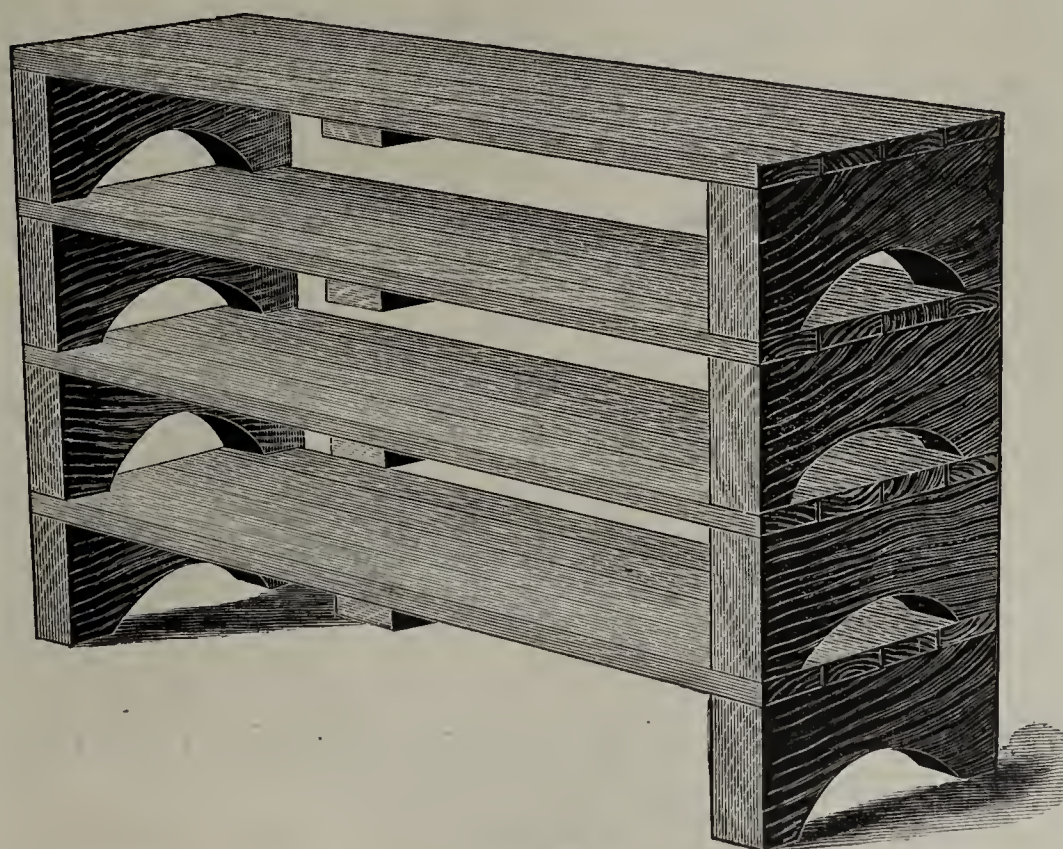
THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

## WOODEN BRICK PALLETS

WOODEN  
BRICK  
PALLETS



STYLE C.

WOODEN  
BRICK  
PALLETS

We manufacture all styles and sizes. Write to us direct for descriptive circulars and prices.

WM. B. MERSHON & CO., - Saginaw, East Side, Mich.



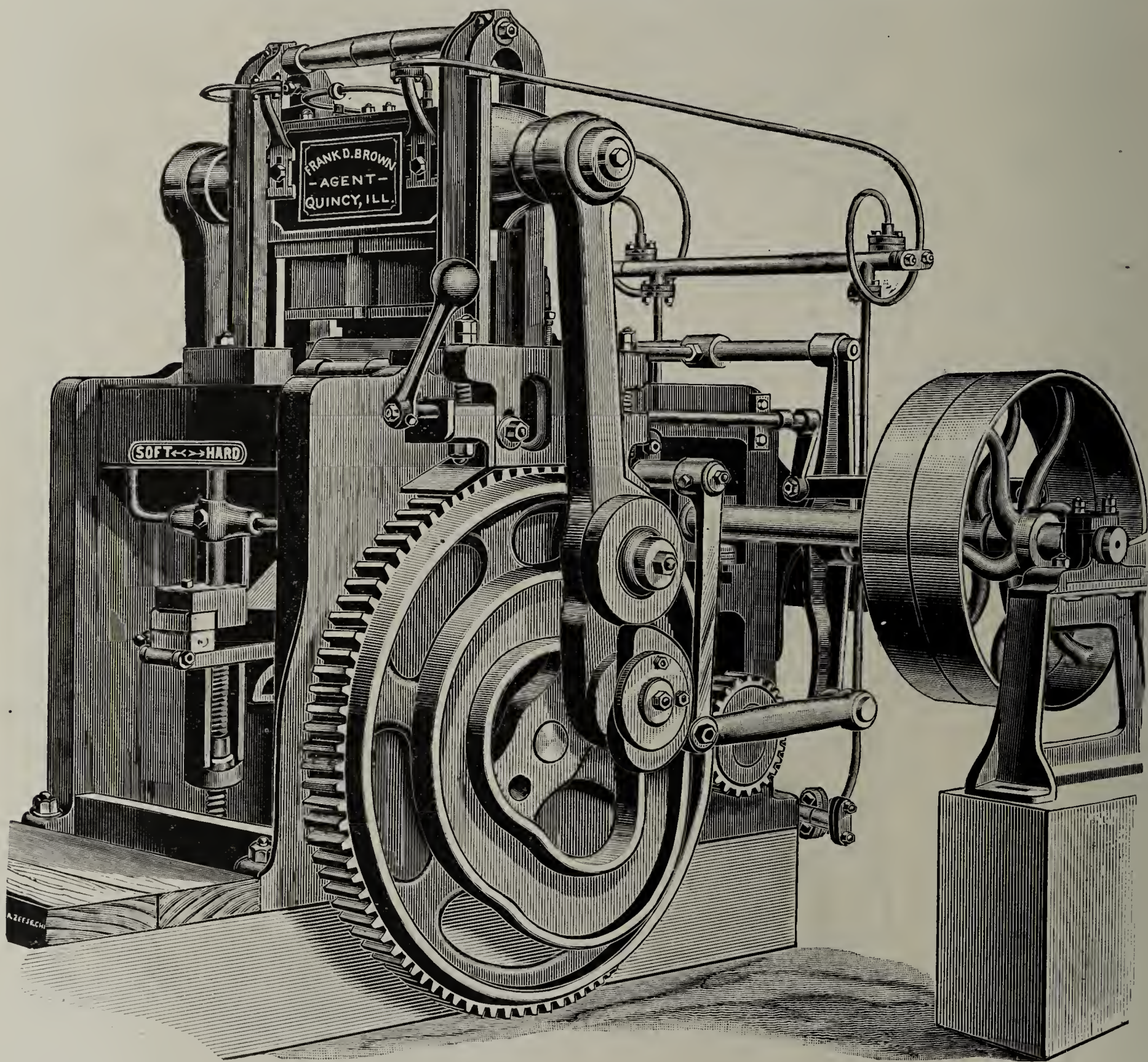
# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

•HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK.✧

Best, Cheapest and Most Durable Press in the World.

\*—One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

**FRANK D. BROWN,** Room 817 Continental Bank Bldg.  
Cor. La Salle & Adams Sts. **Chicago.**



# The Ross-Keller Brick Machine.

## (Triple Pressure)

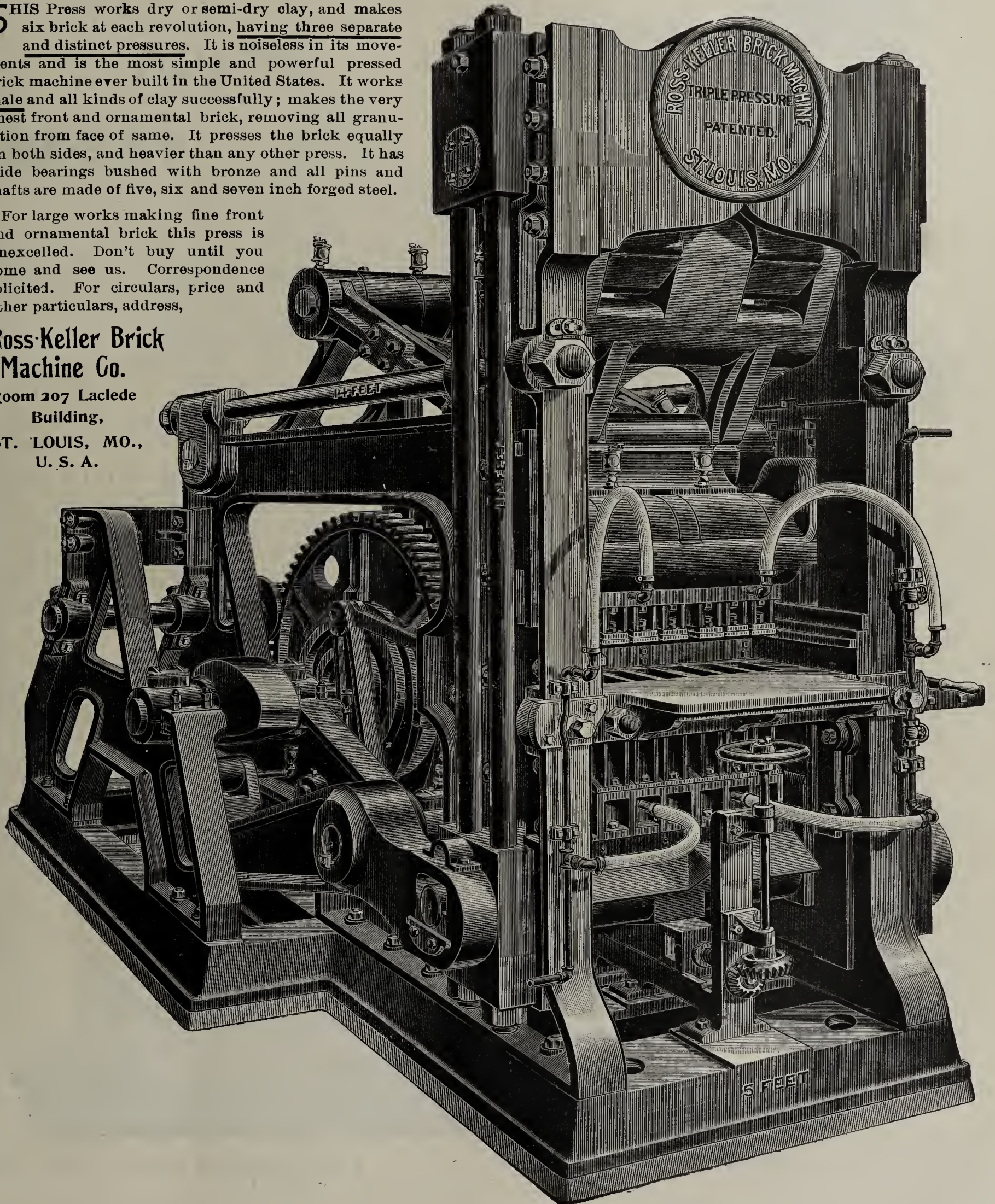
Weight 75,000 Pounds, Capacity 35,000 to 40,000 Brick Per Day.

**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five, six and seven inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address,

**Ross-Keller Brick  
Machine Co.**

Room 207 Laclede  
Building,  
ST. LOUIS, MO.,  
U. S. A.





# Fifty Thousand Dollars

For the **BOYD**

**BRICK**

**PRESS**

## A TRUE TALE.

The largest brick plant in the world is  
*The Jarden Brick Co.,*

—OF—

*Philadelphia.*

Not long ago they decided to put in a Dry Clay Plant. They traveled all over the country and inspected the various dry press machines at work. Then they put in a six-mold Boyd Press. They worked it for over seven months, and were so pleased with it

that they bought **five more** six-mold and **one** two-mold, Boyd Presses. They paid for all these presses. They knew what the Boyd Brick Press could do. They knew that no other press could compete with it. So in order to get the sole right to use the Boyd Brick Press in Philadelphia and for 50 miles around, besides the price of the seven presses, they paid us **Fifty Thousand Dollars** (\$50,000).

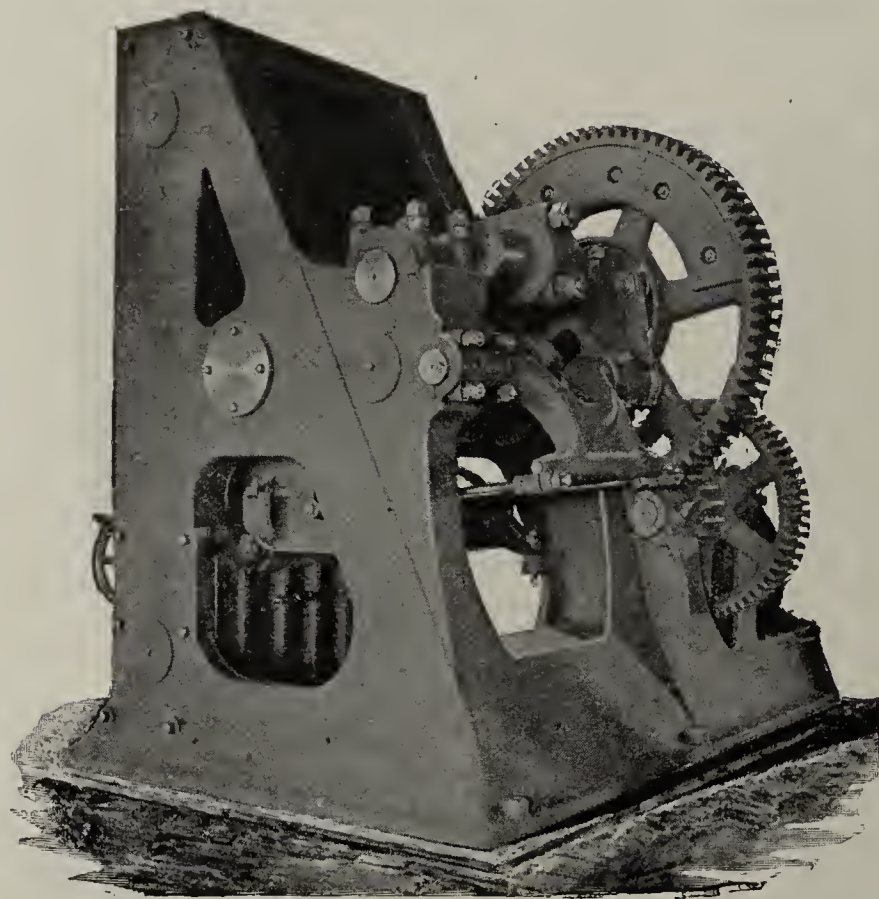
Their brick is acknowledged by builders to be "without competition" in their part of the country.

Need we say more?

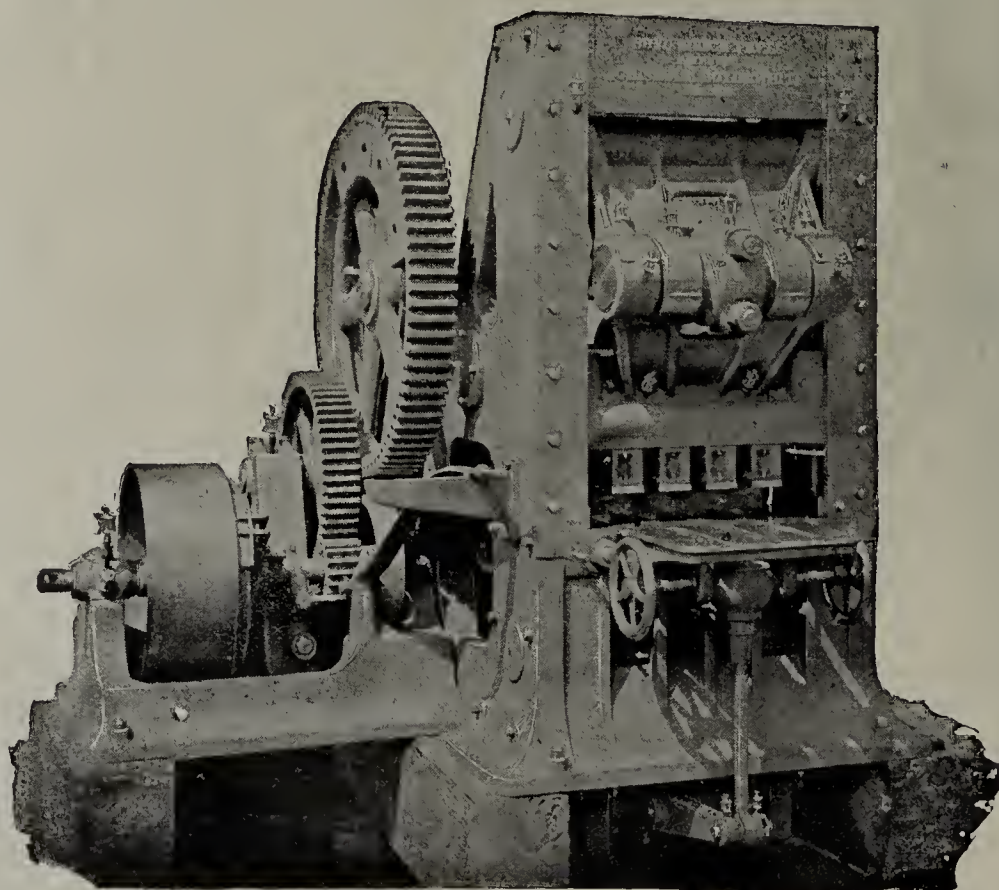
Catalogue on application. Circular giving *fac simile* of medal awarded at the World's Fair to the Boyd Brick Press, free.

*The  
Chisholm,  
Boyd  
and  
White  
Co.,*

*324 Dearborn Street,  
CHICAGO.*



FOUR-MOLD MACHINE.  
(REAR VIEW.)



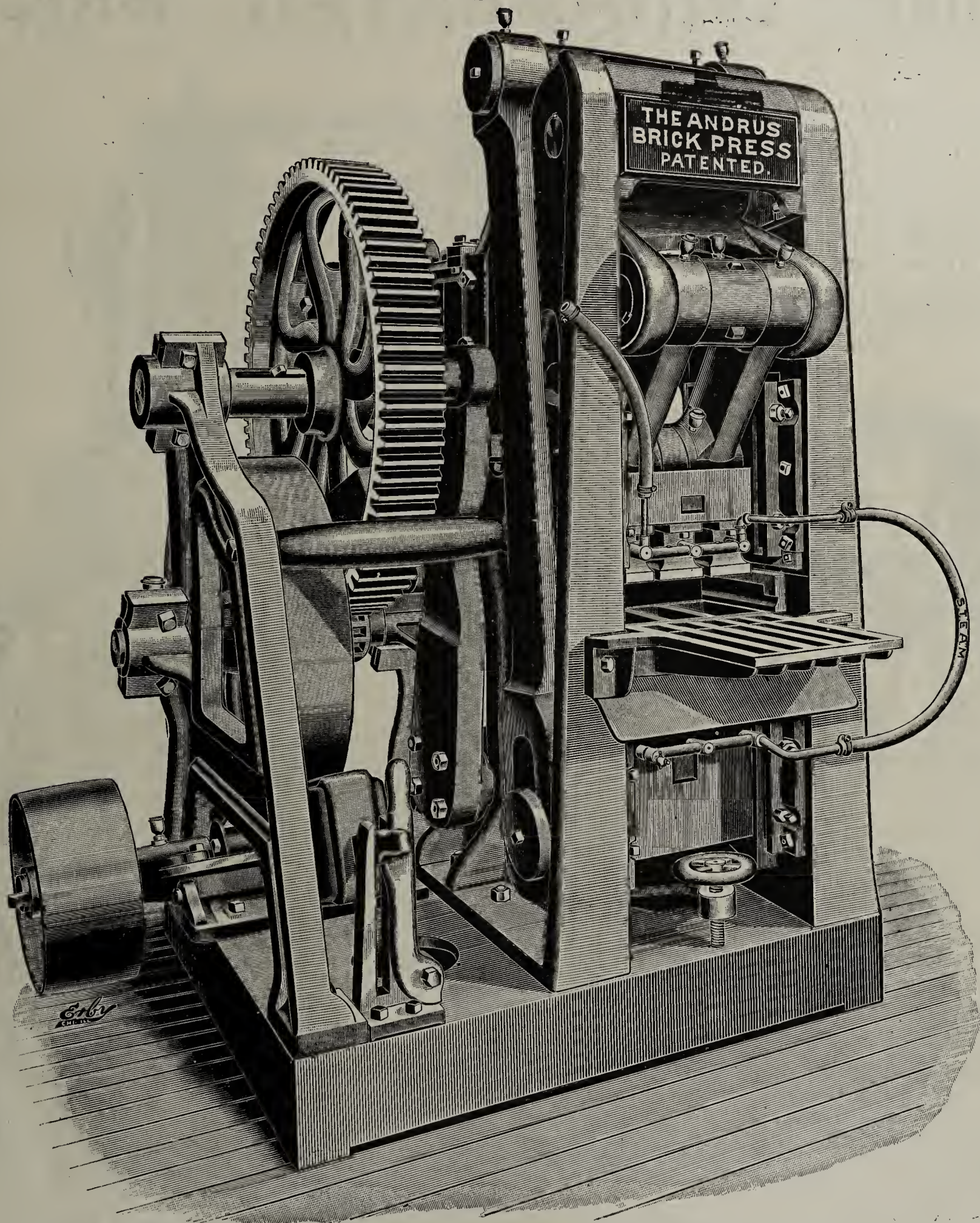
FOUR-MOLD MACHINE.  
(FRONT VIEW.)



# The NEW ANDRUS

DOUBLE PRESSURE  
3-MOLD BRICK PRESS

Within the Reach of Any Responsible Brick Manufacturer.



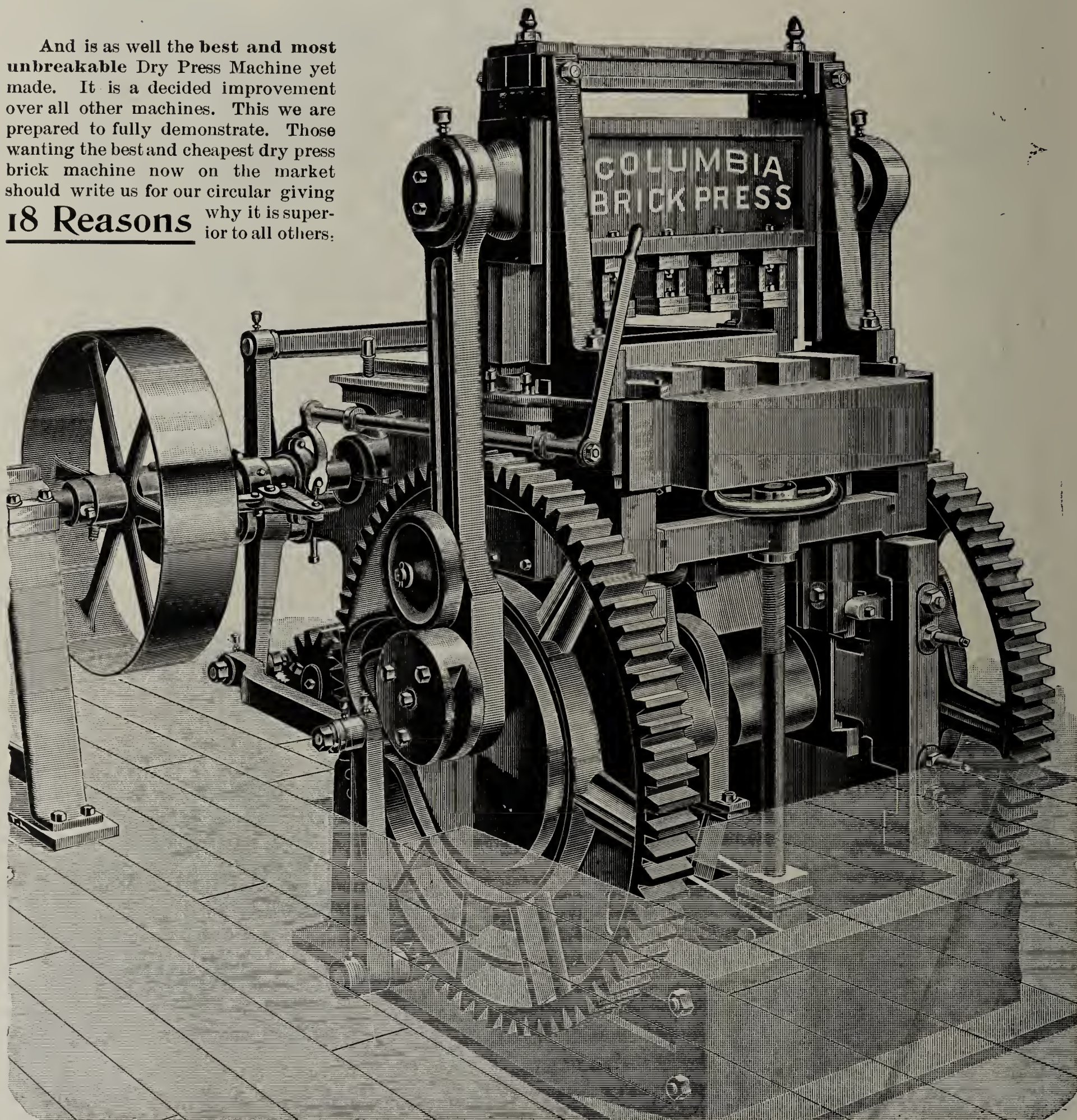
Write for new Catalogue of our 3 and 4 mold Presses and new terms to suit the times. Address

**H. O. WHITNEY, General Agent,**  
General Office and Factory, KEOKUK, IOWA. **KEOKUK, IOWA.**



❖ THIS ❖ PRESS ❖  
 IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF  
**FINE ORNAMENTAL BRICK**

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,  
**COLUMBIA MANUFACTURING CO.,**

Send your clay and we will test it and send you the results....

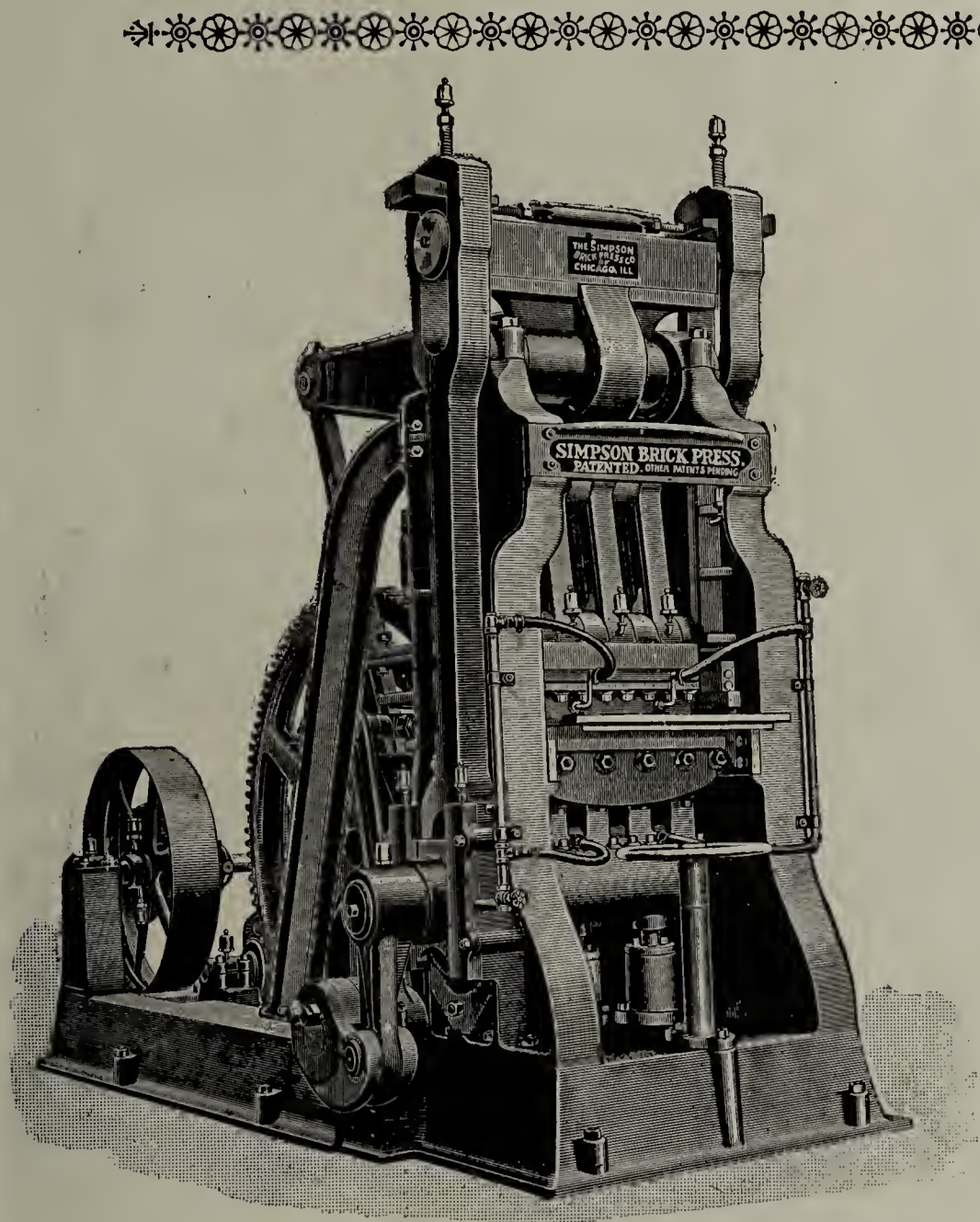
**2119 N. Ninth St., ST. LOUIS, MO.**



—\*IT HAS NO COMPETITOR.\*—

# The Simpson Brick Press

Is THE STANDARD MACHINE of its class.



A poor machine cannot make brick from any kind of material, therefore **purchase the best**, and one that you know is **not an experiment**. The Simpson has been on the market for years and has repeatedly demonstrated its adaptability on all kinds of brickmaking material. Running from the Atlantic to the Pacific, and one and all giving entire satisfaction.

It easily carried off highest honors at the

## World's Columbian Exposition

And was the **only** machine of its class to receive favorable mention by the **Official** Judge on brick machinery.

We will construct complete plants of any capacity and send machinery for trial to responsible parties. Send for descriptive matter.

## The Simpson Brick Press Co.,

AGENTS FOR CANADA,  
Waterous Engine Works Co., Brantford, Ontario.

Chamber of Commerce, CHICAGO, ILL.



# U. S. BRICK PRESS

Perfect in Mechanical Construction.

Least Cost For Repairs.

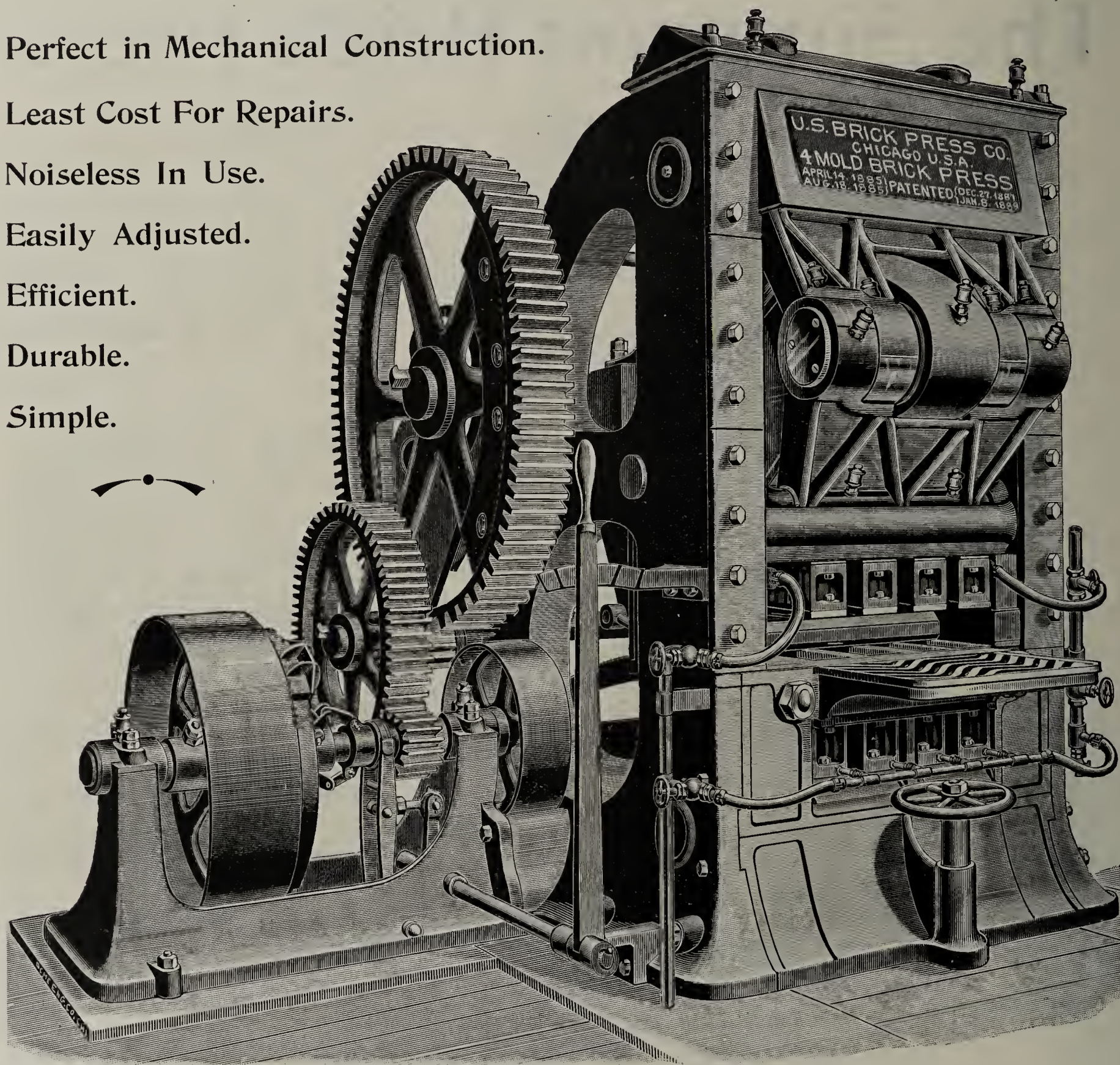
Noiseless In Use.

Easily Adjusted.

Efficient.

Durable.

Simple.



The U. S. Brick Press embodies all the requirements demanded by Pressed Brick Manufacturers, and its record is proof conclusive of its perfection as a Pressed Brick-maker. Write for new descriptive sheets.

**UNITED STATES BRICK PRESS WORKS,**

**OSWALD KUTSCHE, Proprietor,**

OFFICE AND TESTING ROOMS:  
72 West Washington Street.

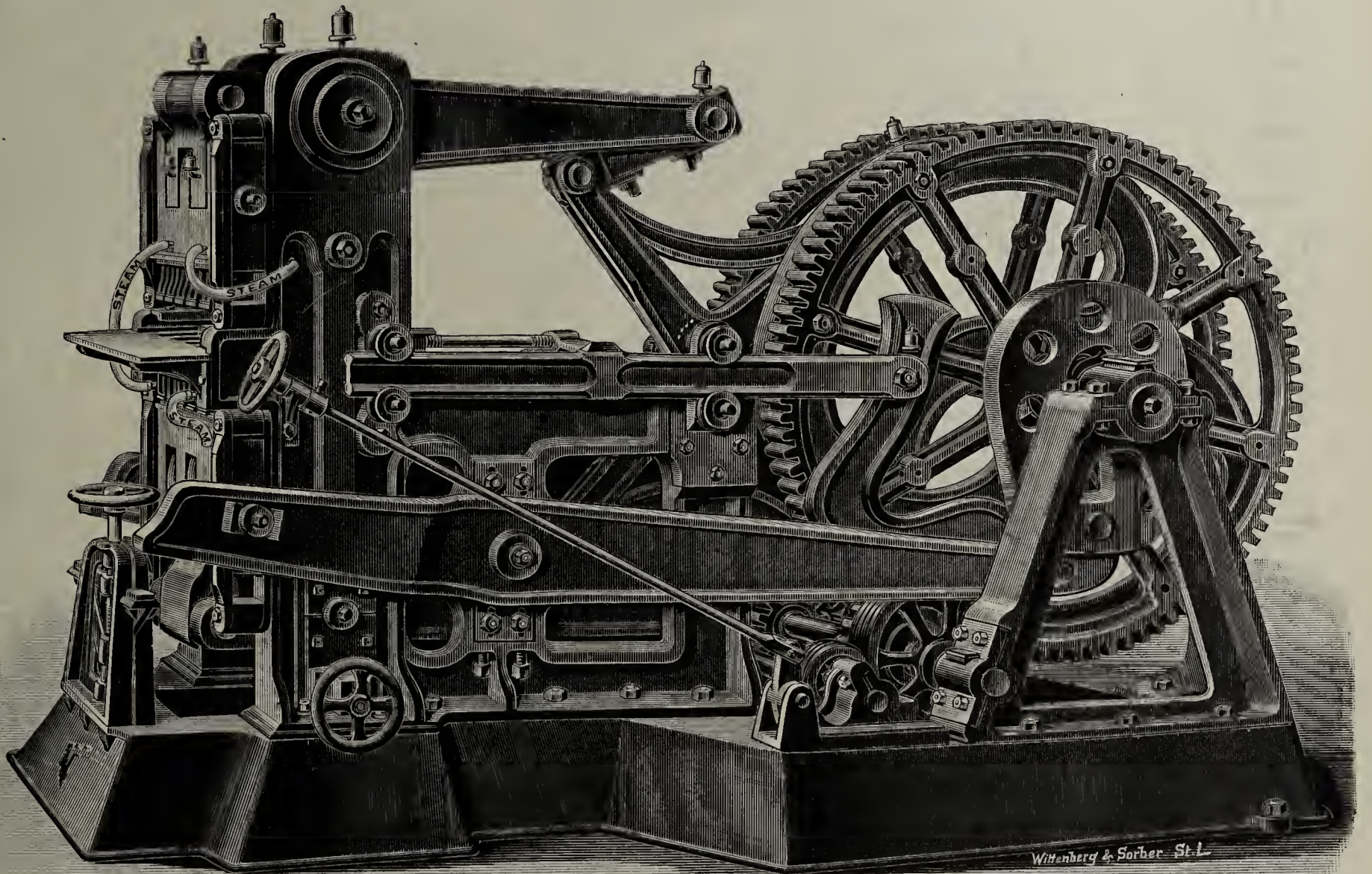
 **CHICAGO, ILL.**



# The Progress Brick Press,

✻ *DRY and SEMI-DRY.* ✻

This machine is the result of years of practical experience in Dry Pressed Brick-making, a model combining **Simplicity, Durability and Economy**, as Brickmakers and Press Builders, we have entailed every advantage in producing the machine for a Brickmaker.



Can be seen in daily operation on plain, stock and ornamental bricks at any time at our yards. **Inspection solicited.**

Equal in strength to 50 tons of iron; this press is built of **Basic steel and best quality iron.**

Bearings of **split boxes**, and wear taken up with **key and key**, hence no lost motion.

All adjustments arranged with **wedges** operated by **hand wheels**, no troublesome liners and all parts easily accessible.

Only **Six Horse Power** required to operate our largest 6-Mold Press.

No liners to our mould, no table to fit mould into, and no change in size of bricks by regrinding moulds.

Of the time of each revolution 40 per cent. is spent in high pressure on bricks, permitting all air to escape, hence, no seam or granulation, in the brick, 28 per cent. in charging forwarding bricks, perfect filling of molds and undamaged product secured by this easy movement. Only 32 per cent. in moving of the Plunger.

This machine is adapted to making all sizes and shapes of bricks up to 12 inches square. Bricks pressed on edge, etc., etc. We manufacture 2, 3, 4, 5 and 6 mould presses and sell them with a perfect guarantee.

Descriptive catalogue, prices and terms on application.

**Tower Grove Brick and Machine Works,**  
King's Highway and Oak Hill R. R. **ST. LOUIS, MO.**

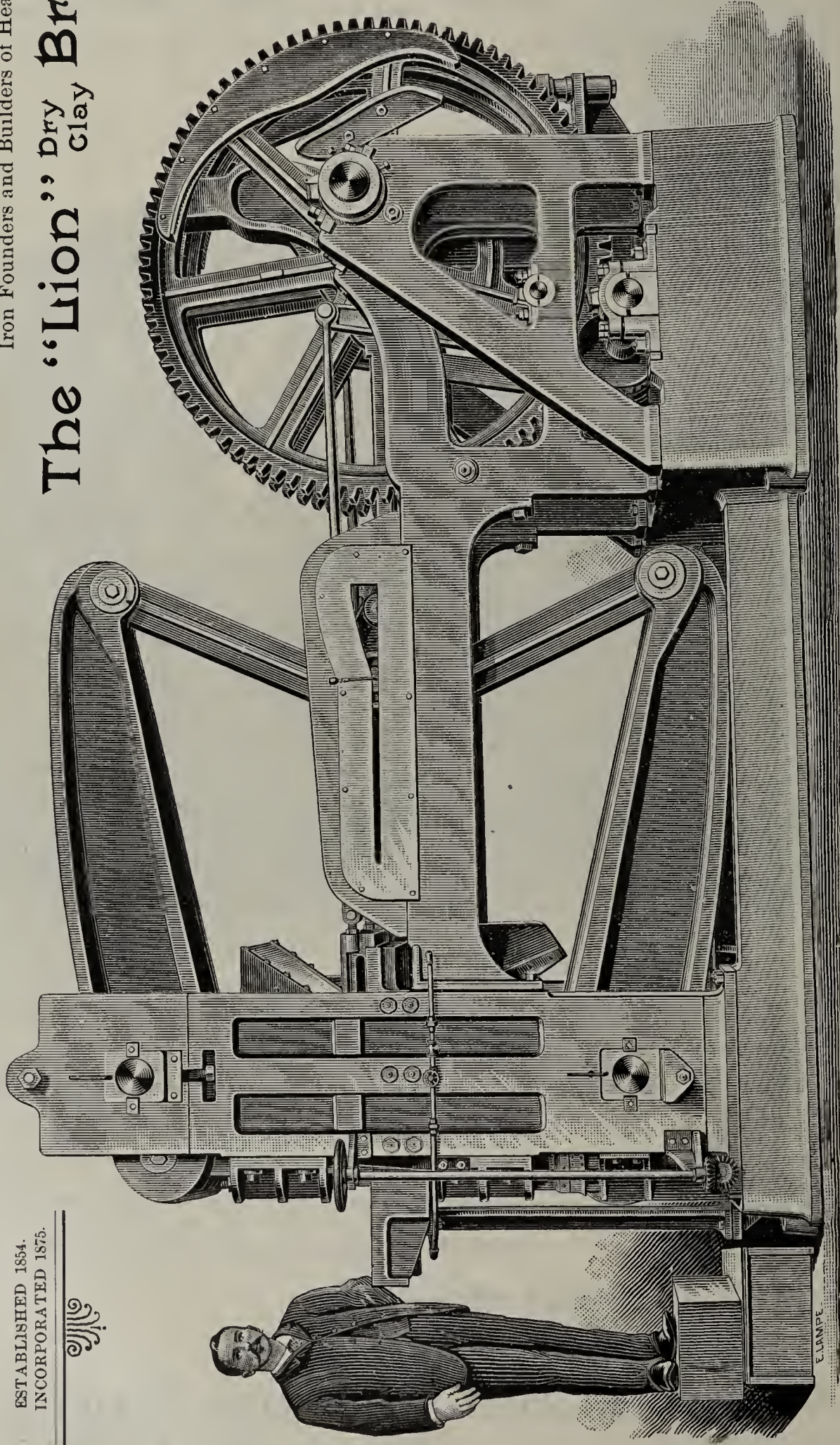


# ST. LOUIS IRON AND MACHINE WORKS.

Iron Founders and Builders of Heavy Machinery.

ESTABLISHED 1854.  
INCORPORATED 1875.

## The "Lion" Dry Clay Brick Press.



Weight, 44,000 pounds.

Capacity, 25,000 to

30,000 pressed

bricks per 10 hours

Pressure, 200 Tons on Five

Bricks.

### WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain. 2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press. to a minimum. 3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do. 4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time.

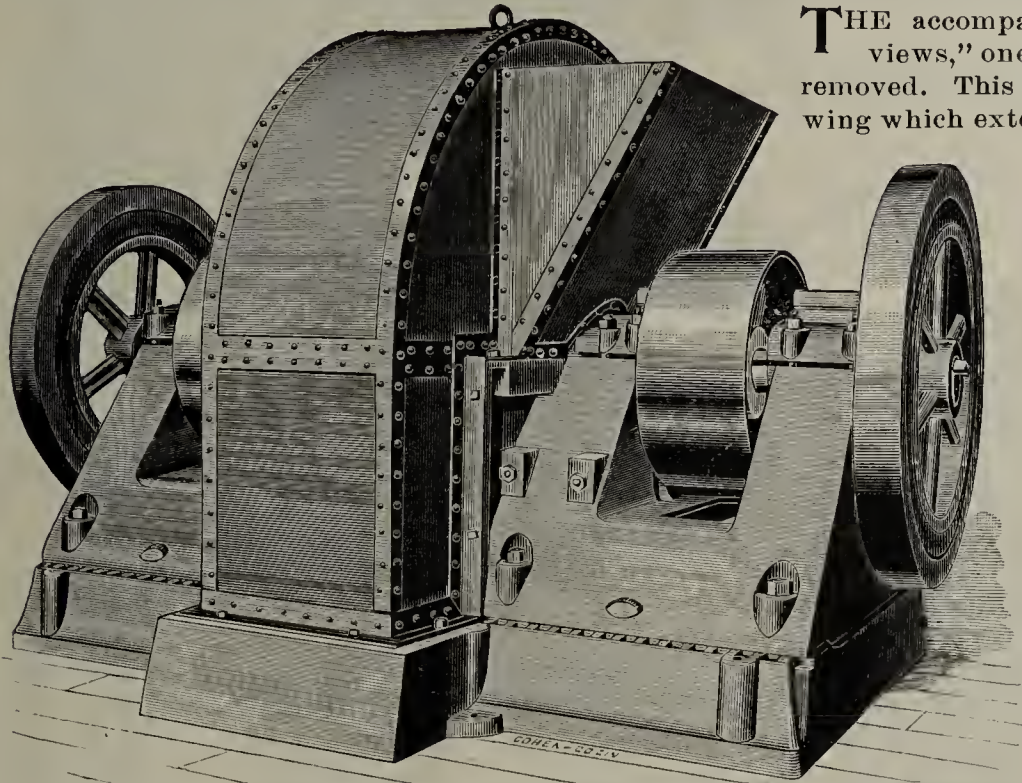
Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given.

If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 good brick, with little or no cost for repairs. We make this press now in two sizes—25,000 to 30,000 capacity and 10,000 to 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepays the freight charges. For circulars, price and other particulars. Address:

**ST. LOUIS IRON & MACHINE WORKS, Main Street and Choteau Ave., St. Louis, Mo.**

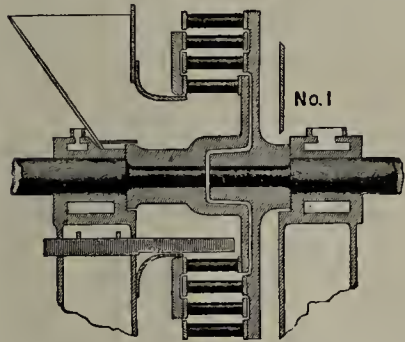


# Stedman's Improved Clay Disintegrators



PATENTED APRIL 10, 1894. Nos. 518,010, 518,011.

Figure 1. This is the old plan of cage construction. While these cages do good work, there are certain mechanical faults in their construction that require excessive power to operate them, and the capacity is diminished. The four rings of cage pins are the same length, and this construction necessitates a recess in the castings to receive the ring of the opposite cage. The friction of the ground product between this ring and cage casting requires surplus power. The pins, or bars, all being the same length, there is no chance for the material to spread and clear itself, as it works



outwardly in the cages, and if the feeding is irregular, it constantly chokes the cages and checks the speed, so that as good grinding is not accomplished.

Figure 2. The construction of these cages is such that the best possible grinding can be accomplished, with little power and little wear and tear. We have what is called an increased clearance of the cages. (That is, they approach a conical construction from the center of the shaft to the circumference of the outside cage.) The inside row of pins is shorter than the second row, and the third and fourth rows increase in length over the second. By this construction there is no recess between the ring of one cage and the casting of the other, any material that works behind the rings being immediately thrown outwardly into the cage beyond, for it has a free discharge, and the centrifugal force it receives will not permit it to lodge between the ring and casting. This increased clearance allows the material, as it is fed to the cages, to spread and free itself, for it gives an increased grinding surface as the material works outwardly. You can feed the material as irregular or fast as you desire and it will not choke or clog the mill.

Parties who are familiar with the mechanical construction of Cage Disintegrators will understand and appreciate the merits of this valuable improvement. This cut also shows the construction of our journal bearings. The arrangement for oiling is the best and the journals are constructed dust tight, so that there will never be any danger of heated bearings.

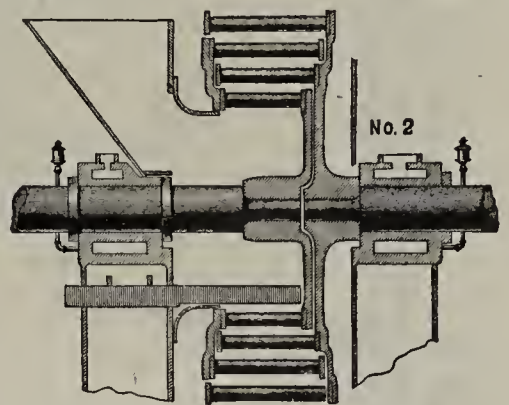
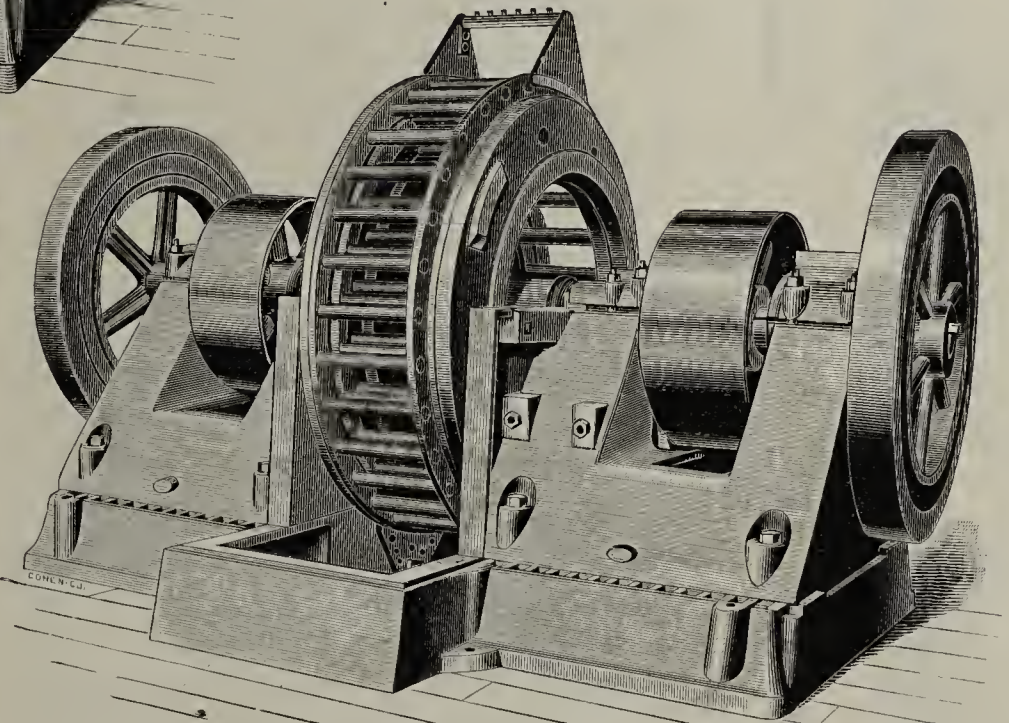
We can design these Improved Clearance Cages to fit the framework of any other make of Disintegrators, and will be pleased to correspond with any one who appreciates the value of this improvement, with a view of placing it on his Disintegrators.

Remember, with our Improved Clearance Cages you can do much more work with much less power, and greatly reduce the wear and tear.

For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

THE accompanying cuts show our Improved Disintegrator, "two views," one with the casing over the cages, the other with the casing removed. This casing, which fits around the cages, has an extension wing which extends clear down to the base plate, so when you remove it from over the cages, they are presented in full view, and it is an easy matter, when slid apart, to reach the interior parts. Fastened to the outside revolving cage are two scrapers; the cross-bars of these scrapers extend some six or eight inches beyond the revolving cages, and revolve close to the iron casing that fits around the cages. This always insures a space of 6" to 8" between the cages and casing for a free discharge, and the action of these scrapers makes it impossible to clog in grinding damp clay. This is the most simple and practical method to overcome clogging in grinding damp clay, and brickmakers who have had experience with this class of Cage Clay Disintegrators will appreciate the value of this patented improvement. See cut below.

Improved Scraper.



**STEDMAN'S MACHINE WORKS, - - 110 Third Street, AURORA, IND.**



# — AN EXPLANATION OF — COLD FACTS!

Draw Your Own Conclusions.

**I**N the discussion of kilns in the N. B. M. A. Convention at Chicago, for special purposes, it was noticeable when an up-draft kiln was referred to, some one would remark that an up-draft kiln would not answer the purpose for the reason that the cold air coming in contact with the bricks in the arches would damage the ware." We wish to call attention of brickmakers to this point,

The bricks in the arches or bottom of our up-draft kilns are as thoroughly protected from cold air, as are the top brick in a down-draft kiln.

So much for this; now we maintain that we can obtain a more uniform degree of heat from top to bottom with an upward draft which is natural, than can be obtained with a downward draft, which is forced and unnatural, and with an arch over an up-draft kiln a larger per cent. of hard building brick can be produced; without an arch two courses only on top are salmon.

Now as to comparative cost of putting in the down and the up-draft kilns.

The average cost of a first class up-draft kiln to hold 200,000 brick, is.....	\$ 1,500
The average cost of a first class down-draft kiln to hold 200,000 brick, is.....	5,000
Saving to the brickmaker in first cost on one kiln.....	3,500
Saving to the brickmaker on three kilns this size, (which are necessary for a small plant).....	10,500

We are ready to verify these estimates.

For the best and cheapest kiln in use to-day for burning building bricks, the "Morrison Up-draft Kiln" with late improvements is unrivaled.

If you have any doubts about it, address

**R. B. MORRISON & CO.,**

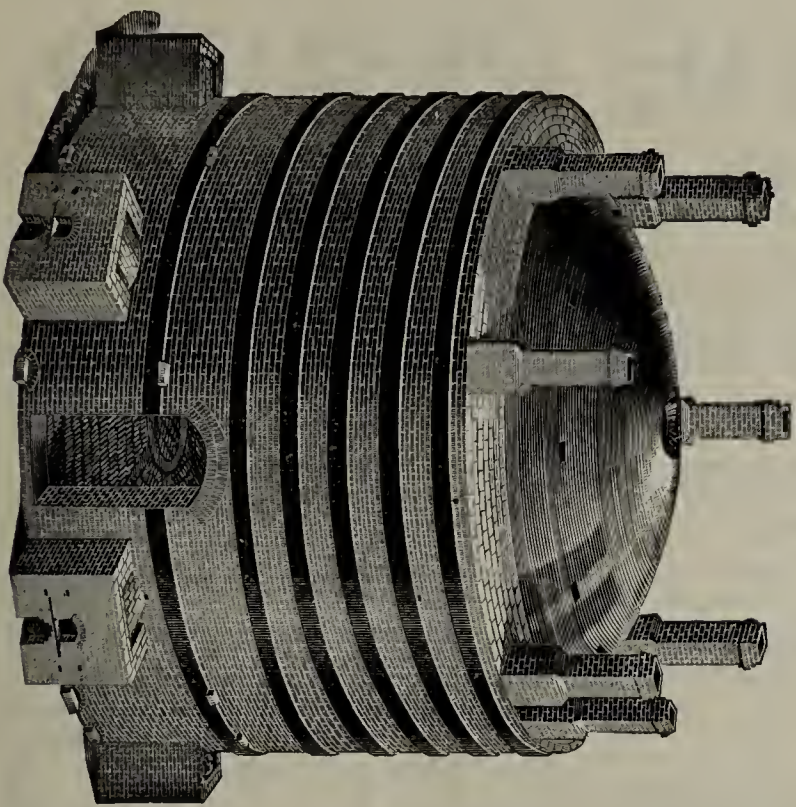
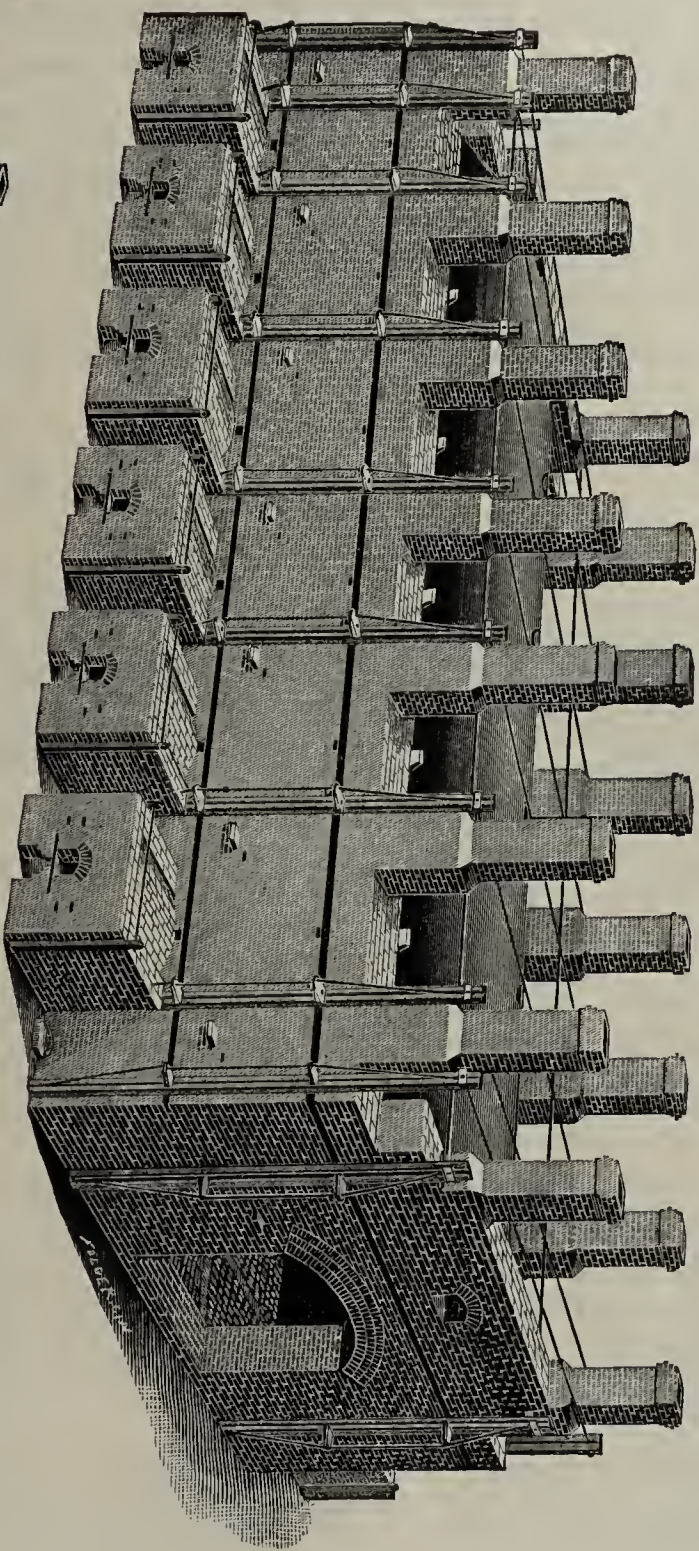
**PROPRIETORS,**

**ROME, GA., U. S. A.**

For further proof. —



# The Eudaly Improved Down-Draft Kiln.



**A** VERY large number of manufacturers are now using the **EUDALY KILN** for burning all kinds of clay wares, especially **front, ornamental and paving brick**. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of **large capacity** on account of economy in cost of construction and **space** occupied on the plant; while the Round Kiln is better adapted to plants of **small capacity**, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for **burning all hard and uniform**. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**

64 Johnston Buildings,

Cincinnati, Ohio.



# THE KILN OF THE PERIOD.

## THE "PERFECT KILN."

*Sercombe's Patent.*

Designed on Economic and "Common Sense" Lines, for Burning Brick, &c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Hoffman's are being converted and new ones erected in Austria (the home of Hoffman's); also a number in America.

### NOTE WHAT THE USERS SAY.

100 per cent. Hard Brick, out of which are 70 per cent. Vitri-  
fied, Annealed Tough Pavers.

John A. Wiley, *Pres.*  
Geo. Allen, *Sec.*

W. S. Bleakly, *Treas.*  
W. Cramer, *Gen'l. Man.*

FRANKLIN PAVING BRICK CO.,

March 19, 1894.

To L. HANCOCK, Esq., Metuchen, N. J.

Dear Sir:—In answer to yours of the 13th wanting to know how we are getting along with our kiln, would say that we are improving steadily as our men get to understand our material. You know that our clay is one of the most difficult kind to work that your kiln ever had to contend with, for the reason that there is so small margin between vitrifying and melting. We are now getting 70 per cent. vitrified brick and balance all hard. We expect to do better than this soon. I feel confident we will. A kiln that will burn our clay properly, will burn anything in the shape of brick material.

Yours truly,

GEO. ALLEN, Secretary.

From the Russian Agricultural Agency, St. Petersburg.

Herewith we beg to inform you that the erection of the Kiln is finished, and we are very glad to tell you that our customer (Prince Kourakine) is very much satisfied with the kiln after same was duly tried.

We enclose cheque for balance of license fee, etc.

From Mr. H. Burridge, Bedford.

No doubt you will be pleased to hear that I am getting on all right with the Kiln. I have no hesitation in saying that I am pleased with it. It is going well.

From Mr. J. D. Dunlop, Woodstock Works, Belfast.

I am very pleased to be able to inform you that the "Perfect Kiln" is doing well, burning the brick all hard, at a cost of between 7d. and 8d. per 1,000 for coal.

From Messrs. Hawkes & Joberns, Kenilworth.

We shall be happy to let the gentlemen you name see the Kiln. We are quite satisfied with it, and its work.

From the St. Julian's Brick and Tile Co., Ltd., Newport, Mon.

In reply to your letter, my Directors instruct me to say that they are very pleased with your kiln, and will be willing for any intending clients of yours to inspect same.

..... Secretary.

From the Longton Hall Co., Ltd., Stoke.

Our Kiln seems to be working satisfactorily, and we shall not at present require the assistance of one of your men.

From the Exmouth Brick and Tile Co., Ltd.

In reply to your inquiry, my Directors instruct me to say that they are extremely well pleased with the way the Kiln is working. The splendid lot of brick in the yard is a credit to anyone, and no one could reasonably expect better.

..... Secretary.

From the Stramberg Lime Co., Stramberg, Moravia.

After speaking highly of the economy in erection, and the system of flues, they say, "After we have been used to working two Hoffmanns, beside the "Perfect" furnace, then can we truly assure you that we save 20 per cent. burning material in the "Perfect," and attain a more equal heat. We can therefore highly recommend this system, and shall be pleased to answer further enquiries."

From the Rothneusiedler Brick Co., Vienna.

The altered Hoffmann is very easy to work, and we save 15 per cent. of fuel and get the brick more evenly burnt by the "Perfect" system.

References can be given to over Forty first-class firms already.

Agents for Canada, R. H. PYNE & CO., Yonge Street, Toronto.

## SERCOMBE, OSMAN & WARREN,

Mention the CLAY-WORKER

EXMOUTH, DEVON, ENGLAND.



W. H. KELSO, Pres.

F. HASPER, Sec'y

PAUL BOEHNCKE, Treas.

M. C. KELSO, Ass't Sec'y.

MAX A. TH. BOEHNCKE, Gen'l Mgr.

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

.....Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

BOEHNCKE'S

Several other U. S. Pat-  
ents applied for.

UP AND DOWN DRAFT

# Continuous Brick Kiln.

Canada Patent, No. 44,615.

DON'T LOSE TIME TO INVESTIGATE.

18 Kilns in Operation in  
.....the United States.

Several Kilns in course of  
construction  
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

Beware  
of  
Infringe-  
ments.

## ADVANTAGES OF THE KILN.

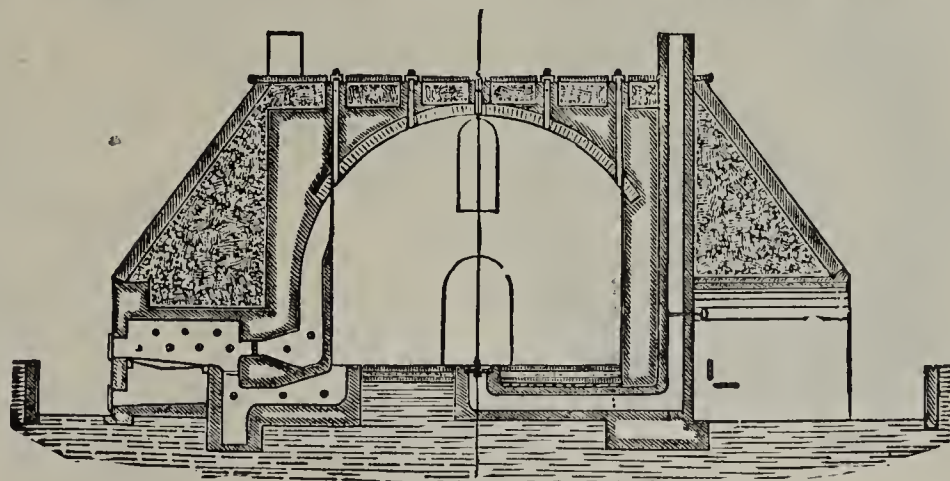
1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of  
Soft and Stiff Mud Brick,  
Dry Press Brick,  
Shape and Face Brick,  
Sewer and Paving Brick,  
Fire Brick, Cement and Lime.

Write for Circulars to

**Centinela Brick  
Kiln & Drier Co.,**

Box 35,  
Centinela, Cal.

COMMON SENSE KILN.



Patent No. 475,433.

FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

## A NEW BRICK DRYER.

We have also Boehncke's Brick  
Drier, which is very economical

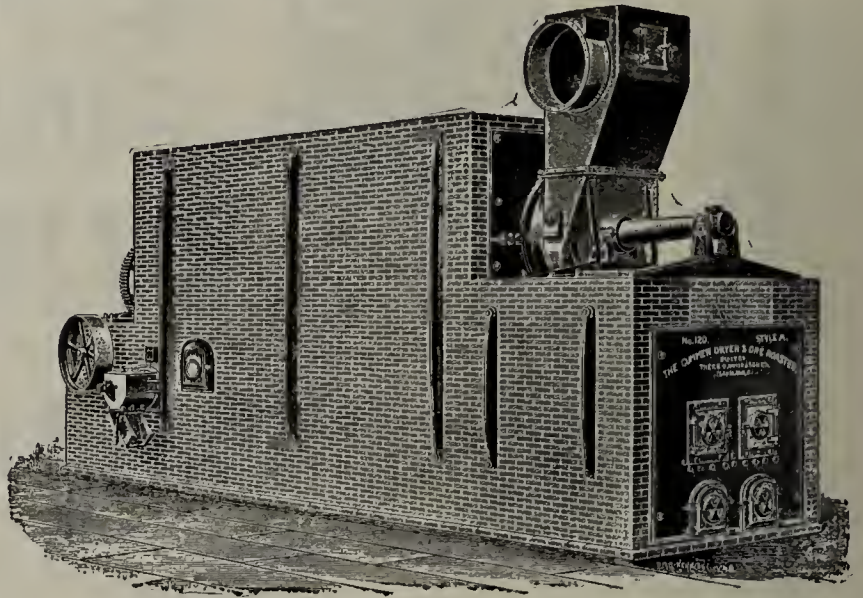
Agents for Eastern States: DeHaven and Charles Lance,  
Commercial Union Building, Philadelphia, Pa.

Agent for Illinois, Indiana, Wisconsin and Michigan: John Col-  
lins, 75, 76, 161 La Salle Street, Chicago, Ill.



LABOR DISPENSED WITH; VERY LITTLE FUEL USED; NO BREAK DOWNS; SUPERIOR PRODUCT OBTAINED: CLAY DRIED SUMMER AND WINTER, RAIN OR SHINE, ARE A FEW OF THE SPECIAL ADVANTAGES OBTAINED BY USING THE

# Cummer Clay Dryer



## SIX SIZES MADE.

Prepares from 3 to 20 tons of clay per hour for dry pan or pulverizer. The clay is handled mechanically (without men) from bank to press or other machines.

### NEW METHODS.

#### DRIES

Phosphate, Sand, Earths, Paint Stocks, Peat, Coal, Salt, Marl and Clay for Cement making, Chalk, Cereals of all kinds, Tankage, Night Soils, Animal Manure, etc., etc.

#### CALCINING AND ROASTING MACHINERY

for Gypsum, Ores of all kinds, Phosphate, Paint Stocks, etc., etc.

## THE F. D. CUMMER & SON CO.,

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SEND FOR  
OUR NEW CATALOGUE.

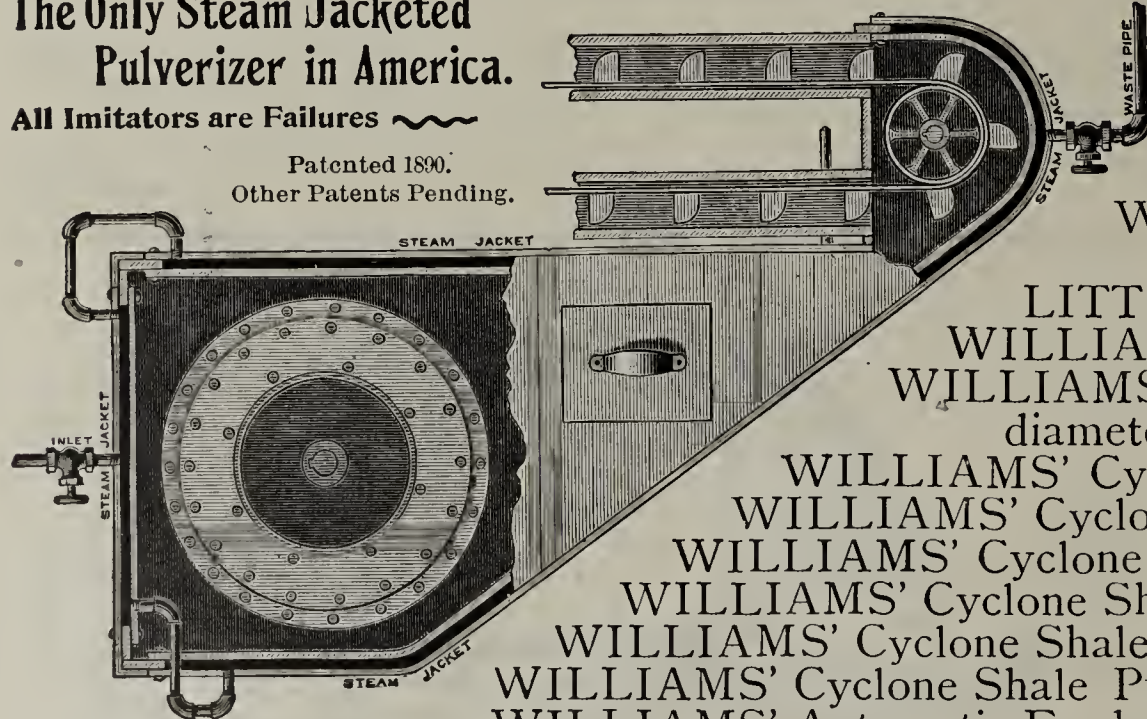
CHARLES ERITH & CO., No. 70 Grace Church St., London, E. C.

# WILLIAMS' CLAYWORKING MACHINERY.

The Only Steam Jacketed  
Pulverizer in America.

All Imitators are Failures

Patented 1890.  
Other Patents Pending.



WILLIAMS' Clay Elevators.  
WILLIAMS' Triple Roll Clay  
Crushers.  
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Three sizes.  
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LITTLE'S Steam Jacket for Pulverizers  
WILLIAMS' Clutch Pulleys and Couplings.  
WILLIAMS' Cyclone Clay Pulverizer 30 in.  
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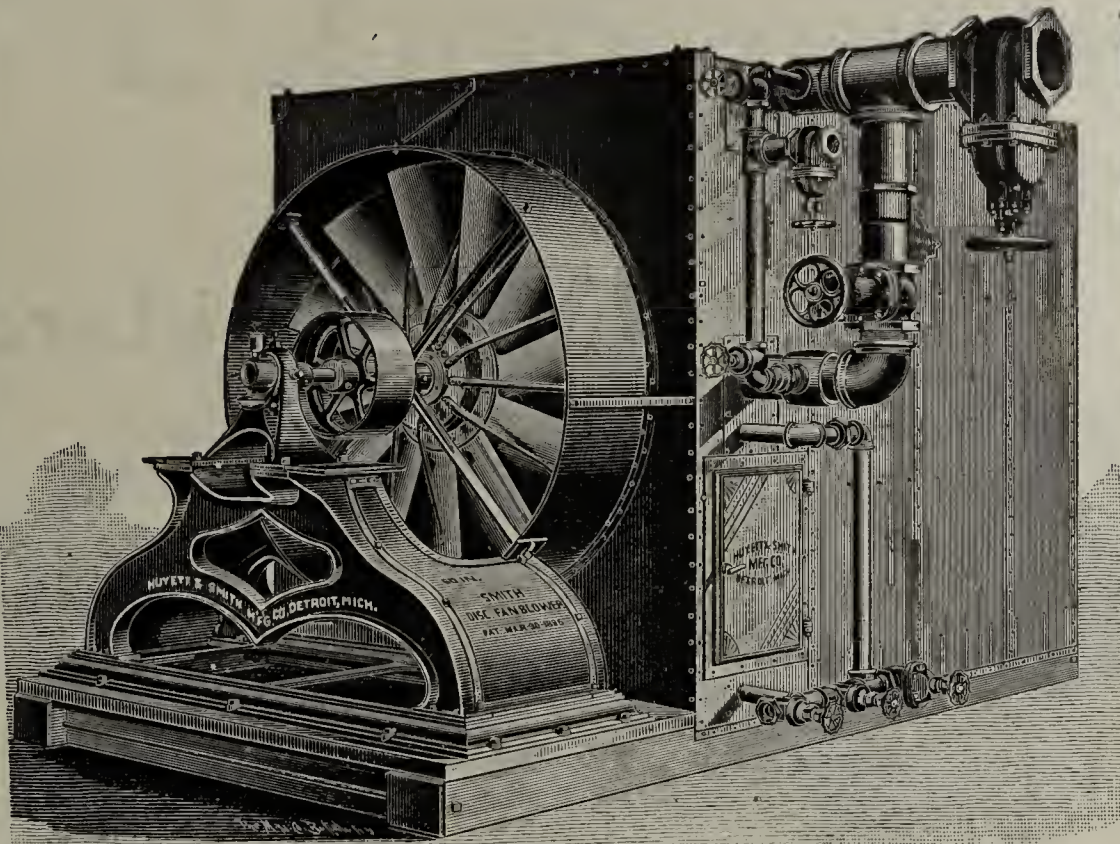
WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.  
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WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.  
WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.  
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WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.  
WILLIAMS' & LITTLE'S Patent Steam Clay Screen.  
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WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Clay Cultivators.  
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WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO., 2705 and 2707 N. Broadway. ST. LOUIS, MO.**





## Is Your Dryer

Giving you  
trouble?

We can help  
you.

Are you de-  
pending on the  
sun and the

weather?

If so, you are losing  
money. Let us tell you  
about the

**Smith Hot Blast Brick  
Dryer.**

We will cheerfully do so.

The...  
**Huyett & Smith  
M'fg Co.,**

— DETROIT, MICH.

We are manufacturers of **BLOWERS**, and can **BLOW** as hard as anyone but prefer to let others do the **BLOWING** in regard to the **MERITS** of our **BRICK DRYER**; the following testimonial letter is but one of a large number we have on file.

PHILADELPHIA, PENN., May 17, 1894.

MESSRS. HUYETT & SMITH M'FG CO., Detroit, Mich.

*Gentlemen:*—In reply to your inquiry about our dryer, we take great pleasure in informing you that the dryer that you sold us, with the guarantee of 40,000 stiff mud brick per day, is now drying from 55,000 to 60,000 per day, which amount we find that we can dry without forcing the apparatus. We use only exhaust steam in the day time and live steam at night, carrying about 70 pounds of steam. We shut our dryer down at 12 o'clock Saturday night and start at the same hour on Sunday night.

Having made a study of currents of air and personally examined several styles of dryers we consider that your dryer is the best on the market. We have also proved it to be economical and would cheerfully recommend it to any person needing a dryer.

Truly yours,

THE PHILADELPHIA BRICK CO.,  
Per James H. Hamilton.

Plans, printed matter, etc., furnished on application.

# The Huyett & Smith M'fg Co.,

Main Office and Works, 1,400 Russell St., = DETROIT, MICH.

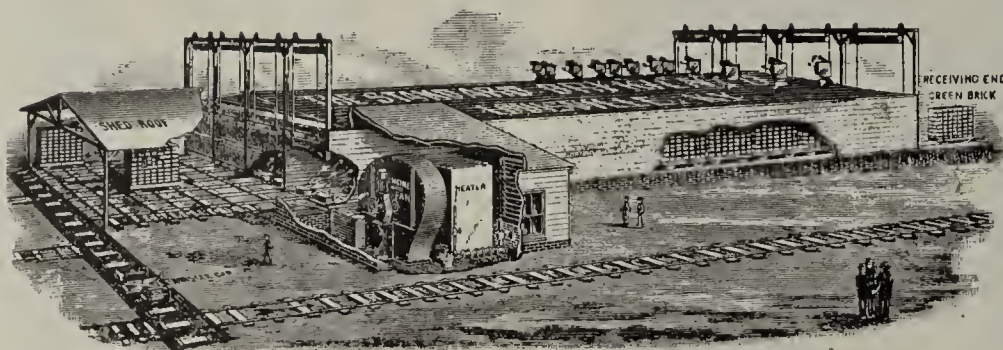
NEW YORK, 26 Cortlandt Street.	} BRANCHES. {	PHILADELPHIA, 118 Custom House Place.
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# Speaking About Drying Brick

Are you aware that there are more modern ideas, more novel features, more real meritorious points embodied in

## The Standard Forced and Natural Draft Drier



Than in any or all other makes combined?

This may seem like a boastful statement, but it is nevertheless so, as an investigation will prove.

Its adaptability to clays of different nature, as well as its reliability and uniformity in drying, has made it the **popular** drier of to-day; the result is that, even in these dull times, orders are being received from territory as far East as the Atlantic and as far West as the Pacific.

This information is given merely to indicate the wide spread reputation which **TRUE MERIT WILL ESTABLISH.**

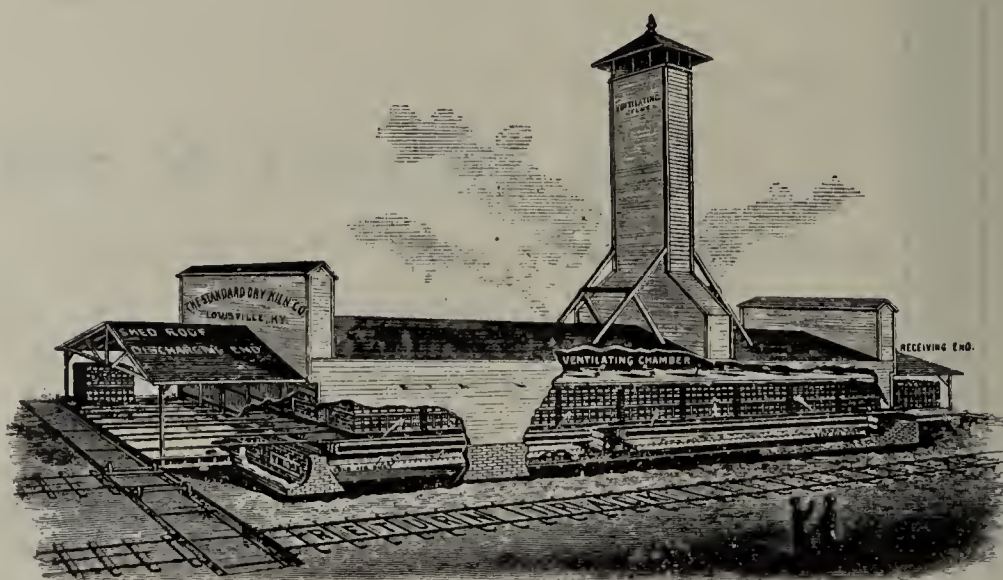
Send for illustrated Catalogue and "Opinion of Users."

Our Prices are Reasonable, Terms Liberal, Guarantee Absolute.

## The Standard Dry Kiln Co.,

Builders  
of  
Up-to-Date  
Brick  
Driers.

INDIANAPOLIS, IND.  
LOUISVILLE, KY.





# THE CLAYWORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXIII.

INDIANAPOLIS, IND., SEPTEMBER, 1894.

No. 3.

Written for the CLAY-WORKER.

## BRICK IN MILITARY ARCHITECTURE

THE subject of this sketch is a portal at Toulouse. These portals were doorways in the old wall which formerly surrounded nearly all cities of the middle ages. Very frequently the walls themselves have been removed and there remains only the building which formed the doorway through the wall. In a recent number of this journal a portal at Haarlem was given, and it is to be noticed that in certain matters of outline there is a resemblance between this and that one. In truth when we take the same period of building there are often very striking resemblances in detail. This one belonged to the period of the fifteenth century; the one at Haarlem was a little later, but the people of the north countries were followers rather than leaders in architecture, and they did not take up with a style until it had pretty well run its course in middle and southern France; work of this character was always to be seen at its best in France. There is a refinement of detail, a higher regard for

the small things than is to be found elsewhere. The Dutch portal is more picturesque than this, altogether more pretentious; but when it comes to the

smaller details, we find them much more delicately worked out in the Toulouse building. There is enough that is really good in this structure for the work of an ordinary architect during his life time; the window, the tower details the cornice, the beautiful dormers, the tower at the point of the roof, the finials, the moldings, all are of the most highly refined character. They are the work of a period of great artistic production. The projecting cornice of these building formerly a means of defense. In between the brackets the besieged could drop heavy weights of stone or iron on the enemy below. The little openings

in the solid part of the crenels could be used to view the enemy at a distance. The large openings or notches in the crenels which come above the brackets were used for attack when the action was not close.

The dormer which is in the roof and the tower above were no doubt added after it became unnecessary to use this structure for military purposes. This part of the building is of wood, and, by the way, these wooden constructions of



A PORTAL AT TOULOUSE, FRANCE.



the XVth and XVIth centuries which stand permanent and strong to-day, should put to shame our modern buildings of wood which rarely survive their fiftieth or sixtieth year. There are those among us who, when this matter is mentioned suggest that the permanency of these wood constructions of an earlier time is due to the kind of wood or the climate which they have survived. There is nothing in this, the wood is a red oak, less compact in grain and altogether a material inferior to our own oak which is in common use. The climate is if anything more trying on wood, brick, stone or other building material than ours; the climate is damper, there is a constant alternation of sunshine and rain, and in many sections there are rapidly recurring variations of temperature from freezing to thawing, than which there can be nothing more trying to building material.

There are not a large number of military structures in France which are constructed of brick. There are a number of other buildings at Toulouse in that material through they are for the most part of a religious character. We have given pictures of several brick chateaux, but in truth the number is not great. Stone was the material most readily at hand, and could be secured and put in position at a less cost than brick and for that reason it was used. The brick of this section was really better suited, however, to the construction of military structures than stone. One of the means of attack on the stone chateaux was to dig a hole in the wall, and build therein great fires which destroyed the wall so that not infrequently great breeches and means of successful attack were provided in this manner. With a brick wall this means of attack would not have been possible. Brick is harder and more enduring than most of the stone of France; however, it was not the material most readily to be obtained at the least expenditure of labor.

The soiled places and the putlog holes shown on the walls of this building indicate the point of juncture of the old military wall. L. H. GIBSON.

#### DEGREES OF EXCELLENCE.

It is not good (advertising) form nowadays to assert that the article you are advertising is the very best in the market. Unless you have some commodity which is absolutely unique and that is able to hold its own on the strength of

its real superiority, it is not wise to sing that tiresome song about yours being "the best."

To say that it cannot be excelled, that it is second to none in the market, that it possesses all the merits which go to make up a desirable article of the kind, is all right, and a good deal more sensible and dignified than the other thing.

Nowadays, when there is so much competition, the manufacturers of high-grade goods are putting the best possible stuff on the market, and it is pretty safe to choose between half a dozen names of established reputation.—*Art in Advertising.*

Written for the CLAY-WORKER.

#### THE VILLAGE BRICKYARD.



LAST month attention was called to the misfortune of brickmakers, known to the writer, who had attempted to save their property or make money by building houses, as well as the promises of insurance agents to make working men rich for a trifle. Both of these schemes are of the same nature and are dependent for successful results on the supposition that the manager in either case is engaged in running a gift enterprise in which there are no blanks.

The only way to build houses of any advantage to a brickmaker is to build them yourself from the ground floor all the way up. For instance:

1st. You select a lot in a suitable neighborhood, level with the street or higher, or if low, that can surely be underdrained. See that pig-pens, tannery, or other forms of nuisance are not near and that your lot is provided with prompt access by street cars, has gas, water and electric light at hand, and that the neighbors are of the same nationality as you expect to build your houses for. The neglect of one or more of these essentials, may cost you thousands of dollars. The making of your money must be by FORE SIGHT, and instances are constantly occurring where it was possible before the row was staked out to say with assurance that "the enterprise will undoubtedly be a loss of at least the price of the ground." So sure do I reckon this loss from neglect that I have frequently said: "I would not build such a house on such a lot or lend money on the same if the land

were given me," and subsequent facts have fully justified the position. This, I believe, is the most common error in Mechanics' Rows — want of business ability in the selection of the site.

2nd. In every case that you build a row be sure that every article that enters into the formation of that operation is of suitable kind. See that the design of each dwelling is carefully worked out; a practical, convenient, economical and tasty building, in accord with the present age and crowded full of pleasant surprises for the housewife in the shape of closets, wardrobes, mantels, hearths, etc., finished with handsome hardware and wood in natural colors. Remember that a piece of looking glass sells many a plain house. Our predecessor, William Penn, bought thousands of acres of our best land with beads and mirrors—and the squaws still live, although many of them have white skins, they nevertheless like richness and beauty in their surroundings. Gratify this taste and the builder's reward is almost certain.

3rd. Remember that the operation to net you success must be under a master's hand; be that master yourself. A row of ten houses at \$2,000 each means an outlay of \$20,000; probably more than your pile—it must be handled with the best of care, no waste, but economy on every side. So don't spend all your time saving a dollar in making a few brick, but keep your eye constantly on the \$20,000 that may otherwise land you in the sheriff's hands. He is a nice man, but his business ability is too prompt for profits.

4th. Buy your material right, for cash or its equivalent, without exception. Don't for one moment imagine that you can put your trade against the carpenter, the mill man or the plumber. It cannot be done, thousands of people have tried their level best to trade with a plumber and there was never in any instance an approach to success except once. Mr. John Frost at one time tried to break a plumber up and as he was about succeeding, the plumber took him into partnership, and since that day John Frost is the silent partner in every plumbing establishment, and as we outsiders have the bills to pay, it consequently behooves us to keep our eyes open and buy right, for if this is not done, it shuts the door at once to all future prospect of selling to advantage.

THE VILLAGE BRICKMAKER.

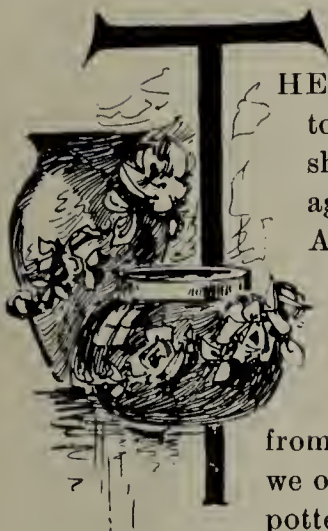
[TO BE CONTINUED.]



Written for the CLAY-WORKER.

## PRE-HISTORIC AMERICAN POTTERY.

BY RICHARD G. FRACKELTON.



THE story of American Pottery to the casual reader is a short one, yet it begins long ago. Who were the first American potters,—whose works we still possess?

Like its brickmakers, we have no trace as to who they were, where from, or where they are gone; we only know that they lived, potted, and are dead.

There has been but one book ever published—the first, last, and only one, purporting to be a history of these potters and people who inhabited this continent at the time when the tumuli and fortifications were erected. But except the followers of the Prophet,

gold and glory, leading his few Spanish mailclad gentlemen to meet Tecum Uman on the fatal plain of Tzaccopa at the head of his 230,000 natives, much of the pre-historic pottery we have in our Museums to-day, was then already old.

For according to the manuscript of Don Juan Torres, the grandson of the last reigning King of the Quiche's, which manuscript was in the actual possession of the lieutenant general, appointed by Pedro de Alvarado, and which Fuentes, the Chronicler of the Kingdom of Guatemala, says he obtained to work from by means of Father Francis Vasques, the historian of the order of Saint Francis, the Toltec Kings were descended from the House of Israel, who were released by Moses from the tyranny of Ramesis II, and after crossing the Red Sea fell into Idolatry.

There is another unwritten legend, however, older than this, Conte de Mere-loie, muttered by old cronos to-day around the campfires of the unknown

That Moses and the Israelites, like most people who escape to liberty from religious or political oppression, on arriving on new soil, are apt to practice the methods of their former masters on those who do not agree with them in thinking. Fearing chastisement in some form from Moses, these people, whether Israelites, or of that great swarm of captives of all races, and political malcontents, who escaped at the time of the Egira from Egypt and its brickyards, having escaped from Pharaoh, concluded also to quit Moses & Co. At any rate, both church and campfire legends agree on this other point also. That there was a difference of religious opinion between them and the Israelites, the Quiche legend, as it is called, states this, and both the Israelite version and the order of St. Francis, are willing to let it go at that.

The other unwritten legend, dim and grey as it is, muttered around the modern campfire at night is, that a little



PREHISTORIC AMERICAN POTTERY—PHOTOGRAPHED BY PERMISSION FROM THE COLLECTION OF THE CITY OF MILWAUKEE.

no one gives credence to the story, and outside of that "peculiar people," to whom all—even the Jews who followed Moses—are Gentiles, the world is not a wit the wiser for the information it contains, and all others remain in the dark, and probably will to the end of time, as to who they were, the people who did the work, where they came from, what became of them, or what was their design in erecting these mounds, from which their pottery is obtained. Unless we accept the Quiche legend. For legend, that also is at best, although vouched for by good Old Fathers and Mother Church.

Yet when Mexico was overrun, her sacred fires scattered and guarded lovingly; Alvarado, searching for more

throughout the world; so dim, so indistinct and grey, and yet claiming this same Tanub for the descendant of their own well-loved Egyptian leader.

Differences of opinion between "Good Old Fathers" and "Old Women" will ever exist, but on this point both agree, that, whether of the House of Israel or not, these brickmakers under their tribal chiefs, went across the Red Sea with the Israelites out of Egypt.

Mother Church, ever looking for confirmation of Holy Writ, made "Jews" of them, who after the passage of the Red Sea, fell into Idolatry. This was in the era of the Golden Calf incident, etc., in the Desert—not in America—fearing the reproofs of Moses, or as the older legend has it.

difficulty occurred about "*Who should preach Religion, and who should do the work in the Desert?*" and as both parties had had about enough of that for someone else, under Pharaoh in Egypt, the weaker party concluding that to remain in camp under Moise et Cie, would be simply an exchange of Masters and Pastors, broke camp and wandered away.

The ancient Chroniclers of the invasion of Mexico, wanted to make "Moors" out of Mexicans and arouse a new crusade in Spain. Old fighting Bernal Diaz, and that school of writers recognized race similarity, and Hispano. Moorish pottery from Spain took root and became at home among its new, (or old friends?) in Mexico and Guatemala.



Mexico at their feet, they no longer hesitated to find the descendants of "The Lost Tribes" in the Quiche Indians. When these people left Moses and under Tanub, their chief, passed from one Continent to the other, they came to a place which they called, not the "Sieben Gebirge" as in Europe, but the "Seven Caverns." It was a part of what is now Mexico where they founded the historical city of Tula.

From chief Tanub, "the Egyptian," sprang the Kings of Tula and Quiche. Again the people multiplied and Nima-quiche, the fifth King of Quiche, obeying the direction of a young girl "who saw clear," as the legend has it, or who saw an Oracle or Patron Saint among the people, led them out of Mexico into Guatemala. There they built the city of Utatlan, making it their annual tribal gathering place. Its high places remain to this day, though much of the stonework has gone to build the churches of the New Faith, and the wretched village of Santa Cruz del Quiche. Here exists also this almost unchanged people, potters and brickmakers as of old, biding their time of being gathered together—which is to come. Cherishing the usages and customs of their ancestors, their blood uncontaminated by admixture, with those who have conquered, sought to lead them and passed away.

Grand and magnificent churches, have been erected on their tumuli, to new faith, pomp and parade to please their ignorant and poetic fancies, music and flowers to assimilate the new to the old beliefs.

The poor descendants of the flowers of Tanub, "the Egyptian," brings the first fruits of field and flowers, as he did before the old terra cotta statues of the Wisewomen, Kings and Counts of his Race, and leaves them reverently within the rail of the new Altars on the old Tumuli. He enters for Vespers, and bows reverently to the setting sun in the West, and at night, in nature—under no roof—preaches his own rites as of old.

By the courtesy of Mr. Nebeling, curator of the Museum of Milwaukee, Wisconsin, I am enabled to illustrate some pre-historic American pottery in their collection, which has never before been photographed.

It was a strange feeling to actually

handle such objects, utterly unknown as to who their makers were, still bearing as they do, the delicate finger marks in the clay of those who will never be gathered together on earth, apparently those of the women of this unknown people who lived here and have gone.

Two of the pieces only have an applied color, apparently of a darker clay impregnated with iron. The rest are incised decorations, except the handles, which bear evidences of crude copying of the then existing animal life.

Specially notable are the two on the left on the lower line, the one with the frogs as handles, and the bas-relief treatment of the same decorative motive on the broken cup next to it on the line.

That again next to it, having the form of the laboratory pipkin of to-day, with well formed spout and handle. The next piece with the head of an animal and neck forming a handle of the piece, giving the idea of its tail,



might appear as a Scandinavian product, if its American Mound Builder origin were not so well proven. The next vase has four handles for suspending it with, uniting neck and body.

The one with the ducks head and tail shows a close attention to natural form in nature, while the one at the other end of the lower line with four feet, is evidently for making fire under it, same as is done with clay vessels of like form in South America to-day.

Perhaps the most remarkable composite piece in the collection is the bowl for cooking, and the three pieces, or pillows of clay for supporting it, while the ashes or fire was be placed underneath the bowl. The four pieces are in excellent preservation, and all bear strongly the imprint of their makers' fingers in the clay. These are but a few pieces of the collection, but serve to illustrate what John Boyd Fletcher calls "The State of the Art."

Any further information known about these pieces will at all times be gladly given by the Curator of the Public Museum or the writer, to parties interested in the pottery of pre-historic America.

Written for the CLAY-WORKER.

#### AMONG EASTERN CLAYWORKERS.



VEN a rambler after brickyard notes is prone to enjoy a short sail upon old Mother Ocean. From Baltimore to Boston upon one of the Mer-

chants and Miners Transportation Company's steamships is one of the finest of short trips, and if ever a brick-man has the opportunity, I advise him to avail of it. At the foot of

Chesapeake Bay, a stopover of a day may be made at Norfolk, and you may go over to Old Point Comfort and Fort Monroe. By all means do so if you can and you will enjoy the fine hotels and the prospect of the beautiful Hampton Roads, the finest harbor in the world.

Boston is a city of contradictions. As a city, it courts the water, but its streets shun it. They are busy streets too, and the busiest of people that traverse them are those interested in the clay industries.

The handsome offices of the Fiske, Homes Co., are perhaps the "hub" about which all others turn. It is a firm well known over the country for its "brick ashlar," and they are becoming more famed for another product, namely, the "Fire-flashed terra cotta." This is flashed in an open kiln, and the firm is justly proud of their old gold and golden brown effects. One of these latest pieces is shown in the accompanying engraving.



ing, a panel in old gold, placed in the Home for the Aged at Brambleton, Va. When I called upon these people, I found genial Mr. Homes at his desk, surrounded by many beautiful specimens of the fire-flashed work. Intensely interested in the welfare of the firm, he had pronounced views in regard to the business outlook. While hopeful of the future, now that the tariff matter is settled, he is resentful of the changes that have been made in the schedules affecting the industry.

Up in Burlington, Vt., which is, by the way, one of the loveliest of little cities, there are two makers of bricks. The plant of A. A. Graves is located in Winooski, and the Drurys make bricks in Essex Junction, both of these places being very near the city and liable at a later date to become a part of it. The Graves yard overlooks the beautiful Winooski river, and the falls. The clay is dug from an inexhaustible bank, in fact, it seems as though the clay might have first been dug, and the kilns built upon the "bench" so formed.

The yard in Essex Junction is owned by Messrs. G. B. & H. D. Drury, and is equipped with two Martin presses with a combined capacity of 80,000. A blue and gray clay is used, burning to a cherry red. The kilns are built to hold about half a million, and are of the old scored pattern, wood being used as fuel.

RAMBLER.

#### APPRENTICESHIPS FOR AMERICAN YOUTH.



IN AMERICA to-day we have virtually no apprenticeship system. It has almost disappeared, owing to the introduction of machinery and the division of labor. Other forces have contributed to its destruction. The Trade Unions and their opposition to apprentices have done much to hasten its end, the system would have disappeared in time without their aid.

The remnants left of this old system are ill fitted to these enterprising times. It is the same as the old with only a few changes. The term of service is shorter, and the boy is not held by law to serve one master.

But the greatest difference is this:

In the early method he received his instruction directly from the master; now he has to depend upon his own resources, and learn the trades from what he sees his fellow workmen do, depending on his aptness and skill in applying what he sees.

Boys in those days disliked the idea of becoming apprentices. The threat of hiring them out as such was sufficient to bring any wayward lad back to the path of duty. Uninviting as the position of apprentice was then, it can hardly be said to be better at the present period. Oppressed by the Trade Unions, discouraged by the length of term, and glimpses of the drudgery to be endured, is it any wonder that boys shrink from the idea of having thus to be initiated into the art of making a living?

American youths debarred the privilege of an education, except that furnished by public schools, turn from their higher ideals, the professions, to the next choice, the *trades*.

His inability here to acquire a trade is due to no lack whatever in him. No! there is hardly a boy in the United States who has not brains and strength enough to become skilled in the use of tools if the opportunity were given him. *Where is the difficulty?* We have in this country, *innumerable secret organizations* made up and run wholly by a class of foreigners on a foreign plan. Their object is to benefit themselves and their foreign brethren under *pretense* of protecting the trades, and to profit at the expense of American workmen. While they admit freely and without regard to *competency* any foreigner who comes to our shores, their doors are barred to all American youths, struggling to gain a foothold, on the plea that the labor market is already crowded.

The difficulty seen in the overcrowded market is *attributed* to the surplus of apprentices and accordingly employers are limited by the unions, as to the number they can employ. This number is made so small that of the six hundred thousand of our young men who annually become of age, not more than six thousand can become skilled mechanics. They say, "The labor market is already crowded and to admit more into the trades would only make it more so." Yet these same unions admit freely into their ranks any *foreign* workman who comes, and they also let thousands in who only come here to take advantage of the high wages, and who return to their native country

richly rewarded for their trouble.

The real reason for opposing the American youth is plainly not due to the reason which they attribute to it. These unions are afraid of the independent ideas of Americans. They are well acquainted with his intellectual superiority over his foreign neighbor which renders him less willing to submit to fines and to obey orders unless thoroughly convinced that they are perfectly reasonable and justifiable.

Let us turn now from the *cause* of all these evils to what we may safely say is their *only remedy*. Times have advanced considerably since the independence of this half the world was established. We saw and remedied the deficiencies in government by establishing in the place of the old style monarchies, a government of the people, by the people, and for the people. The time is not far distant when this government will see that if things are to continue so, if American people are still to be free, they must take decisive steps toward educating their sons and teaching them the ways to gain an honest livelihood.

There are many ways in which this can be done. The two here named are probably the most important. They are in plainer terms, to stop *immigration* or establish *Trade Schools*.

The interests of the American boy have been sorely neglected by his country. The one person who was probably first to see and provide a way out of the difficulty was Col. Auchmuty of New York City. The sorrowful situation in which he beheld the boy of New York, appealed strongly to his big and generous heart. He saw *how* and *why* they were kept out of the trades by the foreigners and he set to work with the firm determination to do what his hand and fortune could accomplish. How well he succeeded is shown in the successfully operating Trade Schools in his native city, which will stand as a monument to the memory of this noble and self sacrificing man, who died but a year ago, while ardently laboring in the interests of the youths of America, as if loth to leave his ideal unfinished.

As Froebel is honored as the pioneer of the kindergarten, as Lincoln is honored as the emancipator of the slaves, so Col. Auchmuty will claim the honor, sympathy and respect of every true hearted citizen of America, as the *founder* of Trade Schools.

The Trade Schools in New York City which Mr. Auchmuty established in

\*An essay read before the graduating class of the Manual Training School Branch, Washington University, St. Louis, June 13th, 1894.



1881, cover about about one acre of ground and are probably the best examples of their kind, notwithstanding others have been erected at a later day. His idea was to instruct the boys in both the scientific and practical branches of a trade, leaving speed of execution to be acquired, in real work after leaving the schools. The different trades taught are, carpentry, bricklaying, plumbing, plastering, painting, stonecutting, typesetting, and tailoring. A boy with ordinary capacity can learn in *three* or *four* months, what by the old apprenticeship system would have taken him *three* or *four* years to acquire.

*Skilled mechanics* are employed to teach the boys the way to secure the best results and how to hold the tools correctly. The method of teaching is very nearly the same as that used by the Manual Training School of this city (St. Louis). When the school first opened very few attended, beginning at thirty it has steadily increased until now the annual number of graduates has reached six hundred. The first few that attended were boys serving apprenticeships and who were dissatisfied with what they were getting. They were quick to see the advantages offered and after a few weeks attendance surprised their employers with their suddenly acquired skill.

As the reputation of the school grew, the day classes began to fill up. The attendance was not limited to the city of New York; the boys came from all over the United States and Canada. Many, in order to attend, came miles by rail, after a hard day's work and spent the evening in the school, probably not reaching home before half past eleven or twelve o'clock at night. Since the establishment of the school over *four thousand* young men have been graduated.

What *recompense* does this country owe to Mr. Auchmuty for this inestimable service? Nothing but gratitude. Mr. Auchmuty, if he were living to-day, would ask no return. To see his countrymen follow his example, to let him know that his labor had not been in vain would be far more recompense to him than any America could offer. What pleasure he derived from his life long struggle is best told by quoting from one of his numerous speeches on the subject.

"I seem to see that long procession, full of youthful hope and the earnest

desire to succeed in life. Some went over, and were never heard from again, others, discouraged, came back; but many, very many, went on, and, undaunted by insult or wrong, with true American grit, fought their way to independence and prosperity. Their names fill a good sized volume. Their letters are many in number. From them have come kind messages: 'The New York Trade Schools were the making of me,' is one that is often heard. And I can safely say that they, with their brave young hearts, with their perseverance and their trust, that right will in the end conquer wrong, have made the New York Trade Schools." Continuing he says, "We are being confronted with the question, whether within the American Republic there is to be established another government of knights of federation, and of supreme councils,



WARREN WAYNE ITTNER, A young American brickmaker, ST. LOUIS, MO.

self constituted, sitting in secret, judging in secret, and issuing decrees that must be obeyed at the peril of life and property. Trade Unions, all admit, are necessary for the protection of the wage earner; but what is wanted are Trade Unions, *controlled by Americans*, and not, as at present, by foreigners. Barriers have been erected against the entrance of our countrymen into the trades while the foreigner is made welcome. Let us have manhood enough, be brave enough to throw these barriers down. It cannot be done easily, but the time has come *to try to do it*. Our young men, though graduates of our public schools,

stand on every street corner, begging for the privilege of being allowed to work in the land of their birth. Fill the workshops with them. They will then control the trades organizations, and labor difficulties will disappear; for intelligent, well-educated American workmen, while maintaining their own rights, will respect the rights of others."

It must not be supposed that Mr. Auchmuty's labors were confined to the New York Trade Schools. When he saw the efforts of the Building Exchange of Philadelphia, to establish similar schools in that city, he not only helped them along by his personal aid and advice, but he benevolently endowed them with the gift of three thousand dollars a year for three years. It is a pleasure to say that these schools are now in successful operation and bid fair to continue so. Too bad we cannot say as much for the efforts to establish like schools in our own city. And here again we are shown the benevolent and noble qualities of the man who has done so much for the elevation of generations to come.

When he learned that like efforts were being put forth here in that direction, he unhesitatingly and voluntarily subscribed fifteen hundred dollars a year for three years. But, St. Louis, that has recently gained the title of "The substantial and confidential city," could not muster confidence enough to take steps toward putting a stronger and broader base under that same title. That was a first attempt and probably not a fair one.

The idea is gradually broadening, and before long, the time that Col. Auchmuty hoped to see, will sweep across this great country from ocean to ocean, carrying before it the broken fragments of the barriers that have for so long a time opposed its progress. Then and then only will this bright land be free from mob violence and anarchy; then and only then, when America's own sons and daughters, loyal to all true American ideas, hold sway—*then* and only *then*, can this country be called, "The land of the free, and the home of the brave." WARREN W. ITTNER.

#### THE FATE OF A FAKIR.

SATAN—What was your bussiness on earth?

UNFORTUNATE—I solicited advertising for cards, hotel registers, albums, and—

SATAN—Right over there, in the warm corner, with the bunco steerers and green goods men!—*Exchonge*.



Written for the CLAY-WORKER.

## HINTS ON BRICKMAKING.

No. 91.

BY R. BRICK.

## BUILDING A SMOKESTACK.



VERY brick plant that has boilers, must have a smoke stack of some kind, and they are usually either brick or iron, and taking the risk "with my friend the Village Brickmaker" of being called a "stickler for consistency" will say that every brick plant should be equipped with a brick stack, not only as a matter of principle, but of economy and safety as well.

The life of an ordinary iron stack is about five years. The cost of two iron stacks will put up a brick stack of equal height and capacity, the latter with proper material and construction, will last a century. The iron stack at the end of five years is absolutely worthless. The brick stack after standing 100 years can be torn down (for it is almost impossible to overthrow one) and the material utilized for other purposes. This may seem an extravagant statement, it is not, however. Well burned bricks are imperishable from natural causes. All that is necessary with such material is proper construction, it will then defy the ravages of time.

Like all other structures the first thing in point of importance in the construction of a stack is the base or foundation. This includes the material in the foundation and the base upon which it rests. We must go down until we reach solid clay, rock or other firm material. The surface covered must be governed by the draft, surface and height required. The height necessary to do a specified amount of work, varies according to location; if built near high buildings or bluffs it would have to be higher, to do as much as another built where there were no hills or tall buildings near.

We will take a location practically level. A stack with nine square feet of draft surface, that is a flue three feet square, and sixty to seventy feet in height, will furnish draft for boilers of 150 horse power. This stack should have a base 10 feet square or 100 square feet. If exposed to dampness the bricks

in foundation should be laid in good cement; if under cover good lime mortar will answer. The base should be carried up plumb 12 or 18 inches, then drop off two inches each course of brick until the work is reduced to seven feet square outside, leaving a flue three feet square inside, and walls 24 inches thick; then carry the outside corners plumb for six feet above this point, then put on four courses projecting for water table, then back to seven feet square; from this point batter the corners toward a common center, each one inch to each five feet in height. At a height of 60 feet above point where batter begins we have 12 inch walls, at 80 feet eight inch walls. This leaves walls thick enough to support coping at top which is necessary to give it a symmetrical finish.

The building of the inside or flue is the point where many make serious mistakes. A smoke stack built solid will soon show fissures in the outer walls. This is caused by expansion from within, this expansion must be provided for if we wish to preserve the structure. The boilers are usually connected with stack by an iron flue; just below the entrance of the boiler flue into stack, the fire brick lining four inches thick should begin, and be carried up at least 30 feet. This fire brick lining should be built independent of the common brick except that it rests upon them at the start. There should be a space of three inches behind and between the fire brick lining and the common brick. Once in every two feet of height let a common brick span the hollow space and butt against the fire brick near the corner; another in like manner projects from the opposite corner. Then let the other corners be supported in like manner two feet above alternating in this manner.

By this plan the lining is held in place and given room to expand without any strain whatever on the main wall; when fire brick work is up to required height, let common brick wall come in flush with fire brick lining and carry the wall solid to the top.

There must be an opening on each side making four in all, four inches wide and two courses high into the hollow space where it begins from the outside and again at the top of this chamber to the outside of stack, this allows cold air to circulate freely behind the fire brick lining, which protects them from the intense heat within. A stack construct-

ed in this manner will remain intact, not a break to be seen anywhere on the outside. The writer has seen stacks that were built of good material, on solid foundations; the linings were built against main walls and tied into them, the result was that the walls cracked badly, from expansion.

The flue should begin at or near the level of the ground with an opening into it so that soot can be removed and the stack entered from below, iron rods  $\frac{7}{8}$  inches in diameter and three feet long, can be laid across the inside corner with an anchorage of six inches at each end in brick work and 18 inches apart. This makes a strong ladder by which a man can mount to the top of the stack at any time when cool enough.

If the stack stands outside of the building the earth should slope away so as to protect its foundation from surface water. In addition to the durability of this stack, there is no risk whatever as to its communicating fire to the buildings around it, while insurance agents are suspicious of iron stacks. It is next to impossible to get one through a roof and protect it in a manner that is satisfactory to them. Even during the short life of an iron stack it is necessary to paint it once a year to make it last even five or six years. There is no expense attached to the preservation of the brick stack, and when the plant is consumed by fire it stands a grim sentinel over the ruins, a monument to the matchless qualities and superior merit of burned clay, as a building material.



## INEXORABLE YOUTH.

POLLY GREEN—"What's the flutter now?"

JACK PARROT (*who has just been brought in*)—"Flutter! Why, that confounded kid has been using my cage for a base-ball mask."

POLLY GREEN (*tearfully*)—"What's a cage to personal beauty? He just plucked out all my tail-feathers to play Injuns with."

—Judge.



## OVER THE BORDER.

Brick Works of Odell Bros., Ottawa, Canada.

**T**HE Ottawa Brick Works were established in the year 1864, by the late H. C. Odell, and have advanced from the old style of single horse pug mill to the "Improved Martin" of the present day. Since 1890 the business has been carried on by Clarence, Walter and Mortimer Odell, under the firm name of Odell Bros.

The capacity of the yard is 40 M per day of ordinary bricks besides special shapes are made for bay windows and circular parts.

The prices this season are for half hard and half soft, \$7.50 per M; veneering brick \$10 per M. delivered at the buildings in the city. Sales are principally for the local trade, and the demand has not been very great the past three years. They have been experimenting with their clay, with the idea of making paving brick, but up to the present, have not been successful, as the clay does not easily anneal.

The yard is now on the rack and pallet system, and they find it very successful; lumber is cheap there, and so it costs less to make a yard like this than the patent dryers advertised. They use wood and pay \$2.75 per cord for mixed. Coal is away out of their reach in price.

The building trade has been pretty good this season, several large stores and private residences are now being erected.

Ottawa, the capital of the Dominion, is a handsome, progressive, and growing city of about fifty thousand inhabitants; it has one of the best electric railway systems, also arc and incandescent light, and a water power, which runs one of the largest saw-mills on the Continent, lumber manufacturing being the principal industry of the city.

"Look around among your acquaintances," says *Printers' Ink*, "and if you

see some close-fisted merchant that underpays his clerks and will walk a mile to save car fare, who is spending hundreds of dollars in advertising, you can safely wager that it pays."

Written for the CLAY-WORKER.

### THE CLAYWORKING INDUSTRIES OF OHIO.

#### Ninth Paper.

BY EDWARD ORTON, JR., E. M.

#### PROCESSES OF PAVING BRICK MANUFACTURE.

**T**HE action of plunger machines was described in the last paper and while the general excellence of the results which are attainable by this process were acknowledged, the faults were also pointed out, chief of these being the fact that the machine is intermittent in its action and that it can only work about half of the time. This feature especially might be ex-

of the steam is very wasteful and costly in fuel.

Thirdly, the out-put of an auger machine is greater in its proportion to its cost than any other kind, and,

Fourthly, the out-put is delivered in a shape so that its handling can be reduced to the minimum in labor and expense. The principle on which the auger machine works is explained in its name. It is an auger, or screw, which being revolved in a fixed position propels the clay forward. In a carpenter's auger, the chips are carried back from the point of production, while in the auger mill, the motion is reversed. This auger is carried out in a great variety of forms, adapted to all classes of work.

The general characteristics of the bar of clay produced by the revolution of a screw are well marked. The tendencies at work are two, those which affect all clays flowing through a die, and those which are due to the auger.

The gathering together and propulsion of the particles of clay by an auger in itself seems to arrange the particles around a central point. This is evidenced by examining the bar produced from extremely sandy and gritty clays, which are so rough in their nature that they do not tend to laminate or slip as plastic clays all do. In such a bar, the structure, while solid,



ODELL BROTHERS' BRICK WORKS, OTTAWA, CANADA.

pected to raise objection among so energetic a people as Americans, and naturally a machine that is always pushing out the clay finds readier adherents on that account.

The second class of stiff mud machinery, that of the auger type, combines several advantages which makes it very popular. The first advantage is the continuity of its action, whereby it constantly makes brick as long as the clay is supplied. The second lies in the fact that auger machinery is driven by belts and gearing and that the steam power required can be generated in the most economical and approved style of engines, while in steam presses, the best type of the plunger machines, the use

dense and free from laminations, shows the particles arranged in concentric and radial lines around a central point. This fact proves that this arrangement of particles is a tendency inherent in the use of an auger for propulsion, for in working clays of this class, every influence which tends to produce laminations or faults of structure, is at its minimum.

The same tendency is shown in working plastic clays, but in this case the concentric arrangement may be confounded with the laminations. The mere arrangement of the clay around a center does not in itself do any harm, gritty shale clays thus made often constitute our finest material in structure. But



when a clay is plastic and is worked in an auger mill, the polished auger forms smooth surfaces where the clay slides over it, and these "slips" often fail to unite again in the bar of clay. And as they are thus formed, they take up the spiral movement shown by the particles in the case of the gritty shale clays and the bar then becomes a series of concentric layers imperfectly united. So that the tendency of the auger to arrange everything around a center becomes a serious difficulty in dealing with a plastic clay.

The arrangement of the particles around a center is due wholly to the auger. The arrangement of the clay in layers around a core is due jointly of the influences of the auger and the movement of the clay through the die. The tendency is therefore affected by the size of the bar produced, for it has been previously shown that the flow of clay through a die has effects which are far more active in dies of medium size than in those either very small or very large.

The size of die aperture affects the concentric arrangement of layers in an auger machine product most greatly in the common end cut brick sizes from 2 x 4 to 4 x 5, for in these sizes the influences which affect the structure are most active. The bricks made from side cut machinery are therefore far less subject to laminations than those made end cut.

The clays which are most affected by the influences of auger machinery are the rich plastic kinds which easily slip on the auger, or within themselves. Such clays cannot be worked in an auger machine with the production of a bar which is free from laminations. Hard gritty clays of very moderate plasticity, work through without much slipping and the bar produced in this way is often perfectly solid.

It usually happens however, that when a bar of clay is sound and free from structural defects inside, on account of the hard and gritty nature of the clay, that its surface is disfigured by numerous cracks and checks. For while the clay may be as plastic as it can be made, its lack of cohesion or stickiness allows it to crack when it emerges from the compression of the die into the freedom of the open air. So that the paving brickmaker who attempts to improve the inside of his bricks by using gritty clays is apt to have trouble with the appearance of the outside.

The use of auger machinery has assisted more than anything else, in the use of the shale deposits, for shales, being as a class very little plastic, are not well suited to the use of the plunger machines, (which work best in material of undoubted plasticity) but their gritty nature is exactly what is needed to produce the soundest material that an auger machine is capable of making.

In the manufacture of building brick the structure of the bar of clay is comparatively immaterial, for the first thing considered in the building material market is the appearance and size, while in paving material the constant effort is to produce material of a uniform, homogeneous nature.

two streams of clay are carried forward simultaneously, which unite at the die. The concentric structure is much broken up by this device, for one stream opposes the other, and both are shoved forward without opportunity to twist.

The use of double thread augers is confined to side cut machines at present for the uniting of two streams of clay at the die tends to produce a large bar and the common side cut auger applied to a single stream end cut die would not be successful. But it seems as if a double thread auger, sufficiently conical to bring the bar down to an end cut size could be successfully applied.

Other efforts have been made by brick machine manufacturers to obtain better



EMPLOYEES OF ODELL BROTHERS' BRICK WORKS, OTTAWA, CANADA.

The various kinds of auger machines in use are classified as either side cut or end cut. In the former a bar is produced about  $4\frac{1}{2} \times 8\frac{1}{2}$  inches square which being cut up into sections  $2\frac{1}{2}$  inches long makes side cut brick. The exposed portions of side cut brick are smooth from the die, while the top and bottom are rough from the cut. In end cut brick the bar of clay is made  $2\frac{1}{2} \times 4\frac{1}{2}$  inches cross sections and is cut into  $8\frac{1}{2}$  inch lengths. As has been stated the tendencies which cause the laminations are much more active in the end cut machines than in the side cut.

A great many side cut machines still further improve the quality of their work by the use of what is called a double thread auger, i. e., one in which

structures in the end cut bar, by using a double or triple issue die on a machine built for producing side cut brick. One bar of clay is produced in front of the auger, and is split and formed into either two or three separate streams in the compound die. The effect of this arrangement is not as satisfactory as it was expected to be, for the tendency seems to be to split the original concentric structure in two or three pieces and the separate bars produced will represent either one half or one third of a circular stream. It is like splitting a large log into three slabs and expecting as much strength from either one of the flat slabs produced as would be obtained from a small round log of equal area of cross section.



The tendency of bricks made in these multiple stream dies is to crook in drying, owing, to the unequal distribution of the particles with reference to the center of the brick. So that the result of the best experience seems at present to show that the best structure is obtained where the bar is made side cut with a double thread auger, but if an end cut brick is desired, it should be made in a single stream die, so that each brick is a full section of the whole product of the auger.

Auger machinery has been manufactured so long and by so many firms, that there are a great many types in use and in the market. Each is claimed to have some special excellence; the convenience of taking the machine to pieces for renewals and repairs, the strength, the accessibility of the parts which endure the strain, the special features of the die, and many other such points constitute the basis for these assertions.

The auger itself is made in several different ways. The solid continuous screw, the interrupted screw, the solid auger point with pugging knives in rear and many other plans are in use. The use of a continuous screw is undoubtedly favorable to producing laminations for the smooth spots or "slickensides" are bound to occur more frequently when the clay travels a long distance in direct contact with the polished screw. The arrangements for receiving the backward thrust of the auger are also very much elaborated, for it is plain that the thrust backwards is equal to the pushing power forwards which the machine is exerting in throwing out the clay.

This thrust block or "tail block" as it is called, is nearly sure to heat, more or less, no matter what construction is adopted. The difficulty is much worse in end cut machines than in side cut, for the power exerted in forcing a given quantity of clay through a hole, varies inversely as the square of the diameter of the hole.

The method of handling a bar of clay when made is a subject hardly less important to the brickmaker, than the structure is to those who use the brick, for the handling is a prominent part of the cost of manufacture. And also the surface finish of the brick depends largely on the system of handling by which the product is treated after leaving the machine.

The simplest methods of cutting up the bar of clay in sections of the proper

length for brick, both side cut and end cut, are by hand power devices. Side cut brick are still nearly all cut that way. End cut brick have been automatically cut for some years now, and side cut brick are being cut automatically for the first time during the past year. Where hand cutting is adopted, the material is removed by pallets or by hand, but where automatic cutting is used, the product is made to travel off on a moving belt, each brick separated from the last by a small space. From this belt the brick are taken by hand to the repress or the dryer. The perfection of the cutting of the brick automatically is one prominent reason which gives the auger machine the prominence over the plunger machines.

Machinery of the third class or combination type is not very important as yet, for up to this date no combination machine has been devised which can compete with the auger machinery for quantity of production or cost. But nearly all this kind of machinery is the result of attempts to correct the defects of the plunger and auger processes.

One of the most important combination machines is composed of a vertical pug mill, discharging downwards; at the bottom, a large mud-wing (which is a section of a screw) forces the clay into a series of mold boxes which are brought under the mud wing by the revolution of the horizontal table in which they rest. The force filling these boxes, while really a screw motion, is so obscure in its application that no concentric structure is imparted to the clay and after the box is filled loosely by the mud wing, it is consolidated by being brought between a pair of plungers which work, one up and the other down. The clay is thus compacted into a hard mass, which is subsequently removed automatically from its box and taken from the table by hand.

Another machine operates on the same principles, the clay being forced into molds by an obscure power and there consolidated by plungers. These two machines may have a future of some importance, for the clay neither passes through a die under pressure, nor is twisted around an auger, and on these accounts would seem to offer an opportunity to use very plastic clay deposits which now cannot be worked alone on any other machines with the production of anything like sound structure.

Still another combination machine has been built and tested which makes

the brick by plunger action, cuts them off, and represses them, and finally piles them up on a car automatically, limiting labor in the production of brick, to the one attendant around the machine and the man who removes them to the dryer. The plant has not yet been made a commercial success, but the failure does not seem to be in any way the fault of the new machine. It is a marvel of ingenuity, and it is only a question of time when sufficient money will be used to give it a working trial. The structure of the material is not wholly free from laminations of the plunger type, but as the chamber and die are short these are less than in the regular plunger machines. The great economy of operation offers a rich bait to some one who has the means to afford it a fair test.

Written for the CLAY-WORKER.

#### TERRA COTTA DETAILS.



MOST buildings are ugly. All buildings cannot be absolutely beautiful. None need be offensive. Pictures of any ordinary business or residence streets taken at random will show a very large majority of ugly buildings. It is only a few weeks ago that we



saw a photograph of some of the principle business streets of Boston. They were made for the purpose of indicating certain principles with respect to rapid transit, and of course without thought of the artistic. Now there is no question but that Boston is among the best architectural cities in the country. It contains as large a proportion of interesting buildings as any other, but the photographs of these business streets showed great rows of ugly buildings.



From an artistic standpoint, the general view was not pleasing, one can go into that city and make a selection and show many beautiful structures. They cannot, however, photograph a street and show a majority of attractive buildings.

In commercial architecture the fault is not so much in composition as it is in detail. The inexorable demands in mercantile structures is such that it prevents the composition from being very bad. A great deal of light is wanted and there are not many surfaces to spoil by bad decoration. The ruination of our mercantile structures is in matters of detail, the little things, the moldings and other features supposed to be decorative or ornamental. These details instead of adding beauty oft times add ugliness, because they are misapplied, or crudely conceived and executed with a rough hand. There are more buildings that are ruined by having too much money applied in a false decorative spirit than through a lack of money. It is all a question of knowledge and refinement. Generally speaking, an ugly detail involves just as much labor and material at as high a price as an artistic one.

Where buildings are constructed of brick and decorated with terra cotta good effects are almost universally attained for the reason that terra cotta modelers are not mere mechanics but are artists who appreciate the value of color work as well as beautiful figures and graceful lines. Very much of the architectural terra cotta now produced by the various firms engaged in that work is beautiful both in form and color.

The accompanying illustrations are from photographs of a few of the many interesting details recently found in the office of the American Terra Cotta and Ceramic Co., Chicago, and indicate the high class of work that company is turning out. Wm. D. Gates, President of that company has of late been giving considerable attention to glazed or enameled terra cotta and is now prepared to furnish architects and builders with anything they may want in that line.

### YOU BET.

Little types of lead,  
Some papers and some ink,  
Form a combination  
Stronger than you think.

—C. W. Darling, in *Printer's Ink*.

Written for the CLAY-WORKER.

### MANAGEMENT OF MACHINERY.

BY D. W. STOOKEY.

IN GENERAL.



PEOPLE are born with inclinations and facilities for certain pursuits or occupations, and they will succeed better in these particular lines than in others for which they have no taste. Unless one naturally takes an interest in machinery, or has had some previous training in the care and management of machines of some kind he will hardly succeed in getting good results from any that he may undertake to manage.

Many good machines have been condemned when the fault lay in the management and not in the machine itself. Manufacturers of machinery have been put to great expense and lost largely in the reputation of their machines because they were so unfortunate as to fall into the hands of men who had no faculty or ability in their care and management. This has been especially true of manufacturers of agricultural and clay-working machinery. Farmers as

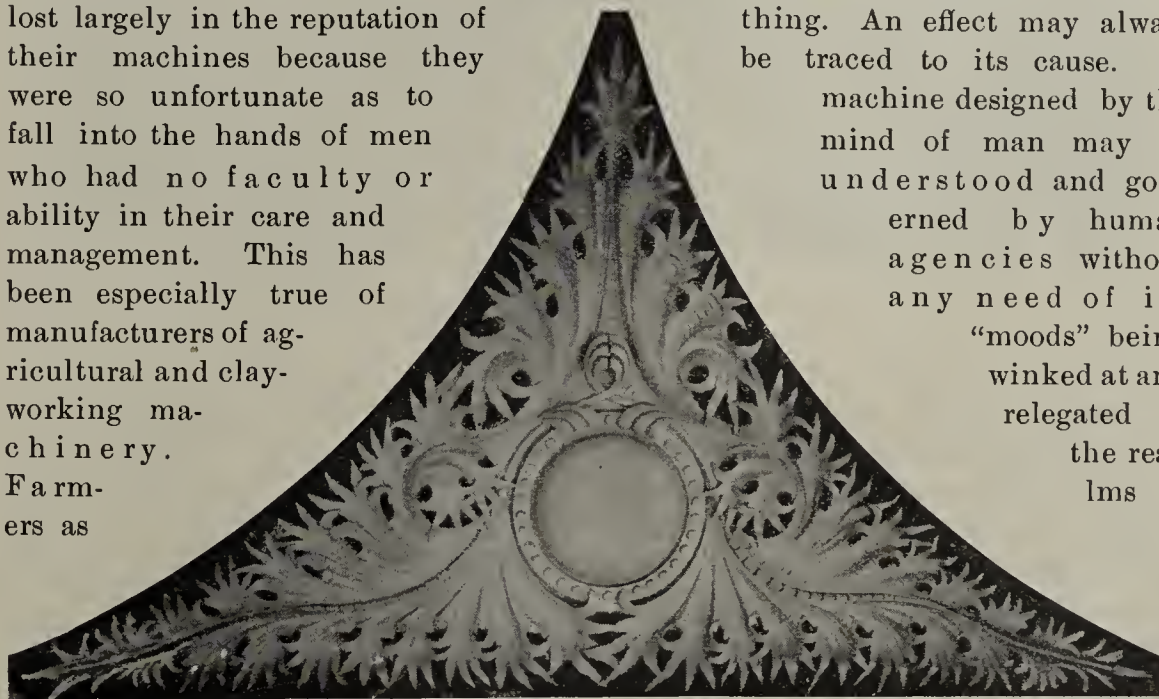
towards perfection of work. The growing tendency towards the substitution of machinery for hand work has led many to undertake the use of machinery who had no experience nor natural ability to lend a semblance of assurance of success. As a consequence many have failed who did moderately well so long as they followed the simple methods with which they were familiar. These failures in a large majority of cases were charged to the machine, when in reality the fault lay with the man whose incompetency and lack of judgment have to be borne by the machine.

Machines have been charged with having moods. Some days they work readily, smoothly and it is a pleasure to be with them, while at other times the converse is true.

Dr. Holland said that the moods of the human mind depend largely upon the condition of the liver, and doubtless a palpable reason exists in all cases for the moods of machines. In the natural

world there is a reason for everything. An effect may always be traced to its cause. A

machine designed by the mind of man may be understood and governed by human agencies without any need of its "moods" being winked at and relegated to the realms of



A TERRA COTTA PANEL—AMERICAN TERRA COTTA & CERAMIC CO., CHICAGO.

a rule have had little training or experience with machinery and are not prepared to handle successfully the feed mills, binders, threshers, etc., that are placed in their hands. The tendency of the times is strongly towards doing everything by machinery, and as a natural consequence many men are attempting to run expensive and complicated machinery who are not blessed with enough natural mechanical genius to manage a coffee mill and keep it in order.

Within the last decade, or two clay-working machinery has made rapid advances both in numbers, in use and

the mysterious or incomprehensible. He who helplessly allows his machinery to run in a "sullen or stubborn" mood confesses his own incompetency. If it is kept in proper condition and given work for which it is adapted, it will perform its part well, if it does not a reason exists and the responsibility of removing this reason rests with the man in charge. It must be constantly under his supervision. He must not suppose it is in order because it was some time ago. Its tendency is to get out of order and he should know its condition at all times. If allowed to run without proper attention it will soon protest by noise, wear-



ings, heavy draft or breakages. These indicate that something is out of order and demands attention.

#### MUST BE ADAPTED TO THE CLAY.

A brick or tile machine must not be expected to turn out perfect brick or tile from any kind of clay or with any kind of management. Something more than a brick machine is required at a brickyard. A brickmaker is one of the essentials of a complete outfit and this one is absolutely necessary for the production of good brick and the success of the enterprise.

The tendency is to expect too much of a machine bearing a good name or that has been constructed for a special purpose and for which the manufacturer produces good testimonials. The testimonials show that it is capable of doing and does do what is claimed for it, and if it fails in any case the fault lies out-

expensive system of manipulation to prepare it for working by the dry press method and would likely be more profitably manufactured by the semi-dry process or by a soft mud machine, and he who tried to work it with a dry press would err in judgment and afterwards condemn the machine.

Their name is legion who have tried to work a common or inferior brick clay into drain tile and who have blamed the particular machine that was so unfortunate as to fall into the hands of a man with such small bumps of discretion and foresight.

#### CONDITION OF THE CLAY.

A clay that has stones or gravel in it evidently requires the use of a stone separating device. One that comes from the bank in hard lumps or stiff blocks of a soapy consistency will be improved by being passed through some

and some of the blades in the pug mill may be entirely dispensed with by previously passing the clay through a crusher.

There is a great temptation to work the clay too dry in the semi-dry process machines because it makes such smooth ware and has such good form. When worked too dry the clay does not weld as perfectly as when more moist, and the tendency to crack in drying is much greater. In addition to this the draft is much greater and the column of clay moves more slowly, thus reducing the capacity or amount made in a given time.

#### ADAPTED TO THE PLANT.

The capacity requisite in running and cost of the machinery should be adapted to the necessities and sales of the plant. A forty horse outfit should not be placed in a one horse business, an expensive machine or set of machinery should not be purchased for a place where a cheap one will answer all the requirements. The outfit should not cost more than the income amounts to. Some with more enthusiasm than judgment have arranged expensive plants for the manufacture of heavy clay wares, such as brick and tile, at points without a market within range of their shipping facilities, and as a natural consequence have discovered too late, that they have more capacity than market. A demand may exist, but it is so remote that the freight bills are so large that they practically confine the market of each factory to a small area adjacent to the location of the plant.

In designing and building machinery certain specific objects are always in view; that is, the machines are intended to perform certain functions and produce definite results. The main thought of the designer and manufacturer therefore, should be to attain this desired result in the most satisfactory manner, and the machine should be so constructed and contain all the parts necessary to the production of this object. However, the one that does the required work the most perfectly is not necessarily the most practical. Theory and practice often conflict in every industry and experience suggests many changes from the plans of the theoretical designs.

Instances are quite common where elegantly constructed machines that performed their work nicely for a time have been condemned and relegated to the scrap pile because they lacked in



TERRA COTTA DETAILS—PANEL BY THE AMERICAN TERRA COTTA Co., CHICAGO.—See page 234.

side of itself and can probably be found in the fact that it has not had a fair chance. Stock cannot be fattened unless they are fed on fat producing foods which they are prepared by nature to eat. The flesh eating animals with their sharp, shear-like teeth will not thrive if fed on grain, the ox with flat "grinders" will not fatten on meat, a loom will not make cloth of bars of iron, a nail machine will not make nails of clay, neither will a brick machine make good brick of loam, sand, hard lumps of clay nor anything but clay in the condition intended by its designer and builder.

Some clays will work successfully in a dry press machine but would not in a soft mud mill, some are adapted to the semi-dry process that are not to either of the others.

The judgment of the man in charge must decide what kind of a machine his clay requires, and he can only blame himself if he buys one not suited to his necessities. A clay bed that is very wet and adhesive would require an

kind of a crusher or disintegrator. If it can be spaded from the bank and worked directly by the machine in a satisfactory manner into a good quality of brick, it would probably be a needless expense to use a crusher. Cases of this kind are very rare, and in general the greater ease to the machine, the increased speed and improved quality of the product will amply compensate for the crushing of the clay.

#### SHOULD BE KEPT IN ORDER.

If the machine runs heavily the cause should be sought out and remedied. In many cases the difficulty lies in the condition in which the clay is when fed into the hopper. It may contain hard lumps that offer great resistance to the knives of the pug mill. If so it should be first passed through a crusher.

Crushing the clay reduces it to small pieces and goes far towards doing the work of the pug mill. In machines, such as the ordinary tile and brick machine, in which the forming or molding machine is combined with the pug mill, the draft is greatly reduced



some of the requirements of the practical test. Some were too expensive to compete in the market with others that could be sold for less money and fulfilled the requirements fairly well. Some have been left behind in the race for public favor because they were too complicated to be kept in order and run satisfactorily by the men who required their services, but who were not mechanical experts. Others were victims of the universal law of the survival of the fittest, because they were so finely constituted or impractically designed as to be sadly deficient in the matter of durability.

The manufacturers of the first class, learned by experience, that hard teacher, that the price of an object is always a factor that exerts a great influence upon the mind of the buyer. While the finer machine may perform the work in a very elegant manner and be a source of pride and satisfaction to him who runs it, the practical man and a large majority of the buyers will take the one that does "well enough" and can be bought for less money.

Those who sold the second class soon received repeated complaints from their customers as to the failures of the machines to do the work satisfactorily, when in reality the fault lay with the operators. But be this as it may, those who require the services of machines want such as they can use, and not something that is of no practical use to them.

The Corliss engine, which is one of the finest, most economical and most theoretically perfect on the market, will never come into general use for users of small power, because its mechanism is too complicated for the ordinary steam user.

In the third class the clayworking world has examples of machines that were placed before the public with great anticipation by the manufacturers and received by many as the very thing they needed, but after a fair trial they have been found to be good while new but not durable. Some part or some movement in their makeup has failed and been condemned. Purchasers are cautious although they may be deficient in native mechanical ability, and by experience, observation and conversation, soon learn of the deficiencies of one machine and the redeeming qualities of another. From these thoughts the factors of efficiency, economy, simplicity and durability may be drawn as

elements in the practically successful machine.

"A new broom sweeps clean" and a new machine will run smoothly and give satisfaction for a time with little more attention than to make the "wheels go round," but after a time it will wear here, a bolt come loose there, or something get out of adjustment some place else, and it will wear, knock, rattle, squeak, grind, heat or run heavily and unless given the proper attention it will



TERRA COTTA DETAILS—A TERRA COTTA COLUMN—See page 234.

soon degenerate into a condition only calculated to augment the expense account of its owner.

These are "the times that try men's" (not souls) fitness to have charge of machinery. In many instances a little oil or a few minutes judicious use of a monkey wrench will remedy the evil and all will go smoothly again.

In the management of machinery the truth of the old adage "A stitch in time saves nine" is often vividly illustrated,

as is also that of the one with reference to the want of a horse shoe nail.

A machine cannot do the work for which it was constructed unless it is kept in order and placed under the circumstances intended by its designer, and it is an injustice to its projectors to condemn it for inefficiency when it is not given the treatment and opportunities intended by them.

Clayworking machinery is very apt to degenerate, because it seldom falls into the hands of practical men, and because of the nature of the substance with which it has to work.

Pug mill blades, grinder knives and feed augers will naturally wear very rapidly, because of the gritty nature of the clay in which they work under great pressure. These should be made very hard, of chilled steel, if possible, and should be renewed as soon as much worn. It is poor economy to use a half worn feed auger, while a full crew of men are under pay, rather than incur the expense of a new one.

All bearings should be tightened up as fast as they wear, lest they become loose enough to rattle or knock. If much worn they will allow the shaft to draw out of line and cause trouble with the gearing or in other ways. If no more liners can be taken out new Babbitt metal or brasses should be supplied.

Oil should be applied often and in small quantities. It will not suffice to pour a large quantity into each oil hole before starting in the morning and after dinner. This runs down in a narrow line and will mostly drop off without lubricating the whole bearing. It is better to apply the oil while the parts are in motion, as it will be much better distributed where needed.

Dirt has been defined as matter out of place. Soap, the enemy of dirt, becomes dirt itself where it is not wanted. The oil, so essential in the boxes and on the journals, becomes dirt when it drips from its place. Clay which is eminently proper in the pug mill, becomes dirt when allowed to fall over the machine and get into the bearings where it will do much damage. A wrench or hammer becomes very objectionable dirt when laid where it may jar off and fall into the machine or into the gearing.

Everyone with a musical ear can readily distinguish between noise and music. When a machine is running properly there is a pleasant humming or purring about it that is very grateful to the ear of those most interested, but

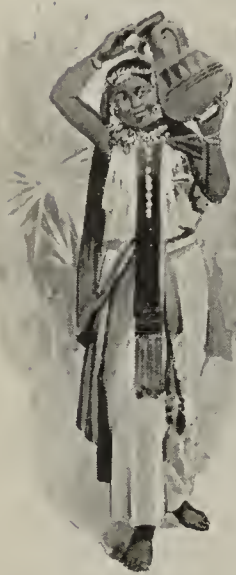


when out of order it makes a disagreeable noise that grates harshly upon the auricular organs of him who takes a pride in doing all things well.

Written for the CLAY-WORKER.

### THE MODERN DINNER PLATE.

BY EDWIN ATLEE BARBER.



IT IS a remarkable fact that of all our table and household utensils made of clay, the plate is the only piece which has not been improved in shape during the past hundred years. The forms of pitchers, tea-cups, coffee-pots, and, in fact, all other pieces of table services and toilet sets have been modified and adapted to modern requirements, but the dinner plate still remains in the uncouth form of the days of our grand parents.

In *The History of Pottery and Porcelain of the United States* I took occasion to call attention to the perpetuation of certain offenses against good taste in the continued production of the ancient style of table plates with guttered or concave margins. It has been suggested that the protruding ledge around table plates was originally intended as a shield to prevent the thumb from coming into contact with the contents, in passing from one person to another. If this supposition be correct, it is the strongest argument in favor of the abolishment of an objectionable feature, for the continued use of a thumb guard would be construed as an admission of incompetency of servants, or a reflection upon the manners of guests. The refinement of our modern table etiquette should rebel against such intimation. It is more probable that the depressed plate ledge was designed as a receptacle for bones and scraps, and at a more recent period, for butter and salt.

In days of yore the pewter porringer held a conspicuous place among the table furniture of our great-grand parents, and the pewter plate and large circular meat dish with the broad, projecting margin, were invariable accessories, with the three-prong fork and iron knife. Gradually delft ware, made after the same patterns, superseded metal, and blue Canton china services, still of

the same forms, came into general use.

In the first quarter of the present century Staffordshire china sets came into general vogue, in which the oblong platter made its appearance, but plates and meat dishes still retained the old guttered margin for the refuse of the meal. And so on down to the present day the objectionable plate rim has continued to be reproduced with little variation, and we are compelled to use daily this unsightly and clumsy relic of a primitive civilization.

The shallow plaque with a slight, continuous curve should be the model for the modern dinner plate. While simple and elegant in form, it is lighter in weight and occupies less space on the board than the old style. Moreover, it presents a better surface for artistic decoration, and, possessing more available surface, will hold more and can, therefore, be made of smaller size. Some of the most refined and beautiful patterns of desert and fruit plates are now produced in this form by several of the foremost Trenton potteries, notably such as are made in the thin Belleek or egg-shell ware. We predict that within the next few years the rim plate will entirely disappear from the tables of the cultured and will be looked upon as curious relics of a ruder social epoch. Let us hope that our potters will soon

Written for the CLAY-WORKER.

### CHEMISTRY FOR CLAYWORKERS.

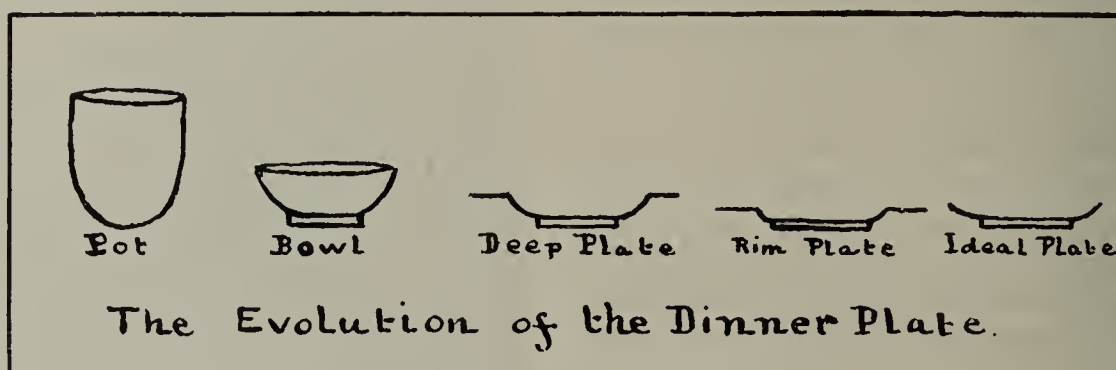
No. 26.

BY WM. WAPLINGTON.



HAVING temporarily dismissed heat with its laws and properties let us now turn our attention to some of the elements which appear to be more directly connected with chemistry; you will observe, however, that heat cannot be entirely thrust out, for it will be found obtruding itself into every element, or, into some of its compounds as we describe them.

We will commence with, POTASSIUM. This is a metal, its symbol is K, atomic weight 39, specific gravity 0.865; its specific gravity shows it to be lighter than water, nevertheless it is as much a metal as iron, copper or zinc, so that a metal is not necessarily heavy. Sir Humphrey Davy discovered this metal in 1807 by reducing KHO (caustic potash) with a powerful voltaic battery between plates of platinum. The metal may, however, be prepared in the following manner: A mixture of carbonate of potash, or, more correctly carbonate



awaken to the fact that the conditions of to-day are far different from those of a century or more ago, and that individual salts, butters, bone plates and bread and butter plates, having supplanted the plate rim, the latter is now obsolete. Some of the English and French manufacturers have already commenced to produce plate with sweeping curves and gracefully curling platters, and the favor with which they have been received is strong evidence that modern consumers will soon demand the permanent retirement of the ancient and objectionable patterns which have too long been tolerated.

The world's death rate is computed to be 68 a minute while the births average 70.

of potassium, or still more up to date, potassium carbonate,  $K_2CO_3$ , and powdered charcoal is prepared and thoroughly dried in a covered iron pot. When quite cold it is reduced to a powder and mixed with one-tenth (1-10) of its weight of charcoal in small lumps, the mixture is put into an iron retort—usually an iron bottle in which mercury used to be imported. The retort is then brought to a white heat, or nearly so, in a furnace fired with wood, or charcoal; to receive the metallic potassium is a copper receiver divided by a partition which receives in one portion the pipe from the retort, the other portion is filled with ice. When the charge in the retort approaches a white heat carbonic



oxide is given off in abundance and large melted drops of potassium fall into the receiver, which, by the by, is nearly filled with naphtha, the naphtha is to prevent oxidation, or, in other words, rusting, which it would rapidly do if left in contact with air a few seconds only.

The decomposition which takes place in the retort is thus symbolised,  $K_2CO_3 + 2C = 2K + 3CO$ .

Potassium is a bluish white metal which can easily be cut with a knife, at 32° F. or, 0° C., it has a crystalline structure, at 72° F. or, 22° C., it is a thick liquid about the consistence of molasses at 149° F. or, 65° C., it is a thin liquid.

*Oxide of Potassium*, (potash)  $K_2O$ . If some of the potassium be taken out of the naphtha in the receiver the metallic lustre of the surface will soon turn dim, and become coated with a white powder because it rapidly absorbs oxygen from the air; this white powder is oxide of potassium, or potash and bears the same relation to potassium as the black scales of iron on the smithy anvil do to iron.

Now if this white coated piece of potassium be thrown into water the white coating (potash) will dissolve, for it is soluble and as potassium is lighter than water it floats. As soon as the potash coating dissolves the potassium is laid bare to the water, it becomes very much agitated and floats back and forth with a sizzling noise, because of the great energy with which it is attacked by the oxygen of the water; the water being of course decomposed and the hydrogen set free this decomposition is so energetic that sufficient heat is generated to set the hydrogen on fire and burn it up as fast as it is liberated.

The traditional setting the river on fire can therefore be easily accomplished if we had the necessary quantity of potassium. We may go even further and burn up blocks of ice as easily as water by piling sufficient potassium on them. We will, however, with an experiment on a smaller scale, satisfy ourselves on this point.

If a small piece of potassium be placed on a piece of ice, it—the potassium—sets fire to the liberated hydrogen, just the same as it did on the water, and quickly melts a hole in the ice. The potassium is all oxydized and the substance formed is commonly known as "caustic potash" and chemically known as, a hydrate of potash, or potassic hydrate and is of considerable importance

in the arts and manufactures. A solution of potassic hydrates, is known as "potash lye."

The formula of potassic hydrate is  $2KHO$ , and the equation showing the decomposition, etc., that takes place when potassium is placed on water or on ice is this,  $2H_2O + K = 2KHO + H_2$ .

Potassium is very abundant in nature but always in combination with other substances, it cannot, of course be found in a free state on account of its strong affinity for oxygen, so it is generally found in combination with silica acid, in granite, trap, basalt and other igneous rocks. These rocks in time are crumbled down by the action of the atmosphere, and the potash finds its way into the soil and enriches it, in fact, it is found that soils destitute of potash are always barren. In the early papers of this series, I showed how the  $CO_2$  of the air acted upon the silicate of potassium in felspar, when water was present how carbonate of potassium was formed which being soluble was carried away, and how silicate of aluminum was deposited as clay (kaolin). This is how nature manufactures and distributes "carbonate of potash" for us and at the same time prepares clay for the future clayworker, on a very slow, but on a very grand scale.

*Potassic hydrate* (caustic potash)  $2KHO$  or  $KHO$ , is a very important compound and is prepared on a commercial scale by adding slaked lime—which is hydrate of calcium, (calcic hydrate) to a dilute boiling solution of carbonate of potash (potassic carbonate) the equation representing this change is,  $K_2CO_3 + CaH_2O_2 = CaCO_3 + 2KHO$ , you see by this that the carbonic acid, or carbon di-oxide leaves the potash and combines with the lime, which being insoluble sinks to the bottom while the caustic potash remains in solution. When the lime has all settled, the liquid is poured off into a loosely covered silver basin and boiled down to dryness and the heat then raised sufficient to melt the caustic potash thin enough to run into small cylindrical mold, and in this form it is furnished by the druggist like sticks of white candy. It must be kept in stopped bottles because it absorbs moisture from the air rapidly and soon becomes liquid. As stated above, it is a very important article. Medical men use it for cauterizing or dissolving the skin, etc., corns may be dissolved by it, but it must be used with caution otherwise it may reach the flesh and produce

a painful sore. If you mix some of the solution of potash with any of the fixed oils in a bottle and shake them up well you will produce a soft soap, in fact this is one of the most important uses of both caustic potash and caustic soda—the manufacture of soap of certain kinds, although, the ordinary both soft and hard soaps are made from the carbonates of potash and soda, and crude carbonates at that, and I am not aware that the refined caustic potash just described is used to any extent in soap making, soft soaps are potash soaps, while soda gives us the hard soaps.

*Carbonate of Potash*, (Potassic Carbonate)  $K_2CO_3$ . This is known in its crude form by the name of pot ashes or pearl ashes and is the source from which most other salts of potassium are derived. This country and Russia produce it in large quantities, and so may any other country that has similar woods in such abundance. It is derived from the ashes of the burnt wood, which are well lixiviated or washed in large barrels or vats filled with water, when sufficiently washed to dissolve all the soluble matter the water is drawn off and boiled down to dryness in large iron pots or caldrons, the residue being crude pot ashes, and hence the name potash," when these are further purified they are the pearl ashes of commerce. Both these are very impure but answer their purpose very well in the soap and glass works, etc. That which we get from the druggist is the purified form, and is obtained by calcining cream of tartar, boiling the mass in water and filtering, then evaporating to dryness.

The carbonates of potash and soda are used as the base of many fluxes, and are therefore undesirable in clays, especially fire clays, for comparatively small percentages of these alkalies entirely ruin clay for refractory purposes.

There are numerous other salts and compounds of potassium the mere naming of them would occupy more space than would be desirable in the CLAY-WORKER, so will only briefly mention one or two more.

*Sulphate of Potash*. This salt is formed as a residue in the process of manufacturing nitric acid from nitrate of potassium and is used in calico printing.

*Nitrate of Potassium*. Nitre, or saltpetre is found in the East Indies and in other countries too, lying like snow on the ground, it is collected, dissolved in water, after which re-agents are added to throw down impurities—chiefly lime

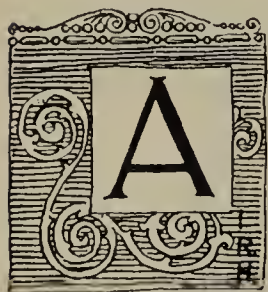


—the liquid is then drawn off and evaporated and saltpetre of commerce is the residue. As I have pointed out before in these columns the part it plays in the manufacture of gun powder I need not repeat it here. I may just mention that it has the property of preserving meat, some of my readers will remember how requisite it was in the old country at pig killing time to “cure” the fletches, shoulders, and hams. The symbol or formula for nitrate of potassium, (potassic nitrate), is  $\text{KNO}_3$ .

*Chlorate of Potassium*, commonly known as chlorate of potash, and chemically known as potassic chlorate,  $\text{KClO}_3$  is one of the sources for the artificial production of oxygen, and is also largely used for the manufacture of matches, it is one of those compounds held together by such slender ties that in the presence of combustible matter it only requires a slight blow to cause an explosion, for instance, if it be rubbed up in a mortar with sulphur it goes off in rapid explosions, for these reasons it cannot be used in the manufacture of gun powder.

Written for the CLAY-WORKER.

#### HALF BRICK, HALF TIMBER BUILDING.



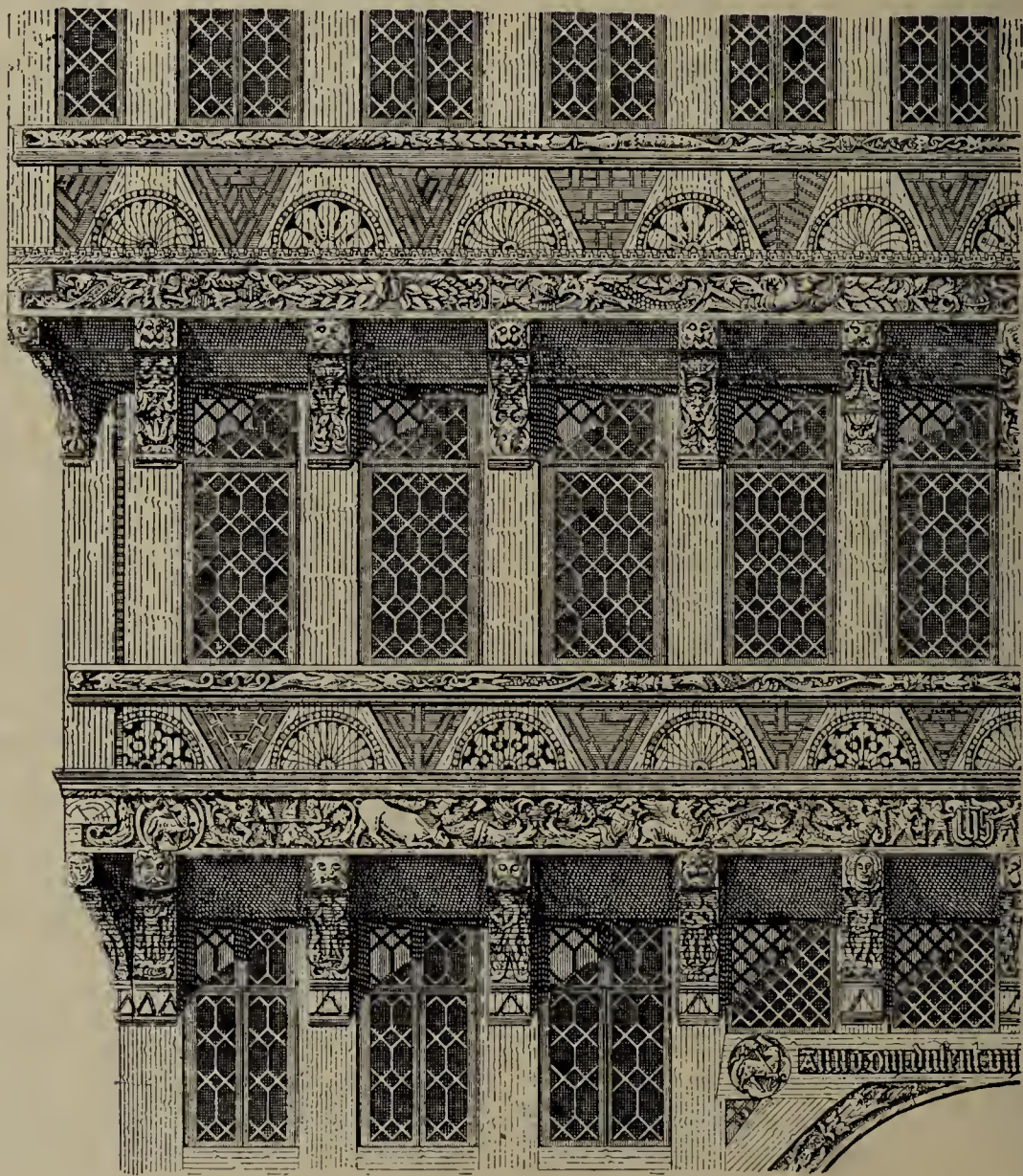
AN architectural student who had travelled from Hamburg to Berlin, Leipsig, Dresden and other towns and cities of north Germany said to one of his friends: “There is only one section where you will find anything to interest you and that is in the section immediately north of the Harz mountains, in and around Hildersheim, Halberstadt and Brunswick.

“Certainly one should find something to interest him in the larger cities named.” “Yes,” was the answer, “if the same sort of thing were not done better elsewhere, that would be true. Hanover and Berlin look like new cities. There is a great deal of new building in both of them and it is not of a high type. One sees the same sort of architecture which we find there carried out in a better way in other sections for which reason there is no occasion to travel over great sections of country in order to see what is relatively inferior. In travelling abroad one wishes to see what has a particular character of its own. If in architecture, what is distinctive. He

does not wish to see the same sort of thing imitated in any degree in other regions, and he does not care particularly to travel over great stretches of country for that purpose. Certainly there is no characteristic architecture in Berlin, not enough in other cities to make them worth while visiting for architectural reasons unless we accept Dresden, with its manifold exhibitions of the Rococco architecture, which no one cares to imitate.”

In the smaller towns named, in Hildersheim and the others, there is an architecture which is distinctive, it belongs alone to that people and to the

it. The reaching for novel effects in our American architecture has had not a little to do with retarding its higher artistic development. In the section named, this architecture is not novel. One can go through any number of streets lined with houses of this general character, all beautiful, all satisfactory, sufficiently varied to prevent them from being monotonous, yet all of the same general character. What may be of especial interest to clayworkers, is the fact that the spaces between the woodwork are filled in with ornamental patterns of brick. They are not filled in, in that way to be plastered, as is com-



time in which it was built, the sixteenth century.

We give first an illustration of a section of the old Knochenhauer-Amthaus which is said to be the most beautiful half timber structure in all Germany, it is practically an eight story building. In a land of artists, size does not count. It is artistic because it is so, the composition is good and the decoration beautiful. To us the decoration is novel; to them, not so. For this reason its novelty is not allowed to play any part in the consideration of its merits, nor should

mon in so many sections of the world, but are laid in their natural color, often in beautiful geometrical patterns and always with success. The spirit of the artist was breathed into all of this work.

The other cuts on the following page are of Hildersheim buildings, which are of the same class as this. The constructive principle is the same, yet the decorative details as various as the figures in a kaleidoscope.

Lives of “hustlers” all remind us  
That to make our business rise,  
We should leave old ways behind us,  
Get up speed and advertise.

—Jed Scarboro, in *Fame*.



Written for the CLAY-WORKER.

## DRYING BRICKS.

BY S. GREEN.

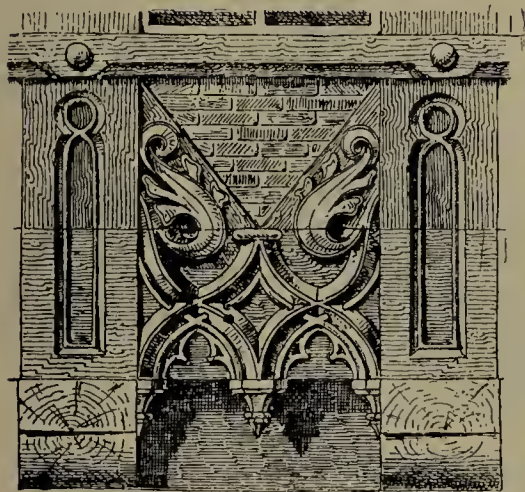
### INSIDE DRYING IS PREFERRED.

HAVING described peculiarly favorable conditions in "outside" drying that secures remarkably good results, and it seems that they are superior to the ordinary artificial means, let us now take an "inside" view.

In copying to obtain best achievements from out of doors, we will consider the current of air as first and most important means. Practical experience seems to show it to be the chief factor in outside drying, as equal service is scarcely obtained from the best known artificial dryers that use decidedly more heat, at higher temperature and less moving air.

The air supplied as the wind, suggests the current of air furnished at little or no cost, yet the additional labor expended in placing the brick for the wind to favorably influence their drying, should be accredited toward the comparative advantages of inside drying.

The current of air procured in the use of chimneys appears to be the most



common means for artificial drying, and though it seems to be economical in contemplating the natural current attributable to the tendency of heated air to ascend. To carry the great amount of moisture to be evaporated, especially from what are termed soft mud bricks, requires so much heat as to incur much cost in this force, that is truly mechanical, and it may be about as much so as the consumption of fuel to generate steam to operate a fan used for the purpose of exhausting the air from a room for the same purpose of putting the air in motion.

Fans may be so placed as to create

motion to a great volume of air and move so much of it as to compare quite favorably with the wind for drying purposes. Large, easy running "volume" fans, side by side, may control the current in a room for considerable width, and if they be from say four and a half to six feet in diameter and fully extending so much above the floor, quite a breeze may be easily created, and with considerable uniformity.

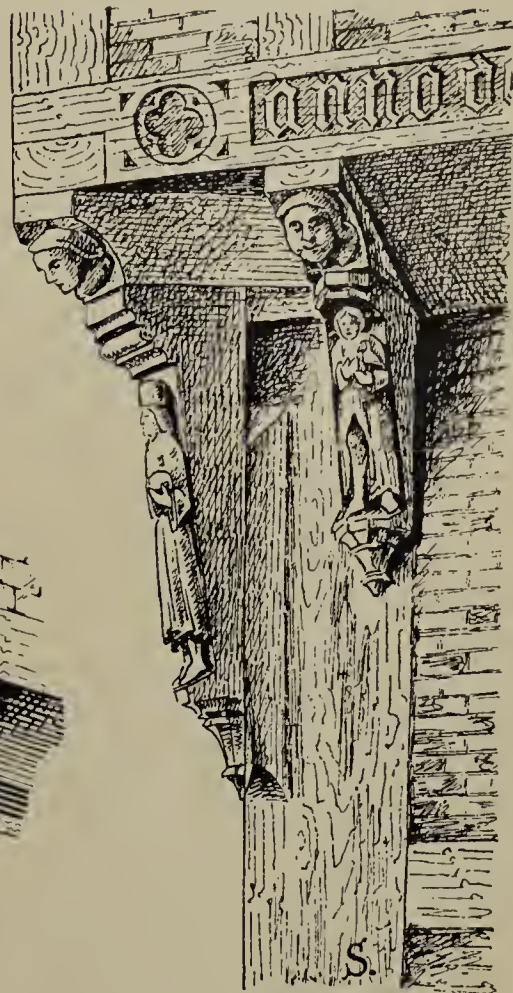
It is claimed that a "volume" fan wheel will put from three to four times as much air in motion as a "shaving" fan blower can, with the same expenditure of power.

When we take also into consideration the fact that with the fans so situated that material may be placed either on racks or in backs on the floor as best suited to the drying, on both sides of the fans; that each may be made about as effective as one side when depending upon a chimney, or a fan to either exhaust the air from, or force it into a room, and thus prove to be about twice as efficient from the same power expended; we appear to be directly introduced to a very desirable and economical means of reproducing the wind for our purpose of drying "inside" with the employment of the "inside fans."

It may be contended that though it costs but one-third as much power to put the air in motion, "volume" fan has so little concentration of current that its inability to affect the drying bricks in a tunnel dryer at considerable distance from this air motor, cannot result in other than comparatively slow drying.

Though this may be true, when as ordinarily the volume fan is outside of the dryer, and depends upon either exhausting the air or forcing it into the drying room (and it is not supposed to be suitable for creating a "blast," nor does such a strong current appear to be either desirable, at any part, lest danger from "checking" may occur, or at all necessary for the quick drying we obtain out of doors where the current is so fully distributed), but when we *distribute these fans* inside of the dryer and close to the drying material, the current is ample for very quick drying.

This seems to me to be the really successful artificial means for drying building brick, by securing the most important advantage of outside drying in a *steady* breeze obtained inside, and most conveniently suitable for advantageous handling of the bricks, with the



very economically obtained motion imparted to the air.

As we well know, it costs considerable power or fuel to prepare the clay and mould into bricks, as the coal bills show in a very practical object lesson, fashion, and yet aside from about one-third of the heat from the engine exhaust to heat the boiler feed water in its course through the heater, the exhaust steam usually goes to waste.

When we consider that the same firing under the boiler creates within about five percent. of as much available heat for drying purposes in the exhaust steam, may we not contemplate on economical source for obtaining, utilizing, the heat accompanying the making of the brick, for the purpose of contributing the next (to the current of air) most consequential factor in drying them.

We realize the advantage in distributing the fans through a dryer for the effective distribution of the air to dry quickly, safely and uniformly as well as economically, and now, as heat con-



tributed to the moving current of air through the material to be dried at frequent stages of its course, enables it to carry still more of the accumulated moisture. Let us also distribute steam pipes or radiators in the course of the current.

The fanning influence is very preceptable upon the surface of bricks, in evaporating the moisture, when close to the fans, and the radiation from the surface of steam pipe is also much increased because of their nearness to them.

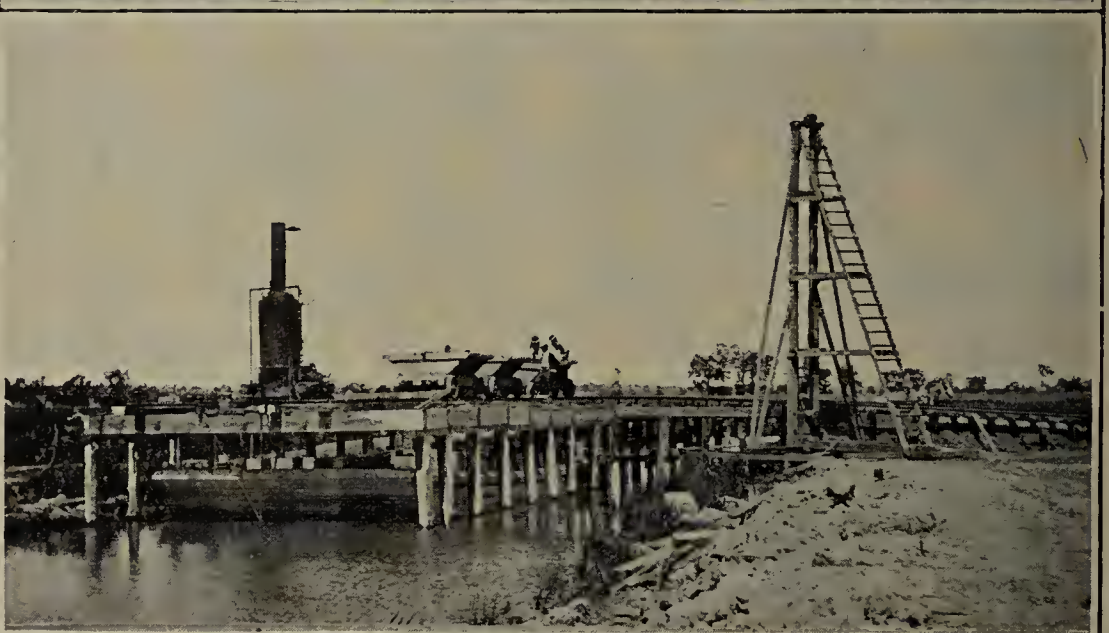
Low temperature accompanies the use of more air. The difference between the air and that of the steam increases the radiation and makes less piping as efficient, and less friction is presented to the passage of the exhaust steam and the engine is materially relieved.

In confirmation of this statement, permit me to note the report from a correspondent recently, in which he says that his steam pipe dryer, requiring full forty-eight hours, was made to dry in less than one-fifth of the time after the fans had been placed inside; and that the heat he now uses in drying his building bricks is from the engine exhaust steam only.

While the steam in passing through an engine exerts chiefly its expansive force, it parts with but very little of its radiating capacity, which we can so safely and fairly utilize for heating the dryer, and it still retains sufficient force to easily flow, with liberal provision in the size of the conveying pipe, to the radiators.

When we actually impart so little power as to create a current of air as desirable for drying as the wind, and also furnish the heat so economically as to not exceed the additional outlay for labor in placing the brick out of doors to so use the wind, it surely appears to dry inside with as little cost as by the old and time-honored methods that so many present brickmakers still cling to. Were they convinced of the truth of this position, they would probably seek an inexpensive artificial means for drying with the important attending desirable considerations in favor of drying inside, which are forcing many manufacturers to adopt even very costly (in first cost as well as in the continuous use) artificial means.

Aside from the foregoing view of obtaining the wind and heat to favorably compare with the outside treatment, there is another advantage which is generally realized from the use of well



BRICKYARD SKETCHES—THE R. H. HALL BRICK CO'S WORKS.

1. At the clay bank. 2. Hauling in the clay. 3. Filling a Barge. 4. Conveying clay from barge to machine.

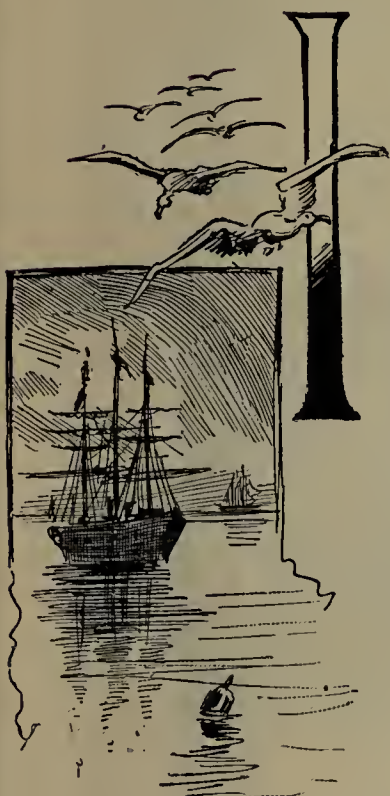


appointed artificial tunnel dryers in connection with the car system of conveying the bricks, and it consists in having the fresh-made, cool bricks enter the cooler end of the dryer (where the moisture-laden air from the drying bricks is discharged) and gradually and more safely approach the heated portion and thus become prepared for quick drying, and compare most fairly with the peculiarly desirable conditions described in the preceeding article, as when bricks may happen to be placed upon the yard with the air charged with moisture and it becomes gradually dryer for the safest and quickest outside drying.

Written for the CLAY-WORKER.

### BRICKYARD SKETCHES.

IN AND ABOUT DETROIT.



IT WAS the writer's good fortune to spend a few days in Detroit during the latter part of July, when most mortals between the Gulf and Lakes were sweltering and not a few were adding to their discomfort by trying to keep tab on the thermometer, a senseless procedure that drives men to drink. We make it a point to avoid the thermometer during midsummer, and midwinter, too, for its influence is demoralizing alike with the young and the old. Then, too,

we know it will perform its functions unaided, with as much diligence as a gas meter, with which infernal machine it may properly be classed, as both are subtle instruments of torture. For our part we prefer to let the weather man, who is paid to perform the service, keep a record of its performances that we may read them in the cool of the evening, within reaching distance of cracked ice, rather than confront a record of "99° in the shade" at midday with no possible means of relief.

However, this latter condition does not prevail at Detroit, for in the hottest of weather her inmates may find rest, comfort and pleasure in a trip to Belle Isle, a beautiful summer resort four miles up the river to which a fine line of boats ply at intervals of a few min-

utes through the day and on toward midnight. About the same distance down the Detroit River is the delightful Canadian resort, Des Chree Shoska, while Lake St. Clair and "The Flats" are dotted with cozy club houses where those desiring more seclusion may find quiet and peaceful retreats.

We were not only fortunate in being able to spend a portion of the heated term in Detroit, but also in being the guest of her brickmakers and builders. Those who have sampled Detroit hospitality, know that this means a royal good time. Scarcely had we registered at the Cadillac, when a cordial invitation to accompany the Detroit Master Builders' Association on a junket up the Flats, was presented by R. H. Hall, president of the R. H. Hall Brick Co. Those who have met "Dick" Hall personally and felt the persuasive influence of his winning smile need not be told that "I went with him," and had a de-

since or expect to see till we again visit that busy stream, and readily believed the statement made by a jolly old tar that a greater tonnage passes the port of Detroit than any other point in the world. The daily average is said to nearly equal that of New York and Liverpool combined. On the return trip we were joined by Mr. Jas. Inglis of the Huyett & Smith Mfg. Co., who is a thorough sailor, having crossed the briny deep several times, and can spin many wet weather yarns as entertainingly and with almost as much enthusiasm as he talks artificial drying at the annual conventions. Among other things, of course N. B. M. A. matters were talked over, and all agreed that if a convention could be arranged for August instead of January, Detroit would afford unequalled facilities for both work and play. It is their purpose to invite the convention there next year. If they get it, and we hope they will, those who



BUILDING BRICKYARD BARGES.

lightful time. Arriving at the boat, we found a jovial set of good fellows, all intent on having a good time, among them several brickmakers headed by Conrad Clippert, whose massive figure and genial face will be remembered by all who attended the last N. B. M. A. Convention at Chicago. His son, Geo. H. Clippert, who is secretary of the Detroit Brickmakers' Exchange, was also with us.

The trip up the river past the never ending procession of vessels which pass up and down the river, as if on dress parade, is a pleasing novelty to the land lubber. We saw more water craft and such things that day, than we have seen

attend will be made to feel at home.

Detroit is a great city. Her population now numbers a third of a million and her builders in ordinary times consume 115,000,000 brick a year. The consumption this year will fall considerably below half that quantity. The brick manufacturers are with one or two exceptions members of an efficient and well managed local association, that has prevented the suicidal cutting of prices for several years. The present season opened so poorly that it was deemed expedient to throw down the bars, and let each individual member dispose of his product on such terms as he saw fit. The result has been a very poor market,



prices ranging below the profit mark.

At the time of our visit very few yards were running, and those were on short time, and with the intention of shutting down at an early day. With the return of business activity, the Exchange will again take in charge the matter of prices, and the old order of things will prevail to the advantage of all.

#### THE R. H. HALL BRICK CO.'S NEW WORKS.

On the day following the trip up the river we accompanied Mr. Hall to the new plant of the R. H. Hall Brick Co., where we saw many original and novel arrangements that tell of an inventive and forceful management. Mr. Hall is a brickmaker both by birth and educa-

with a pair of tongs the burn was good from top to bottom.

One of the first things done after deciding to erect the plant was to dig two canals forty and fifty feet wide, respectively, and ten to sixteen feet in depth, extending from the river back some 3,500 feet. The yard has been built on the strip of land between these canals, which are about 500 feet apart. They were dug by the company's own dredge, and the brick will be floated to the market on their own barges, which they build themselves. They can if they choose ship by rail, as there is a switch running into their grounds.

The clay is taken from a point a con-

an open yard where they are dumped on the ground, and after drying a little are edged by women and children, who hack them in rows six to ten high.

There were four machines in position, and arrangements for four more to be set as soon as they could be put up. They set 222 feet apart, and are run from a 2 $\frac{7}{8}$  in. line shaft that will be 1,800 feet in length when completed, and is connected with two 140-horse-power engines by gear wheels instead of belts, the direct shaft being six inches in diameter.

The brick will be burned in common clamps set 30,000 to the arch, with crude oil. The kiln sheds were not up at the



THE R. H. HALL BRICK COMPANY'S BOARDING HOUSE AND COTTAGES FOR EMPLOYEES.

tion. His father was for many years the leading brickmaker of that section, and amassed a snug fortune in the business. The new yard is located six miles south of Woodard avenue, and comprises some seventy-five acres fronting the Detroit river. To the casual observer it would seem a better site for a frog farm than a brickyard. Some of the old fogies laughed at the idea of building a brickyard on the bottom lands along the river front, and predicted that the first kiln built would be the last, as it would sink out of sight and take a direct downward course to China. But "Dick" evidently "knew his business," for when we arrived at the yard we found the first kiln just finished, and from the looks of two or three brick dug out at the top

siderable distance back from the works and is shoveled into huge, bottom-dump cars and hauled by horses over a moveable track to the foot of an incline where a cable is attached and steam power hauls it up on a trestle built across one of the canals. The clay is then dumped into a barge beneath, which, when filled, is towed down the canal to a position in front of a soft mud machine. Water is thrown on the clay, and presto—the barge is transformed into a soak pit, when an elevating or conveying device is lowered from a bridge-like structure extending across the canal, the signal to start up is given, the wheels revolve and the mass is turned into brick at the rate of sixty or more a minute, trucked in the molds to

time of our visit, but will be constructed chiefly of wrought iron, an innovation that Mr. H. said would be expensive to start with, but a source of profit in the long run. From the kilns the brick will be wheeled to barges and loaded into wagon beds, so that when the dock is reached each wagon load can be lifted by derrick and placed on running gear ready for the teamster to drive off, so saving one handling.

Mr. Hall expects to increase the capacity of this yard ultimately to nearly 75,000,000 a year, and has arranged with the Huyett & Smith Manufacturing Company for the erection of a steam dryer, so that the plant may be run the year round. Houses have been erected for the operatives, who are do-





THE R. H. HALL BRICK COMPANY'S FIRST KILN.

mestically inclined, and a large boarding house accommodates the balance. In brief, the plant is a little kingdom all by itself.

#### CONRAD CLIPPERT & SONS' WORKS.

In what was recently a suburb of Detroit, known as Springwells, there dwells an honest man, one who after an active business life of nearly half a century, during which time he has not only conducted his business successfully, but has frequently been called to fill public offices of importance, and has always proven worthy of the trust, however great the responsibility, still holds the confidence of his neighbors. It is not strange, however, for whatever he has undertaken to do, he has done well. Few men fill so large a place in a community through so many years and retain the esteem of all as has Conrad Clippert, brick manufacturer.

Mr. Clippert is consistent in all things even to living in a brick house. His home is a large roomy structure, standing well back from the street and surrounded with well kept shrubbery, that all in all tells of peace and plenty within. When eighteen years of age Mr. Clippert began making brick, working for R. H. Hall, Sr. In 1888 he started a yard of his own, and now has two plants, each having three machines with a daily capacity of 32,000. This season he has been able to make brick enough to fill all orders on four machines, but hopes for better things in the near future. The business is now carried on under the firm name of Conrad Clippert & Sons, the junior members being George H. and Charles F. Clippert. Both are steady, thorough going brick-

makers, the former giving attention to the office work and outside business, and the latter running the works. The father can well afford to take things easy, as he does, for the boys are both able and willing to take up the work where he leaves off.

Mr. C. kindly drove us to several yards in that quarter of the city (there are eighteen in all) nearly all of which are idle. The yards are very much alike in construction and method of work. The clay is carted to soak pits, and being free from stone goes direct to Detroit soft mud machines, made by F. Huette-man & Co., who have a monopoly of the Detroit market. The brick are all dried

on open yards or by the rack and pallet system and burned with crude oil in common clamp kilns. For two years ('91 and '92) they had natural gas piped in from the Indiana field, but the price was increased to a point that forced them back to oil. The Clipperts have been burning wood this year, but intend to fit up for oil next season.

Most of the yards have iron tanks, holding a car or tank of oil. Above this is placed a smaller tank filled with water and connected with the oil tank below, so that as the oil is drawn out, the water takes its place, thus maintaining an even pressure in the pipes.

The only pressed brick plant in Springwells is that of the Detroit Press Brick Co. We visited the works but found them idle, with stock sheds well filled. They have an old Eureka dry press equipment that still does good duty, and a batch of Eudaly's square kilns.

#### THE NEW YORK MARKET.

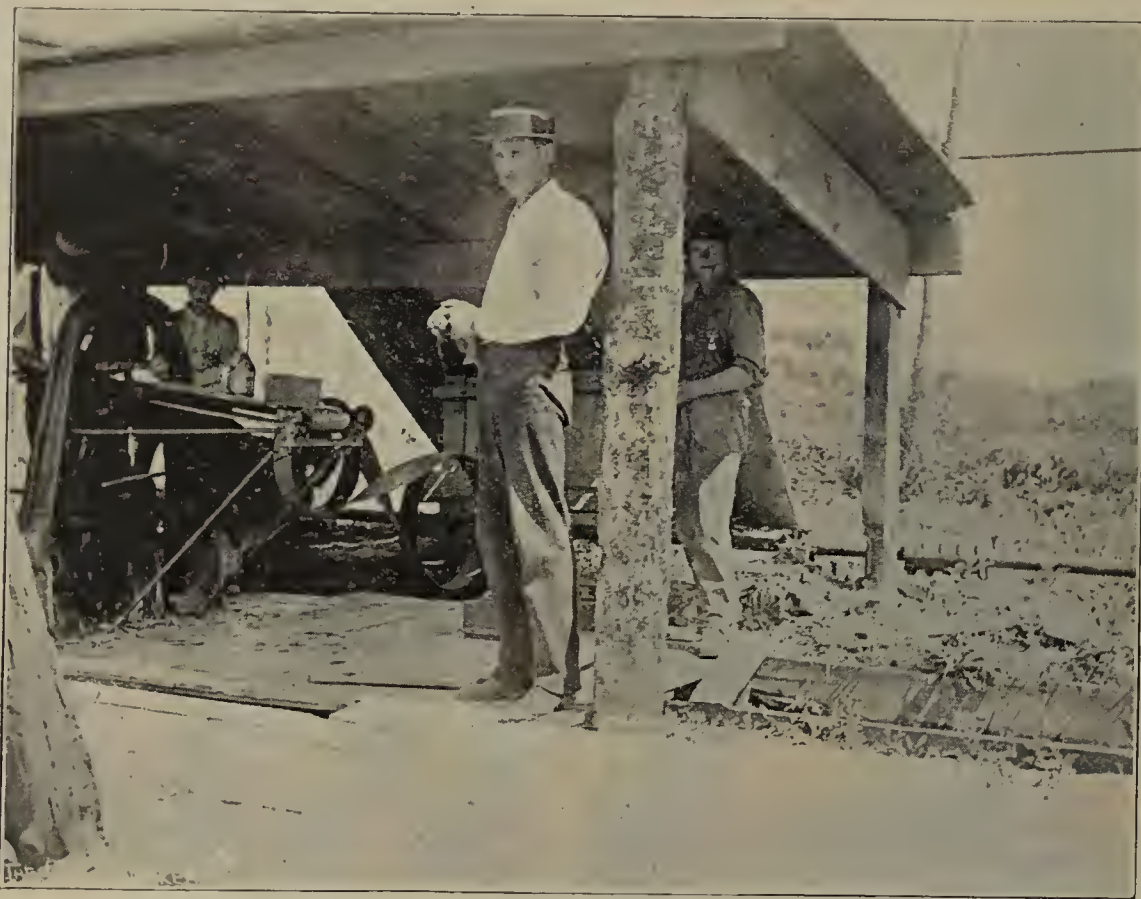


THE adage of "too much work and no play," causing the rising generation to be dull, cannot be applied to the brickmakers of this part of the land, this season at least. The manual part of the labor will be of short duration. Brain work



BRICKYARD SKETCHES—A GLIMPSE OF CLIPPERT &amp; SONS' WORKS.





BRICKYARD SKETCHES—CHAS. F. CLIPPERT, STARTING A RAYMOND REPRESS.

has and always will be, for some time to come, heavy.

Straws indicate wind currents. The faces of many of the manufacturers show the strain of brain work, the struggle to hold their own is beginning to tell. They have been hoping that something would turn up that would ease the burden, but the hope has been a forlorn one, as the state of trade is in no better condition than for the past three months, with a lower range of prices existing; some say that the rates are as low as they can go—well, it is to be hoped that such is the case. Circumstances alter cases, financial obligations have to be met. The stock on hand, or a portion of it, will have to be shipped for what it will bring; if not, the sheriff will be around and a sale will be the result. If it was only one or two who were compelled to realize, the market would not feel it to any extent, but strange as it may seem to many of your readers who are not conversant with the ins and outs of the market, there are those who place themselves at the mercy of buyers by continuing to send.

A barge may lay in market a week or more, and if she gets unloaded in less than two weeks it will be remarkable. There are three weeks gone, and no money returns. In the meantime another boat has been dispatched to market, and so it goes along the line, thereby keeping a full line of stock for the

buyers to select from and force rates down.

#### MOULDING

On many of the yards has ceased for this year. One of the yards here is burning their last kiln this week; another has two to burn. On the first of September another another will run out its last pit. Along the Hudson there are a number that have finished, and

before this number of the CLAY-WORKER leaves the press the majority will have burned their last kiln.

#### AN EARLY CLOSING

Of the brickmaking season should naturally tend to advance prices—will it? If all yards had started molding on the 25th of March, as one of the Hackensack firms did, how long would the season have lasted? The major portion of them started the middle of May, and will be done the middle of September, not through choice, but of necessity from lack of demand for stock. Some of the yards would reap a nice sum if the price would raise, as they are well filled with brick. Others have not as many as usual, as the proprietors say: "I filled my sheds in '93, and in the fall and winter the prices fell, and I am not going to carry such a load again."

#### THE SEASON

Has been a good one, so far as the weather is concerned, and the percentage of washed brick is small compared with other years, and cannot be blamed as a factor that has depressed the market. As a general thing all poor stock is sent to market with the result of a fall in prices. The season thus far has been very free from rain, and it is to be hoped will continue till the wind up without any heavy storm.

#### SHIPMENTS

To New York have practically ceased from here with one exception. Vessels



BRICKYARD SKETCHES—WATER AND OIL TANKS



from these yards are carrying from the one that is sending. It is another case of friend Crary's peculiar brickmaker. A sale of four million brick at \$2.50 per thousand for the run of the kiln is a ruinous rate. Where is a yard that can make and burn them for that price? At a public or forced sale such rates are often reached, but at a private sale and of such a quantity, the question is asked, what next? The party who bought them has had his barge loaded for the past two months, when the sale was effected he sent her to market so that he could use her in carrying the brick, or help, as he had given freight to other boats. He thinks he bought them cheap. There is no doubt of it.

#### BUT IS THERE ANY MONEY IN IT

Is the question. As one looks at the price paid it would appear that there would be a snug profit. I hope there may be. As the cost is \$2.50 under the shed, the loading of the boats will be, say, 15 cents per thousand, the freight \$1.25 per thousand, commission 15 cents without guarantee or if sold for cash 1 per cent. more, or about 17 cents per thousand, in all about \$4.07. The only reduction that can be made in the figures is in the freight, which might be reduced some. There will be some pale which will bring say \$1.50 per thousand in the market—that is, if a customer can be found. Interest on the investment will add some cents per thousand to the cost. Will or will it not be a paying speculation?

#### TWO VIEWS

By different men connected with the trade is of interest under the present circumstances, and it is an old saying that the unexpected always happens and if so both questions as answered would then be unexpected. "Mr. — do you think that brick will reach a lower price than at present prevailing?" No limit was put in which the lower rate might reach. "Well," was the reply, "I would not be surprised if you would see lower prices. You may before this time next year see a large number of landlord brick sent to market. By landlord brick I mean that the landlord will be compelled to take brick in payment for rent due. If so the market will be down—away down—not a pleasant outlook." The same question was asked another in the trade. He said: "As you are aware the formation of a trust was in contemplation last spring. By appearances at present the sheriffs in

the different counties in which brick are made that are on tide water are likely to sell a large quantity of brick. If such should be the case there may be a syndicate formed to buy those brick, as they will be sold low, and hold them for a price. Those who will not hold off in the spring for price will be told that if they do not help hold the market up, that stock will be sent in such quantities that a low rate will prevail. It would not take a very large sum of money to handle a deal of that kind, and there is plenty of money idle looking for investment." It is to be hoped that both parties are wrong in their predictions of what may happen. There have been more brick men this year that have

this trade—the home consumption—that is seriously affected by the large firms selling for prices that the smaller would not. Go where you will through the country you will find that a representative of the large concern has quoted rates that are at least 50 cents per thousand less than it should be.

#### THE MARKET.

The supply exceeds the demand at all times, in fact, if a dealer comes around he is a very much sought individual, each and all trying to make him believe that they have just the grade he wants, and at a rate he will miss a chance of his life if he fails to take advantage of. He very carefully weighs each price and finds by the time he has



BRICKYARD SKETCHES,—“THREE OF A KIND”—FRANK C., JOHN E. AND FRANK H. WOLF.

required help than heretofore, and unless a change comes soon there will not be as many yards running next year as this, for the capital will have disappeared and nothing left to raise money on to start anew.”

#### THE LESSONS

Many, though costly, may be a benefit to those who will hereafter embark in brickmaking. It will also show to those who had that erroneous idea in their head that the big fish would drive the little fish out, that this is a game not worth the candle. There will always be some one to take the place of those who fall by the way; very often it is the big fellow who drops. There is one part of

looked over the situation that the first one quoted must have made a mistake, as his figures are about 25 cents per thousand above the market. The following quotations should suit all who wish to buy: New Jersey, good, \$3.75 and \$4; Hudson river, ordinary, \$3.75 and \$3.87½; Hudson river, good, \$4 and \$4.12½; Hudson river, fine, \$4.21 and 4.37½; Hudson river, choice, \$4.50.

A. N. OLDTIMER.

THE merchant who grumbles and sighs,  
And turns up the whites of his eyes  
In sorrow and pique  
Because trade's very wique,  
Is the fellow who won't advertighs!

—Exchange.



Written for the CLAY-WORKER.

## A TALE OF WASTED GENIUS.

How Dolliber, the Gifted Artist  
Failed to Illustrate a Great  
Novel.



WHO inquired regarding my poetic proclivities writes to me again. He says among other things: "I am convinced after reading your horrible confession in the last number of the CLAY-WORKER that you don't write poetry, but, certainly you sometimes illustrate poems don't you? And you make pictures for stories too, I believe, and make bluffs at cartoons occasionally. Now people in general know very little about the inner workings of the illustrator's profession. Don't you sometimes have pictures thrown back on you? Or perhaps you have a friend who has.

"Won't you please tell me some experiences in that direction—your own or some one else's."

Certainly, my friend, I will, but the experiences of which I will relate are not my own. They're

some one else's—those of an artist named Dolliber. This Dolliber is rather clever in his way and he has made me his confidant more than once.

Now I showed Dolliber your letter and he furnished me with material for an answer; sufficient for three articles which the editor of CLAY-WORKER, in the kindness of his heart—the ace I think it is—may publish at such intervals that he has more space in his journal than he can conven-

ently fill with legitimate matter.

I have divided Dolliber's confession under three heads. The first is

HOW DOLLIBER ILLUSTRATED THE NOVEL.

The novel was—

A TIRED TIGRESS,

A SOCIETY STORY OF STILL LIFE.

BY J. DAWKES STILLWAGGER, JR.,

Author of "Both Blighted," "Carved by Destiny," "To the Hilt," Etc., Etc.

I give the title in full that you may know that I was not intending to illustrate a commonplace every day novel

written by some tyro of a novelist. The author of etc., etc., I know must be eminent. I had seen etc., etc., so often.

The author said that I needn't read the novel at all. He wanted character sketches mostly and not scenes of the story illustrated.

This suited me to a T, and besides I had had a glimpse of the novel in mss. It was written in light violet ink. I



might also have remarked that J. Dawkes Stillwagger, Jr., was in real life a freckled faced young lady named Casey, roaming around in the forties, and who had been disappointed in love. J. D. S. Jr., had done the disappointing and Miss Casey had adopted his name as a *non de plume* in order to get even



with him. Those who have read her novel say it was a terrible revenge.

There were a number of other characters but they only lived through one or two chapters and then breathed their last, so Miss Casey said and I have omitted them from the chaste pages of the CLAY-WORKER.



Among the characters in Miss Casey's bat—I mean story—were the following, and I leave it to the fairminded if I did not follow instructions faithfully:

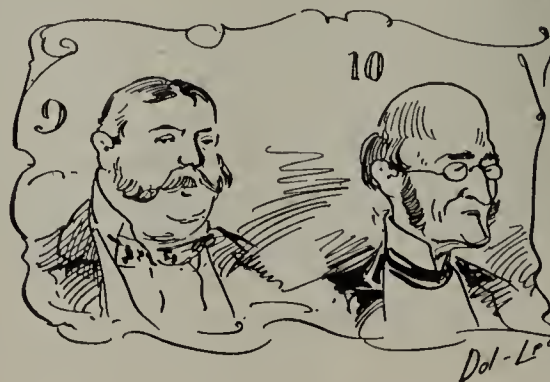
1. A fine looking old gentleman, a man of studious nature and inquiring mind, well advanced in years, yet with a natural grace that even age could not obliterate. Lord Commynsby was of the old school, but with a modern mentality that belied the snowy whiteness of his still luxuriant locks.

2. Miss Arlingford's was not a classic beauty but of a fashion that attracts by its innate nobility of character. Her features had that sweet charm of irregularity while her irreproachable manner was winning to even comparative strangers. Her nose slightly retrousse was daintily carved. Her hair was of a bewildering color, light and flowing, not golden but rather of a dusky bronze that was still light enough to contrast finely with the dark eyes the brightness of which even long lashes failed to hide.

3. Hector the noble dog that rescued the haughty Countess Madeline. A magnificent animal of an antique type that made one think of the hounds the horsemen used in the chase. Yet Hector was gentle as a calf.

4. The villain of the story—a man with a dark overhanging brow. Handsome but with a sinister expression in the eyes that lowered beneath jet black eye brows. A Neapolitan in appearance. Harkwell Brewster was a man who always went armed even when cavorting around in the drawing rooms of a palace. He had the air of a bravo though faultlessly dressed and with manners that were suave and gave evidence of gentle breeding.

5. Salvator Anglestura, an artist with the hearty abandon of his craft but, fine featured





and debonnaire. A thorough bohemian and a thorough gentleman.

6. Pasha Asket Hororal, an attache of the Turkish Legation, an Oriental with the polish of a generation passed in the courts of Europe, a diplomat and a gallant. He had an aquiline nose and a curly, silky beard.

7. Sylva Montrosser, an old fashioned lady but sweet and beautiful; not a modern type belle, but a remembrance of a beautiful past with clinging graces of the age in which she had moved and won the hearts of scores.

8. The hero in chief—a magnificent specimen of growing manhood. An Appollo and Achilles in one. Dark with wavy hair and a curling mustache, and daring but frank eyes of a deep hazel hue.

9. The family lawyer, a gentleman of the old school (public).

10. The gay comedian of the story. A male butterfly, a breaker of hearts.

And yet the drawings were thrown back on poor Dolliber's hands. It was a blooming shame and I trust he has the unqualified sympathy of the CLAY-WORKER's readers as well as that of

CHARLES LEDERER.

Written for the CLAY-WORKER.

### A TALK ON PANICS AND BRICK.

#### Suggestions For Improvement In Brick-making.

BY J. W. CRARY, SR.



OUR country just now is undergoing a periodical change in business and finance. As usual the so-called abnormal state of things, has produced a big crop of doctors on political economy. These doctors are of all shades and kinds, from the country school master, the press, the parties, and all the way up to the professors in the great universities. All these doctors point out the cause of the late, so-called panic. They tell what might have prevented it, and then prescribe the remedies for a cure of the hard times. These remedies would fill a large prescription book, and if the people were to swallow all of the medicine prescribed, there would not be a man left to survive the treatment, and the doctors themselves would die, if they did not run away to some other country.

We use the terms normal and abnormal, as though the normal had been, and could be easily maintained in the life and conditions of mankind. This never has been and never can be, until man reaches his highest point of civilization. Normal, means an established rule or principle, or we may say "level and plumb," fixed or stationary. The business affairs of mankind, are always in a transitive state, there is no such a

thing as stand still or positive conservatism. Man must have a motive, and an object, for an existence, and these will be largely influenced by his surrounding conditions.

I do not propose to lecture on this subject, but only to point out some of the causes of the present depression in business, the remedies will suggest themselves. Alliterative sentences are not very elegant, but I will say, that need, greed and speed, are the words that suggest the cause of the present state of business affairs in our country.

#### THE REBELLION OF THE SOUTH, THIRTY-FOUR YEARS AGO,

Necessitated a new and strong financial policy. Bonds were issued to raise money, and were sold at a discount of an average of one hundred per cent. Extravagant prices were paid for everything. Contractors and speculators became suddenly very rich, the west had to be favored by railroads and loans. All of the best of the public lands, were given to railroad corporations, the lands were worth twice more than the railroads cost. Corporations not only got the lands for nothing, but got their bonds endorsed by the government, the bonds were never paid by the railroads, so that the steal of lands and bonds by the railroads, was equal to about \$2,000,000,000. It is a clear loss to the people.

#### THE PEOPLE PAID AN ARMY TO FIGHT THE SOUTH, AND AN ARMY TO FIGHT THEIR POCKETS.

The "pocket fighters," were by far the most costly. Their greed took advantage of the need of the country, and money getting by all and any means, was made popular and respectable. A fast generation grew up, and "make haste to get rich," has been the motto, and watchword. Every line of business, has been pushed beyond its legitimate sphere, and syndicates, and trusts, and combines, both in capital and labor have been formed and operated to the suicidal destruction of both. Whatever may be the theory for the present state of business affairs, over production, monopoly and fictitious capital, are the chief causes.

#### SUPPLY HAS OUTRUN DEMAND.

In all the real necessities of life, and as wealth could not be gained fast enough to satisfy the avarice, and venality of the stock jobbers, they have issued fictitious capital ("watered stock," to a much greater amount than their real capital. The interest on most of the

stock was payable in gold and it was necessary to depreciate silver so as to make gold bearing bonds, fictitious and otherwise, available and in demand. Of course, all this steal and burden must fall upon labor, which could not support itself with demonetized silver and at the same time, pay gold interest on "watered stock." So came the "strikes," the "shut downs" and the "panics."

#### ARE THE BRICKMAKERS AND CLAYWORKERS IN IT?

It has been often observed that the brick market is one of the best signs of general business progress. The reason of this, is quite plain in the fact, that brick building is considered a sort of luxury, not to be indulged in only when there is a healthy growing profit and surplus, in the business of a community. Any kind of cheap and temporary building, will do, when money is scarce, so the brick market is a very good test of the financial condition of the country. I cannot give the figures but it is reasonable to say, that within the last year, the decline in the demand for brick, has equalled thirty-three per cent. while the supply has not probably declined more than twenty per cent. This of course, not only leaves a surplus of brick on hand, but to a considerable extent curtails the product of the present time.

#### THE GOOD BRICKMAKER, OUT OF DEBT, CAN STAND HARD TIMES.

There is no business more safe and sure of fair pay, than good brickmaking while on the other hand, bad brickmaking is poor pay in good times, and no pay at all, in bad times.

If a man has \$10,000 worth of first rate well burned brick on hand, for which there is no present demand, he can just let them remain in stock. It does not cost him one cent. to insure them, time will not rust them or diminish their value and as the brick market is sure to improve, while the supply of brick will likely be short, he will realize a price for his brick, that will not only pay a good profit on the manufacture of them, but a big interest on the money cost of them while in stock. There is no kind of property in a civilized progressive country, equal in real intrinsic value, to that of a first-class, well burned brick. The only reason that good brick, is not more in demand than gold or silver is, that brick is not a "legal tender." I have never seen a kiln of good brick, (that was for sale) two years old. A buyer is sure to call for them.



IS IT GOOD POLICY FOR BRICKMAKERS TO  
BEG, OR ANTICIPATE A MARKET, AND  
PUSH THE OUTPUT BEYOND A  
FAIR DEMAND?

One of the great and very serious troubles of the business world, is the insatiate disposition to over-do every thing. The merchant that does well this year, wants to do better next year, so he increases his stock, enlarges his store house, and extends his credit; of course, his neighbor merchant, will do the same, soon competitions outrun customers, and supply by the producers exceeds demand, the time for balances come paper, goes to protest, and hence bankruptcy or a panic.

THERE ARE SOME BRICKMAKERS LIKE  
MERCHANTS, THEY WANT TO MAKE  
ALL THE BRICK, FOR THE TOWN,  
OR CITY THEY ARE IN.

Instead of "live, and let live," their motto is "death to all competition." Suppose all the brick yards in Philadelphia, were in one big yard, and all the factories in one big factory, and all the stores in one big store, what kind of a city would Philadelphia be? There are some men in Philadelphia, who would like this chance to "play hog," there are more in New York, and every other man in Chicago, would like to monopolize all the business in his line if he could.

BRICKMAKERS, SHOULD STRIVE FOR QUALITY,  
NOT QUANTITY OF BRICK.

The first thing to consider of course, is market, the next is material, machinery and skill, all these must be combined, so that success may be assured. If every brickmaker would assure himself in these things, before he attempts to monopolize the market, he would never think of making 100,000,000 of brick in a year, where only 75,000,000 are wanted. As a rule, it is the greedy botch, that runs the great big brick yard; he is in no proper sense a practical, skilled brickmaker. In fact, he thinks that the real practical skill, needed for brickmaking, setting and burning, is a sort of common thing, rather below a gentleman boss's special attention, he can look any time in the CLAY-WORKER and find a "feller," that advertises to sell "brick brains," etc., etc. and so he will go on and start his "plant" to make ten to forty millions or more brick a year, he has all sorts of machines and kilns, and advertises that all his works and goods are perfect. There was

no dividend to stockholders last year on account of the many and great improvements added to the works. The stock is not "bullish" this year, but will jump to a fancy premium next year. In fact, an outsider, to hear this man talk, would think that he was the very personification of brick sense and excellence.

WE ACCIDENTALLY HAPPEN TO CALL AT  
THIS ESTABLISHMENT,

We see all sorts of machinery and kilns, some are idle and some at work. The foreman, or superintendent, shows us around, kilns are being set, and burned. We talk to the man with his coat off, seeing to the setting and burning. We ask him, if the big bosses look after this work; he smiles at our seeming verdancy and says, "O yes, they come around here sometimes and ask me, how is she getting on?" We are curious to know, what per cent. of first class uniformly hard brick in color and texture are burned in these kilns. So this practical foreman shows us a kiln from which brick are being shipped. It is a down-draft kiln, the brick are hardest at top of kiln, and diminish in hardness from top to bottom, until at the bottom, only good salmon brick are seen. The corners of kiln are also salmon brick. There are three or four shades in the color, of what is called hard, and very few are burned through, so that the inside will have the same color, and texture of the outside. We say to the foreman "your concern advertise that you have 90 per cent. of uniform hard brick in your kilns." "O yes, they mean that only ten to fifteen per cent. are salmon I have never seen one half of a kiln of uniform hardness and color." Now this is about a fair sample of the common brick yard, their brick are not thoroughly burned or annealed, hence a want of uniform texture and color.

WHAT WE NEED IS A HIGHER STANDARD  
FOR QUALITY OF BRICK.

This would naturally bring a better supply and quality of skilled brick setters and burners, until brickmaking in theory and practice is based on scientific principles, and conducted by duly qualified, practical experts, who must be well paid, it will remain a half and half, slip shod business.

Bargains are offered in new and old machinery in our "Wanted, For Sale," etc., columns.

## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

### The Wisdom of Conservatism.

*Editor Clay-Worker:*

The August CLAY-WORKER lies fresh upon my desk and I venture to send you a word of congratulation upon the production of a number so rich in articles of interest and value. The paper of Professor Edward Orton, Jr., is alone of a character to make this number conspicuous among the particularly good issues of your magazine, and his masterly treatment of principles involved cannot fail to receive thoughtful consideration alike from both makers and users of brick machines.

It is, however, the letter of Mr. J. G. Greusel, "Saving Green Brick," that has recalled to my mind in sharp contrast a number of communications in former issues reciting with more or less harshness the disappointments resulting from the claimed misrepresentations of various machine, dryer and kiln men, expert constructors, etc. Even the brick burners and superintendents have not been exempt, for in fact, almost every one but the would-be brickmaker himself has fallen under the ban of condemnation.

Is it from Mr. Greusel's brickmaker that we hear such recitals? I think not. Nor is it alone to his reputed shrewdness that we may look for his escape from the purchase of inefficient appliances. Does not the letter picture most clearly that type of brickmaker who has carefully learned every detail of his own business, who knows the importance of thoroughness and exactness in every step towards the finished article and who values the true relation between one stage of preparation and the succeeding ones?

To my mind Mr. Greusel's friend is typical of that class of brick manufacturers with whom we, as material men, have most pleasant and profitable relations. When he buys he knows what he wants, and moreover knows when he is well served. He is truly a master in his chosen business. He represents the reverse of that unfortunate brick company composed of men who, though eminently successful in their respective lines, yet too often present in the management of the brick works a conglom-



eration of theories that is sure to beget a tale of woe.

When we have more brick manufacturers such as he, more men who have the courage to shorten the daily task of men, machines, dryers and kilns within the limit of best results and to exact a rigid performance within those limits, more men who know the value of a green brick, then will we be nearer the brickmakers' millenium and the path of their business associates be strewn with roses.

J. H. CHAMBERS.

Philadelphia, August 25, 1894.

### Water Gas for Brick Kilns, Etc.

*Editor Clay-Worker:*

I am in receipt of a letter from a subscriber to the CLAY-WORKER asking for information on the subject of "Water Gas and its Use in Burning Brick." As many of your readers are doubtless anxious to know something about this interesting theme, I think it best to answer through your columns if you will kindly permit it.

However, I am afraid I shall not infuse much enthusiasm into those who are so eagerly looking forward to the rivers, lakes, seas, etc., as the fuel beds of the future. It tarnishes the gilt of this beautiful, but delusive, theory considerably when we realize that these beds of prospective fuel, are not fuel at all but beds of oxidized, or burnt matter. Try to fully realize this, and water gas loses its charm for the clayworker. The hydrogen—which is the fuel part of the water—gave out its heat when it combined with the oxygen it is now chained to, and you cannot use it again as fuel until you have imparted to it just as much heat as it gave out when it united with its present partner oxygen.

Now supposing you could, without any apparatus, any labor, any expense of any kind, impart the heat necessary to separate those two partners—the oxygen and the hydrogen—and you could collect and store these separate gases also without any expense, any labor, any apparatus, etc. What have you accomplished? Simply this, you have in store a certain quantity of two gases that when it pleases you to cause them to combine they will return you just the heat you used to separate them, and what have you left? Water! I have here conceded you several impossibilities to bring you out even, but if you grasp the subject at all, you will easily see that there would be a great deal of heat diffused by such a process so that

practically you come out a loser and a considerable loser too.

To those readers who cannot understand the chemistry of this we must appeal to their mechanical ideas, and suppose for instance their works are run by water power that fails during the dry spells in Summer. Who would think of purchasing a steam pump to pump back to the dam the used water from the tail race, and keep up the supply by using the water over and over again? Yet this is precisely what must be done to generate and use water gas.

There are some purposes where the cost of water gas is compensated by the purity and high temperature of the flame at command, and where intermittent heats are necessary, but for kiln burning its price is prohibitive.

*Production.* The cheapest and simplest way of producing it, is to pass dry steam through highly incandescent coke and for this a thick bed is necessary, and to keep up a constant supply the generators must be at least in duplicate or triplicate so that allowance can be made for restoring the heat lost by decomposing the steam, this is usually done by "blowing up" with a good fan; in this way two furnaces, or generators may be supplying gas while the third is under recuperative treatment.

If any reader wishes to experiment on a small scale, let him try a bee hive stove in which a thick bed of small coke is nice and hot; now place a pan of water in the ash pit and the radiant heat and dropping cokes will soon evaporate the water which will pass through the fire. If any gain in heat is observed let him report to the CLAY-WORKER.

VERITAS.

### The Situation At Chicago.

*Editor Clay-Worker:*

The infinitesimal period of time between August 27th and 28th having passed, the Wilson bill became law without the President's signature, as we all know, and with the morning of the 28th the people in the country began life anew with the hope, at least, that better days were before them for the balance of 1894 than had been given them in the year preceding. Every one seemed to feel that for at least this year matters were settled as to the tariff; and that for at least a year to come, manufacturers and dealers could rely upon there being no changes, and if, as many think, the political majority in Congress should change with the next election, perhaps

a longer time will be given before any change can be made in the tariff. So far as we are in touch with the sentiments and feelings of the public, there seems to be a brighter side to the business outlook than there was a month ago. In the situation as to building and new construction in Chicago, there has been no marked advance made; but we think the outlook has some encouraging features and we all hope to have a better fall trade than was expected by those interested in the building trades.

The manufacturers of common brick in and about Chicago are in part busy making brick. Some of the larger concerns are taking advantage of the season in the year in which brick can be made cheapest, and are making large quantities and piling them up waiting for better prices during the winter. Some are not making at all, and others are running part force. It is certainly a fact that brick are being sold in Chicago now at a price that should stimulate building. Prices vary considerably. The average price is about \$4.75, which is certainly a low figure for well made and well burned builders delivered.

A great deal of attention is being given to, and a good deal of talk is heard as to the use of paving brick in this city. The Ohio combine has done a good missionary work here within the last few months, and D. V. Purington has recently put his paving brick in the east half of La Salle street, between Madison and Washington streets (one square long). It has attracted a great deal of attention and considerable newspaper comment. This street is travelled perhaps as much as any street in Chicago, and has a very heavy traffic; all kinds of merchandise and heavy loads as well as light vehicles; and we believe that as an outcome of this, that brick pavements in this city will replace the granite blocks now so largely in use, which are so slippery and rough for horses and cause much noise in the street. These objections are overcome by the use of brick. No arguments are needed to convince brickmakers of the superiority of properly made paving brick over other material now in use for the purposes of street pavements. We can see no good reason why Chicago should go outside of Illinois to find perfect paving brick, as there are several plants in this State, the largest of which is probably that of the Purington Paving Brick Co.'s at Galesburg. These brick are known to be first quality pavers.



The question as to whether we are a nation strong enough to handle mobs and riots seems to be still on trial. There are several very important questions brought up by the defenders of the leaders in the Debs insurrection, and it looks now as though whatever decision may be arrived at in the contempt cases now on trial before Judge Wm. A. Woods in the U. S. Court here, it will be carried to the court of last resort. The claim is made on the part of the attorneys for the defense that the Government has no right through this court to have men arrested for contempt, lodged in jail and tried without a jury. If Judge Woods finally decides against the defendants in the trial before him, it will undoubtedly be taken to the Supreme Court of the United States, and on this decision will hang the power of the United States Courts and judges regarding insurrections such as the one raised by Debs and his followers, through which we have recently passed. The attorneys for the Government seem to be standing firm in opposition to this theory of Deb's attorneys, and contend that only by the power used by the Government through its courts can it control mobs such as we are growing more and more familiar with in these United States. All classes of people are looking on anxiously watching the result. From our standpoint it seems clear to us that the Government, through its courts, police force and army, must stand in such a position that it can not only put down mobs, but prevent their becoming powerful. "If "Labor Unions" are organized on an inconsistent and revolutionary basis, if the leaders teach violence and law-breaking, then such unions become the foes of the Government and a menace to the safety and comfort of the people at large. Then must not the leaders suffer as insurrectionists until they reorganize on a law-abiding basis? Union men have a great deal to say about the helping hand that they extend to their ignorant and less fortunate fellow laborer. How about the hand armed with a "coupling pin" or revolver that they extend to their brother, who prefers to manage his own affairs intelligently rather than submit his intellect and business to a "union," and be one man in a machine composed of thousands of men, whose minds have no part in the managing of their own affairs—in short, men who sell their birthrights.

As suggested in one of our former letters, we are opposed to unions be-

cause we are the friend of the laboring man. From our standpoint and from the lessons learned from years of experience and observation we are satisfied beyond question that labor unions as now organized and carried on, are the worst enemy that the laboring man has, either members of unions or non-union men. We believe that every man should retain his individuality in whatever sphere of life he may find himself. Every man should have the ambition and the hope to rise above his present condition and surroundings as he grows in years. His manhood should be enlarged, his knowledge increased, and the habits of his life improved upon. He should always have an ideal to work to in his business as well as in his moral and mental attainments, and no man that is handicapped by the rules and regulations of a union can be free to act out and carry to a conclusion his own convictions as to what is best for him. We believe that every man with an average physical body, that is willing to lead a temperate life and be upright and faithful in his service to his employer, will meet with a just reward and ever find a situation open for him. In all the arguments that have been printed from the pens of leading labor agitators so far as we have been able to discover, none of them have made any suggestion of a plan for the betterment of their brethren, except on the basis of strikes as they have been carried on in the past. Mr. Powderly in the New York Sun of recent date is the only one who has attempted to make any such suggestion and he does not carry the question to a finality.

Those of your readers, who have followed us in our letters during the last four months, will remember the different strikes that have continued to paralyze business in the building lines in this city, particularly during the present year. On the 6th of this month a lockout was declared on the part of the Roofers' Association, owing to a strike that had been inaugurated on a building on the south side of the city. It appears that there was an agreement which expired September 1st, and while the men were at work on the job mentioned, a walking delegate came around and demanded that the employer should sign an agreement for another year at the prices then obtained. He declined to do this, but offered to sign one at 30 cents per hour minimum wages. This was not accepted, and the men were

ordered to strike, which they did. There is some probability that other building trades will go out on a sympathetic strike with the roofers. At least this is claimed by the roofers, but we sincerely hope that this last calamity will be in some manner averted, as the building interest here has suffered enough already during the year 1894. Of course if a general strike is inaugurated, those that suffer most will be the mechanics and laborers associated with the strikers. COSMOPOLITAN.

Chicago, September 8th.

#### Brick Pavements at Louisville.

*Editor Clay-Worker:*

Recently there appeared in *Truth*, a Sunday paper published in this city, an article derogatory to the brick pavements, which Louisville has adopted for all new streets, and improvements of streets. For several years granite has been used on all streets subject to heavy traffic, and asphalt on the avenues and roads dedicated to light traffic, while on the outskirts and in the suburbs the Macadam system has been used.

It seems that *Truth* (?), an asphalt paper, seeing that the asphalt interests were being jeopardized, and that vitrified brick was fast becoming the material for paving, attempted to cast discredit on the vitrified brick paving by an article, which after careful investigation by the undersigned, has been found lacking in the cardinal virtue or precept that the paper uses as a figure-head.

Mr. Mehler, our City Engineer, stated the entire article in *Truth* was all "fol de rol," and that the whole thing was an attempt to advance the asphalt interests. Mr. Mehler maintained that the brick streets are holding their own with streets paved with other material.

Mr. J. R. Gleason, one of our most prominent street contractors, and who does the bulk of the work in this city, and who has laid all kinds of pavements, stated that the brick paving gave entire satisfaction, and compared favorably with any streets which he has laid, but Mr. Gleason intimated that some objection had been raised to the brick furnished by a local company, and that it might lead to an unjust condemnation of brick streets.

It seems that there are some half-dozen brick companies representing this city by influential office holders and politicians, all striving to secure the lion's share of patronage. So many politicians holding stock in different



companies, there is bound to be some bickering, as a very jealous feeling pervades among them, and at every letting, the Mayor, City Engineer and Board of Public Works are importuned, cajoled and threatened in order to bring into use some certain brick, for every brand is condemned by those interested in some particular output, and charges of fraud and collusion are rife after every test or letting.

The street contractors, as a rule, desire to secure the cheapest brick, and often some poor brick is substituted, and that is the only foundation for the charges in *Truth*.

There is no doubt that some inferior brick has been foisted on the city and accepted, although political influences, but there will be no repetition of this state of affairs, as the Mayor, City Engineer and Board of Public Works, are determined to have good streets at whatever cost, for the contractors must give bond to keep their streets in repair for five years after completion, and your contractor does not desire anything like "Chickens which come home to roost."

In conclusion I would state that I have personally inspected the brick streets of this city, and would say that they compare favorably with streets paved with other materials, notwithstanding that there is something like a dozen different kind of brick used in the construction of the various streets.

LEO P. KAUFMAN.

Louisville, Aug. 22nd.

#### Philadelphia News.

##### *Editor Clay-Worker:*

The long looked for improvement in business has set in. The season is late but there will be a scramble to get a certain amount of work done. Every day's list of permits shows new work. Much of this was to have been started months ago, but people felt uncertain. We have three months yet, and the probabilities are that in that time we will do as much as we have in the past six months; the brickmakers say so, and if there is any class of men who know, they do. The lumber dealers are in the way also of knowing and they say there will be a big lot of work rushed through. This largest city in the world except London as measured in square miles, has the most extensive trolley line system of any city in the world. In consequence of the cheap and quick travel-

ing, people who have been living down town are wanting to get out.

Four big house building operations are already announced, but no doubt there are many more. There is no boom but there is a prospect for more business. All our brick men are fairly busy, and they expect to put on more men before long. Dullness is rising like a fog, if you permit such a figure of speech. We have all been in a dense fog and have been afraid to move lest we strike something. Outside of brick there is also encouraging activity especially in fire brick and terra cotta. A great many hands have been put on throughout the State.

The Journeymen Bricklayers' Protective Association of this city is presumably an intelligent body, but its action in affiliating with the International Union is a surprise, the purpose being to keep union men from other cities out of this city. The objective point of course is to make labor scarcer here, so that employers cannot reduce wages. That is the way the workmen put it. The employers say they have the right to such natural competition as comes without interference. The workmen ask 45 cents per hour, the employer's rate is 40 cents. The local organization of bricklayers is one of the finest in the land. It is incorporated and possesses valuable property. When this association takes a stand, it means something. It is sometimes called an aristocratic labor organization by some of its less favored associations. It has had an autocratic sway over bricklaying in Philad<sup>o</sup>'phia for many years past.

Rog<sup>s</sup> Benjamin & Co., Spring City, are running 9 hours a day on fire brick. The Ir. side Pottery near Bordentown, N. J., will soon start and another pottery will soon be erected near it.

Murrell Dobbin's big works are turning out immense quantities of brick for home and foreign trade.

The Jarden Brick Co., is running full time and have some big contracts on hand.

The Trenton potters have had a very uncomfortable time between tariff reductions, strikes and dull trade. There is only one salvation for the business and that is to get higher duties next winter. That chance is ghostly. Congress is sick to death of tariff and to open the question for one, is to let in a dozen.

Taking a general view of the situation business is once more on the up grade.

Bank clearings show increased traffic. Railroad freight is heavier; jobbers are busier than they have been for twelve months. We think we are almost out of the woods.

ANON.

#### Florida and Bricks.

##### *Editor Clay-Worker:*

My little squib on Florida in the August CLAY-WORKER has deluged me with letters of inquiry from your readers. They came by the dozen and from all quarters so I must find a means of "getting back" at my correspondents in a manner that will be satisfactory to all, as it is impossible for me to write to each one individually.

Why, my dear T. A. R., I would not do this thing if I was triplets, or the hero of the claw hammer coat, so if the ever obliging CLAY-WORKER will come to my rescue, I promise an article in the October number that will give my esteemed correspondents and your numerous readers, the inside facts and information that will suit every case. Quite a number of practical letters have been placed where they will "do the most good" to the writers. That is, in the hands of leading business men, presidents of Boards of Trade, etc.

Very many of my correspondents labor under the same "northern" error, that Florida is a peninsula of sand. While this applies to the surface of the State, under it and at readily workable depth is to be found all kinds of clays known to the trade; the development of this fact is of recent origin by phosphate hunters, whose augers have brought up strange things they were not looking for notably valuable clays.

The natives and other residents will welcome and heartily aid strangers who come to explore with a view of establishing home industries. In the article promised for October CLAY-WORKER all needed particulars will be given to guide correspondents as to locations, men whom to address locally, cost of fuel, nature of clays, business prospects etc.

Prospective Florida brickmakers will find that the metropolis of Florida, Jacksonville, will afford them stimulus and courage to prosecute new work, as that city is having its streets paved with brick, the bulk of which is coming from Coaldale, Ala.

Although Florida is a state where fine timber is almost limitless, yet in the leading towns brick would be used in preference to lumber, were a home supply to be had. DANIEL E. RYAN.



## Weathering Clays, Etc.

*Editor Clay-Worker:*

It is highly gratifying to find that the articles "Chemistry for Clayworkers," which are penned chiefly for the rising generation of clayworkers, should interest such a veteran in the business as Father Crary. It is certainly refreshing to find a few "old hands" who endeavor to build their practice on a scientific basis, who do not enviously grunt and sneer, but heartily welcome the grand achievements accomplished and made possible by the culture of science.

I am not prepared to make any hard fast assertion about the weathering of clays, therefore, what I have to say on the subject is simply opinion. I think that no great chemical change takes place in clay that is weathering, I ascribe the change to mechanical forces especially to the force of freezing, etc., frost is a good disintegrator, carrying the process to pulverization. Some people are accomplishing the same, or much about the same result, by crushers, dry-pans, and other mechanical aids, without having to wait months for the desired end. Of course if a clay contained soluble salts, drenching rains might wash a little of those salts out.

There may be a strong affinity between clay and ammonia and carbonic acid as Father Crary says, but I am not aware of it. I have been taught to look on both substances as plant food, not food for clay. The leaves of plants drink in or breath in carbonic acid, and the rains carry down the ammonia by the soil to the roots. However, I am not "fixed in my everlasting seat" about this. Therefore, shall be glad if Father Crary and others will air their opinions, or their conclusive evidence, if they have it.

WM. WAPLINGTON.

## A PECULIAR BRICKYARD ACCIDENT.

One night recently at Sprague Bros. Brick and Tile Factory, at Elkhorn, Wis., George B. Sprague and the engineer, L. B. Mosher, were injured quite seriously by the breaking of one of the large iron bands which surrounds the brick kiln. The kiln is a new one, and has just been filled with brick. Sprague and Mosher stood near looking at it, when the band gave way. One end struck Sprague on the head, inflicting a very bad wound. Mosher was struck by the other end of the band. Both men were knocked down. It was a very narrow escape. Had they received direct blows they would have been instantly killed.—*Fon Du Lac (Wis.) Reporter*

Written for the CLAY-WORKER.

## OHIO'S SCHOOL FOR CLAYWORKERS

## Its Equipments and Prospects.

LIBERAL DONATIONS BY MANUFACTURERS  
OF CLAYWORKING MACHINERY.

BY EDWARD ORTON, JR., E. M.



TECHNICAL school for clayworkers at Columbus, opens its doors to the public Sept. 12. A great deal has been said in the columns of the CLAY-WORKER in regard to the organization of this school,

and in regard to its ultimate objects and the history of its inception, so that any further eulogies can well be spared. But a few words as to its present equipment and its progress and prospects of success may be interesting just now.

The methods of study which are proposed will render three separate and equally important departments a necessity. They are, first, a good chemical laboratory suited to the analysis of minerals; second, a mechanical laboratory, arranged for working clays, and lastly a kiln house or firing laboratory, where everything is brought to the final test which proves its value. In addition to these imperative necessary means of research, the full development of the school needs the use of two scarcely less important kinds of equipments, viz.: a well stocked technical library and an exhibit or museum, comprising collections of the masterpieces of each and every line of clay manufacture.

Such a formidable array of wants, with so little of the wherewithal to supply them might well give pause to any one; indeed, if the success of the school were dependent on its appropriation, it would have a painful birth and a sickly existence. But the public interest which made the organization of the school a possibility has also gone a long way towards assuring its success.

The equipment of the chemical laboratory will be in its general features the same as that provided by the other departments for chemical work in the university, except that provision enabling each student to carry a large volume of work are better than in the older laboratories.

Each student has a regular allowance of desk room, with drawers, cupboard and shelves all under his own control

and protected by his own key. In addition he will have access to a most commodious hood, provided with large water bath for slow evaporation, a hot iron plate for rapid evaporation and an asbestos lined compartment provided with iron tripods and platinum triangle for the decomposition of minerals with powerful and poisonous acids. All of these compartments are ventilated by a small electric fan, which exhausts the foul gases from the top of the hood and throws them into the open air.

The sink for washing apparatus and the maintenance of that "chemical purity" so essential to correct work, will also be a model of convenience.

The water supply will be of three kinds, cold city water, hot city water and cold distilled water, all of which will be stored in overhead receptacles, and which will be available with but small head, from rubber tubes hanging over the sink.

The chemical balance for the use of students will also be a very superior tool, of best modern construction, with platinum plated weights, incorrodible in air or water. The special apparatus includes platinum ware made to order for use in decomposing clays and other natural and artificial silicates by hydrofluoric acid, the most corrosive and powerful acid in existence, but which is invaluable from its ability to dissolve silica in all its forms.

The heating apparatus also has been provided with the care born of painful experience. The burners are of a new type, using gasoline gas, natural gas or city gas with equal facility, and provision has been made for making gasoline gas for laboratory use whenever the coal gas supply is unsatisfactory from any cause. In addition to this, compressed air and vacuum pipes will be provided on each desk.

The chemical equipment has been bought in the East, and will be in working order soon. The mechanics are engaged in completing the fixed equipment and furniture.

The mechanical outfit is a much more slow and expensive affair, and one in which it is necessary to make haste with the greatest circumspection.

The full and effective working of this department requires that machinery shall be provided capable.

First—Of working by actual manufacturing methods a large sample from one barrel up to any desired quantity, in order to get average results.



Second—Of producing, by actual manufacturing methods, ware of the full market size.

Third—Of making tests of the quality of the products by the same methods which will be applied in competition tests for commercial work.

For instance, a sample of brick clay ought to be made into brick by soft mud, stiff mud and dry press treatment in order to test its qualities in full. A pipe clay ought to be made into various sizes from two to six inches and into fire proofing of the hardest sections to make and burn safely, in order to judge its quality.

A pottery clay ought to be made up alone first, and later with various additions, into wares of market size.

Of course, on the face of the matter, it is apparent that no such outfit could be provided from our scanty appropriations. But the manufacturers of clay-working machinery in this State have come bravely to the front and among them have contributed all the important and expensive machines, so that the practical completion of the plant on the lines indicated is now assured. Much of this machinery has been not only donated, in whole or part, but has been made to order on reduced models to accommodate our necessities as to power and space.

Too much credit cannot be given to the public spirit of the men who have gone into their pocketbooks for the public good. Machinery to the value of not less than \$5,000 has been already promised, and much of it will be put be put into position during the next three months.

The names of donors will be made public from time to time.

The brickmaking public will be quick to see the great practical value of the arrangement proposed. All them know that a very pretty test brick can be made out of almost any clay, from street-sweepings down, by devoting time enough to the preparation of the clay, and burning in saggars to insure fine color. But what one wants to know is what his clay will make when worked as it must be worked in practice and burned as it must be burned in ordinary kilns, and often with poor fuel.

The pottery machinery will be erected in one room and the brick machines in another. The power will be supplied by an electric motor but only one line shaft will be working at a time.

The kilns will be accommodated in

a special building built for the purpose in the rear of the main structure, to avoid danger from fire. It is only 12x20 feet inside, but it will contain three forms of burning apparatus from the first and two other kilns or furnaces will be built and put into operation during the winter. When all is complete, the furnaces will be arranged as follows:

No. 1. Crucible melting furnace, suitably for making glass, frets and easy fusion, and for rough tests of refractoriness of clays, gasoline fuel and air blast.

No. 2. Muffle furnace, fired with gasoline gas and air blast. Suitable for making tests of glazes on tiles and clay bodies quickly—invaluable for preliminary testing in this line.

No. 3. Recuperative, gas fired, potters test kiln, for burning or decorating any wares, one piece at a time.

No. 4. Regenerative, gas fired furnace for very high temperatures, provided with pyrometers for determining fusing points.

No. 5. General service kiln, for burning brick or pottery. Fired with coke and natural draft, capable of burning 200 to 300 brick, 20 courses high, two stands of sewer pipe, or 4 or 5 saggars of pottery. It can be burnt up-draft, down-draft, or up and down-draft and if desired, the fuel used can be such as will be available in burning the clays to be tested.

It is of course plain that the weakest point in the entire course will be in this department. The expense of large kilns and the impossibility of working them experimentally will always be a bar to the complete practical experience of the student. But the principles of burning are all there, be the kiln big or little and it is expected that each student will become thoroughly familiar with these general laws. Practical experience can only be obtained in the brickyard or pottery.

The library of technical books, nearly all in the German tongue, have been ordered from abroad. The work of the English and American technicologists is singularly backward on the studies of the ceramic art. While English potters have made the bulk of the pottery of the world, yet no one since the time of Josiah Wedgwood has had the public spirit to give his knowledge to the world, or else has lacked the literary skill to make his knowledge serviceable.

The French potters have written from time to time but their writings are for

the most part equally accessible in German, and to these latter people we owe nearly all of the technical literature of the subject. In this, as in other fields, the German nation has left its mark not so much by its exceptional achievements in the industrial way as in putting its achievements into scientific shape.

Lastly, the exhibit of ceramic products must receive notice as an educator. It is in some respects the best educator of all—it teaches its lessons with a force that knows no forgetting. Many good people will pause in front of these shelves and mentally note where they stand in the scale. Many who think the policy of shut doors and trade secrets is best, will come here to learn by ocular demonstration that they have been shutting out progress and wider knowledge to themselves, and that their cherished "secret" has become a back number while they were carefully guarding it. It will be a surprise to many and a delight to all, to witness the magnificent achievements of the ceramic art of this country as will be seen in the collections in this museum.

If machine men can afford to give machinery for the general good, surely every clayworker can afford to give a sample of his best skill. Such has been the feeling among those visited so far at least, and as fast as cases can be provided they will be filled with every class of ware from the egg shell china cup, weighing a fraction of an ounce, up to the enormous glass pot weighing 4,000 pounds.

The general business depression of the past year is likely to make itself felt in the attendance of all kinds of schools and colleges. Especially in the pottery trade, the last year of idleness and strikes and the culminating outrage of the Senate bill's useless cut on the pottery schedules will make it hard for some to attend school, who would in the past have eagerly embraced the opportunity. In spite of all these discouragements however, the new course is likely to start off with a dozen or so applicants, mostly the sons of owners and managers of clayworking plants. A list of the names cannot possibly be given at this date, but will be made public on some other opportunity.

John Sager, Waverly, Ia., in a recent letter says he is going to start a new brickyard at that point, and would like to receive catalogues of machinery, etc.



# THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK  
MANUFACTURERS' ASSOCIATION OF THE  
UNITED STATES OF AMERICA.

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Correspondence on all subjects of interest  
to Clayworkers is solicited. Communications  
from practical men will always be welcome.  
Address all communications to

T. A. RANDALL & CO.,

5 Monument Place. INDIANAPOLIS, IND.

## THE GOOD THAT MACHINERY DOES.

Croaking about the injury which machinery has worked to the laboring class is as old as a mechanical idea. If we look back to the period when there were no mechanical helps, no labor saving devices we find an age of savagery; we find people incapable of much enjoyment. One finds more happy faces, greater general enjoyment, a higher regard for the intellectual, a better cultivation and patronage of the arts where mechanical helps and labor saving devices are in their completest state of development. Yet when a new labor saving device comes out, one which is apt to throw a large number of people out of employment, even the steadiest of us are inclined to shake our heads and squirm uneasily in our chairs. We are not willing to trust history, counting from decade to decade the rate of advance in wages. When we hear of a mechanical contrivance which reduces the cost of composition of a newspaper one-half, we are sympathetic; we feel that a large number of willing workers will be thrown out of employment.

Acts controlled by such impressions would wheel us around into a condition of savagery and brutality. Machinery is the great missionary. There is much of the spirituelle in the influence of machinery. It is machinery which makes music possible, through its help we can cultivate the mind. We have

time for good books, and good thoughts. We do not have to use all of our time molding brick by hand, cutting threads with a file, key seats with a coal chisel, or doing other things in a laborious way which would leave us without time for any of the good things of life—with the perfection of the machine we will, in a few years, be discussing the six hour day for labor rather than one of eight. By that time all of us will have realized more fully the value of the time which is not used in actual productive labor.

## BETTER TIMES AHEAD.

With an end of commercial legislation we may expect an improved commercial condition. To many of us this condition is now possible of realization, the signs of it are in the air. The shelves which are empty are being filled. The manufacturers who were not anxious to sell their product now have men on the road. There were many who during the recent months have not been anxious to sell. One of the largest manufacturers with whom we are acquainted said to us recently that he did not care to sell his goods; there were more people willing to buy than he was disposed to accommodate. He intended to keep what he had, and not scatter it all over the earth when there were chances that he would never see it again. That is, he might have sold on credit but was afraid to take the risk. Here is the key to much of our tribulation—a lack of confidence. The dealer who sharply contracted his lines of credit was in a measure doing the one thing necessary to bring dull times; this spirit fortunately is passing and depleted stocks are being replenished. The wheels are commencing to grind. The wives of the discouraged merchants, manufacturers and workmen are beginning to buy. The world is moving again.

## THE RECORD OF THE DEAD A LESSON TO THE LIVING.

Coxeyism is dead. It was not lovely in life and is not mourned in death. Of it we may truly say, few and evil were its days. It was born of bad stock, what else could be expected of it? There is much in heredity. An evil tree can not bring forth good fruit, neither can a corrupt parent beget a first-class offspring.

Coxeyism's immediate progenitor was that vicious sentiment which has been

doing mischief for many generations—"The world owes me a living," instead of that better sentiment: "I owe the world my best licks." The offspring of the latter are found everywhere, pegging away. They are found in hard places as well as in easy, for in the multiplicity of things to be done, some are harder than others, but all may be made bearable by a cheerful disposition and a recognition of the fact that our kind of work is as necessary as any other kind. In an army, fatigue duty is as necessary as fighting, but it is not considered as honorable and it is often harder, but the good soldier never complains.

On the other hand the progeny of the former are forever unhappy and usually they are pestiferous. Seeking to collect the debt the world owes them, they do little but grumble all their days. Everything is out of joint. It being somebody else's duty to make the living, they are at outs with everything and with everybody, because the living does not come their way with less effort on their part.

Coxeyites somehow came to imagine that the world ought to pay what it owed them through some kind of legislation, a very popular error in the whole family of whom the Coxeyites are only the matured members; hence they started to Washington without script or purse to collect the debt, sponging all the way from that class who keep pegging away in sunshine and storm. They saw no inconsistency in this, for did not the world owe them a living, and are not these patient plodders a conspicuous part of the world?

## SOMETHING IN A NAME.

Coxeyites had to have a name. As the name and occupation of Tramp had been slightly overworked and had even become odious with the people on whom they had long preyed, they chose to call themselves the "Industrials." Besides, tramps usually went alone or at most not more than in couples, but these went in troops—in armies, with captains and colonels, and generals, and with transportation, when they could steal it, and with a commissary department well supplied when foraging was good. Some people were disposed to laugh at their pretentious methods, for they could see nothing industrious in what the army was doing or proposing to do. Nevertheless they found many near of kin who contributed cheerfully and even bountifully to their support, in



hopes that Coxey might somehow find a way to collect the debt which the world owes everybody without everybody's having to work for a living, for the truth cannot be concealed, there are a great many embryo Coxeyes all around, who want to live without too much hard work, though plain people, belonging to the family of the Best Licks, generally turned from them in disgust.

When they got to the National Capital, as some of them did, they found a government there, but it was anything but what they had imagined. It was a huge affair, entirely taken up with providing for the family of the Best Licks, and caring not a fig for those who were out trying to collect the debt which they alleged the world owed them. Nevertheless it was not wholly neglectful of them. It was not long in providing work for them. It had workhouses for them, whether they wanted to work or not, and whether they came singly or in troops, and it believed in that scripture which says: "If any man will not work neither shall he eat." But as the sequel showed, it was not work they were after. They wanted the living which the world owes them without having to work for it. The atmosphere of Washington was not congenial. The government seemed to be absorbed in providing for those who believed they owed the world the best service they could render.

#### A FABLE WITH AN APPLICATION.

Esop tells of a worthless lout who thought his lot too hard to be endured. One day, groaning under a heavy load, he laid it down and called for Death to come to his relief. To his surprise Death came and asked what he was wanted for. "Put this burden on my shoulders, please," said the fellow, and he trudged along with it without further complaint. After a taste of the kind of industries they found at Washington and the compensation they got for what they did, they begged to be restored to their former homes with the fare they had had before starting out in quest of the living the world owed them. They had learned something. Through kicks and cuffs, driven out of every place, they have mostly found their old quarters. Coxeyism is dead, but the miserable, economic heresy of which it was born yet lives to curse the people. The world owes no man a living, but every man owes the world his best endeavors

to make others happy and to produce by his labor the means of his own support.

#### CREDIT TO WHOM CREDIT IS DUE.

In the August *CLAY-WORKER* under the head "The Kind of Brick Suitable for Pavers," we gave a brief extract from an article found in the *British Clay-Worker*, giving that journal due credit of course. It has since developed that the article appeared originally in "*Clay*" the little quarterly published by J. W. Penfield & Son, Willoughby, Ohio, to which the credit properly belonged and would have been given had we read the article entire and so have noted its origin. This only goes to show that a good thing is certain to make a place for itself "sooner or later, if not before." There are many good things in "*Clay*" that will bear repetition.

#### THE SECRET OF SUCCESS.

A few days ago the Anderson Foundry and Machine Works, of Anderson, Indiana, shipped one of their new Anderson Brick Machines to James Gore, Dunedin, New Zealand. In his order Mr. Gore says: "I notice in the April number of the *CLAY-WORKER* you advertise a new machine, 'The Horizontal Anderson.' Please send me a full description of it and quote price, as I believe in having the best and most simple machine I can get. If on trial your machine proves satisfactory, I shall most likely order one and also another of your 'New Departure Tile Machines'."

Mr. Gore understands the secret of success. It is to have the best machinery in the market. This may sometimes involve the abandonment of machinery "as good as new," but still behind the times. No manufacturer can successfully compete with improved machinery by adhering to that which is antiquated. Many an old-time miller tried this when the roller process of making flour was first introduced. Its superiority was readily admitted, but had not good flour been made for ages by the millstone process? But in due time all had to come to the rollers.

The introduction of improved machinery often works a hardship. It not only necessitates the abandonment of what has cost large sums of money, but often means the discharge of many faithful skilled workmen, for the machine is expected to do the work of many men and at less expense, but even

these men are ultimately benefitted by every improvement. It may require a momentary change of employment, but if industrious and persevering they find other and better places, and thus share in the general prosperity which follows the introduction of machinery into every department of life.

We commend Mr. Gore in his far away New Zealand home for his enterprise. Like thousands of others he finds himself benefitted not only by the many excellent papers he reads in the *CLAY-WORKER*, written especially for this journal by men of skill and experience in the business, but he finds our advertising columns full of valuable information for all who like him want the very best machinery for their business. It would seem invidious to congratulate the Anderson Foundry Company on procuring such a customer through their use of our paper, for all our advertisers can testify to equal profit from their investment. They know the value of printers' ink wisely used.

#### A GOOD COMBINATION.

Mr. Cook Nist the irrepressible brick-maker of Louisville called at the *CLAY-WORKER* sanctum recently and in the course of an interesting chat said that the trouble over the brick pavements in that city was the result of political manipulation. A ring with "fluence" managed to get an inferior grade of brick put down on a few of the streets of Louisville and as a result of their jobbery, the paving brick interest would suffer some. Such work should be an effective object lesson to every maker of paving brick. The manufacturer who puts any other than good, first-class annealed pavers on roadways injures himself and the whole paving brick industry. Mr. Nist does not make pavers but directs his entire attention to common brick and with very satisfactory results to himself. He said the past year has been a trying one on manufacturers generally, but he has kept his works going nearly full handed right along and expects to continue to do so notwithstanding the fact that the capacity of his works nearly equals the output of all the other yards at Louisville combined. Mr. Nist is an enthusiast in the use of improved machinery and says his success is due to that and the superior quality of his brick. He is a rough diamond and as full of energy as an egg is of meat. His success is due to no freak of fortune but to hard work and good sense.



## TRADE LITERATURE.

WE ARE INDEBTED to the Hydraulic Press Brick Co., St. Louis, for a very neat pocket catalogue of their molded and ornamental bricks which they make in almost an endless variety of shapes, and in red, brown, buff, gray, granite and mottled colors. Architects and builders will find it a very valuable book of reference. We have also received from them a portfolio of designs that is the most elaborate and costly work of the sort that we have yet seen. It consists of nearly a hundred cards 11x14 inches upon which are delineated the outlines of their molded bricks, exact size, so one may see just how each brick will lay up and smaller photo engravings of the brick clearly showing its face and form. The idea is new and patents have been applied for. The designs are printed on heavy enameled card board and enclosed in a substantial morocco portfolio making a very neat outfit which they will furnish to architects and builders for \$5, so long as the present edition lasts.

A NEW EDITION of M. D. Burke's valuable work on "Brick for Street Pavements" embodying several new features, has been published by Robert Clark & Co., Cincinnati. Price in paper covers 50 cents.

"THERE'S MONEY In It for You," is the suggestive title of a little booklet received from the Standard Dry Kiln Co., Indianapolis. The title page is an odd conceit showing a bag of coin, the fastenings of which we presume may be loosed by brickmakers who adopt the improved "Standard Dryer." Those wanting to get hold of the strings to the bag are requested to write them direct.

A NEAT CATALOGUE is being sent out by C. W. Raymond & Co., Dayton, Ohio. It is devoted to the Daytonian Brick Machines and Cutting Tables which are well illustrated and described. Messrs. Raymond & Co., will be pleased to mail a copy free to any address.

WE HAVE RECEIVED from Geo. Carnell, 1819 N. 5th street, Philadelphia, a catalogue of his well known brick presses and other clayworking machinery including tempering wheels for both horse and steam power. Those wanting anything in the line of soft mud brick equipment will do well to write him for a copy.

For experienced help see the "WANTED, FOR SALE, ETC." columns.

## AN EXHIBITION OF CLAYWORKING MACHINERY.

On page 300 of this issue is a cut of the Special Bucyrus Giant Brick Machine manufactured by the Frey-Sheckler Co., of Bucyrus, Ohio, a firm that always keeps up with the procession in the production of improved clayworking machinery of all kinds and more particularly in the line of stiff mud brick machinery, of which they claim to build the largest line of any firm in the United States. One of their latest products is named the Special Giant Brick Machine, which they think is the largest of its kind manufactured. It has a capacity of from 50,000 to 100,000 standard size brick per day of 10 hours. The weight of the machine

is 20,000 pounds. The material is so distributed as to equally resist the greatest pressure applied. The mixing shaft is made of hammered steel 6½ in. diameter. In short, the machine throughout is especially designed for great strength and capacity.

The Frey-Sheckler Co. will make an exhibit of a line of their machinery at the Pittsburg Exposition, beginning Sept. 8th, and continuing until Oct. 20th. The Special Giant will be one of the machines exhibited in practical operation. All clayworkers who intend visiting this Exposition are requested to make the Frey-Sheckler Co's exhibit headquarters during their stay in the Exposition. Any who cannot visit them there, but would like further information about their machinery, can get full particulars by writing them direct.

## A FEW WORDS ABOUT CONTINUOUS KILNS.

It is generally conceded by those who have investigated the merits of Continuous Kilns that if properly constructed they are uniformly successful. THE WILFORD KILN is built on scientific principles by a practical brickmaker. Those who are using it say it is an unqualified success. The following is a case in point. If you are interested write Mr. Wilford for more of the same sort and other particulars.



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W.F. TASKER,

MANAGER.

TELEPHONE 2997.

**DOX VALLEY**  
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**TAYLOR**  
**BROTHERS**  
 MANUFACTURERS OF  
**FINE GRADE PRESSED BRICKS,**  
 IN ALL COLORS & DESIGNS  
 FIRE CLAY, FIRE BRICKS, SEWER PIPES &c

TORONTO, August 6th 1894

The Wilford Patent Kiln Coy.

Toronto, Ont.

W. A. Wilford, Mgr.

Dear Sir:- We are thoroughly satisfied with the results we have secured from your Continuous Kiln, and have got out of it Vitrified Paving Bricks that are fully equal to anything on the market.

We have looked into the matter of your Downdraft Kilns, and have decided to put in 4 of them for the purpose of burning our Ornamental and Terra Cotta wares, and enclose herewith amount of your fee for same. If you can so arrange, kindly let us have one of your foremen right away, as we are anxious to have them ready as soon as possible.

Shall be more than pleased to give any information to your prospective clients regarding the Continuous Kiln we got from you.

You deserve every success, as you have undoubtedly the best in your line.

Yours truly

See ad. on Page 280.



## QUIET WAYS ARE BEST.

**W**HAT'S the use of worrying,  
Of hurrying and scurrying,  
Everybody flurrying  
And breaking up their rest?  
When every one is teaching us,  
Preaching and beseeching us,  
To settle down and end the fuss,  
For quiet ways are best.  
The rain that trickles down in showers,  
A blessing brings to thirsty flowers;  
Sweet fragrance from each brimming cup  
The gentle zephyrs gather up.  
There's ruin in the tempest's path;  
There's ruin in the voice of wrath;  
And they alone are blest  
Who early learn to dominate  
Themselves, their violence abate  
And prove by their serene estate  
That quiet ways are best.  
Nothing's gained by worrying,  
By hurrying and scurrying,  
With fretting and with hurrying  
The tempest's often lost;  
And in pursuit of some small prize  
We rush ahead and are not wise,  
And find the unwonted exercise  
A fearful price has cost.  
'Tis better far to join the throng  
That do their duty right along;  
Reluctant they to make a fuss,  
Or make themselves ridiculous,  
Calm and serene in heart and nerve,  
Their strength is always in reserve,  
And nobly stands each test;  
And every day and all about  
By scenes within and scenes without,  
We can discern with ne'er a doubt,  
That quiet ways are best.

## WASTED ENERGY.

**H**E talked about the state of trade with most intense avidity,  
And fumed about the tariff with an energy immense;  
He wondered why the Senate couldn't work with more rapidity  
And swore about its slowness with an earnest eloquence.  
He sneered at other houses, and declared they lack ability,  
And criticised their methods while he whittled on a stick.  
He said he could do better with one-third of their facility,  
And intimated plainly that some people made him sick.  
But while he spouted figures with much mental elasticity,  
And loafed about and cussed around the best part of the day,  
And glamed the general government for the present infelicity,  
The other fellows hustled 'round and got his trade away.

—Tom Masson.

## HOW TO MAKE AN ORIGINAL ADVERTISEMENT.

BY ONE WHO HAS SEEN IT DONE.

**G**ET a pair of pretty scissors, and a lot of "Stick-em-hard,"  
And some lengths of that gray matter—not too much, say half a yard.  
Then you need a natty holder, and a pen (don't mind the ink)  
Place behind your ear—leave them; they will make your thinker think!  
Now, a sheet of pure white paper lay before you, smooth and clean:  
Carefully then clip the journal, where those "fetching" ads. you've seen.  
Concentrate your thoughts and quickly cut them out with care precise.  
Sign your name, and Presto! Changeo! there's your notice—ain't it nice!

—Clifton S. Wady, in Fame.

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## BOOKS FOR BRICKMAKERS.

## "BRICKMAKER'S MANUAL,"

Morrison and Reep, \$3.00

## "BRICKMAKING AND BURNING,"

J. W. Crary, Sr., \$2.50

## "TABLE OF ANALYSES OF CLAYS,"

Alfred Crossley, \$1.00

## "DURABILITY OF BRICK PAVEMENTS,"

Prof. I. O. Baker, \$.25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address T. A. Randall & Co., Indianapolis, Ind.

## ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and Belleville Ill.

ESTABLISHED 1859.

**R**ED Pressed and Ornamental Brick of unsurpassed quality a specialty and can be furnished in any desired quantity. Builders who desire the finest pressed brick at reasonable prices, are requested to write for illustrated catalogue and price list.

Rock-faced and Roman brick, red and brown, granite, mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

ANTHONY ITTNER, Telephone Building, ST. LOUIS, MO.



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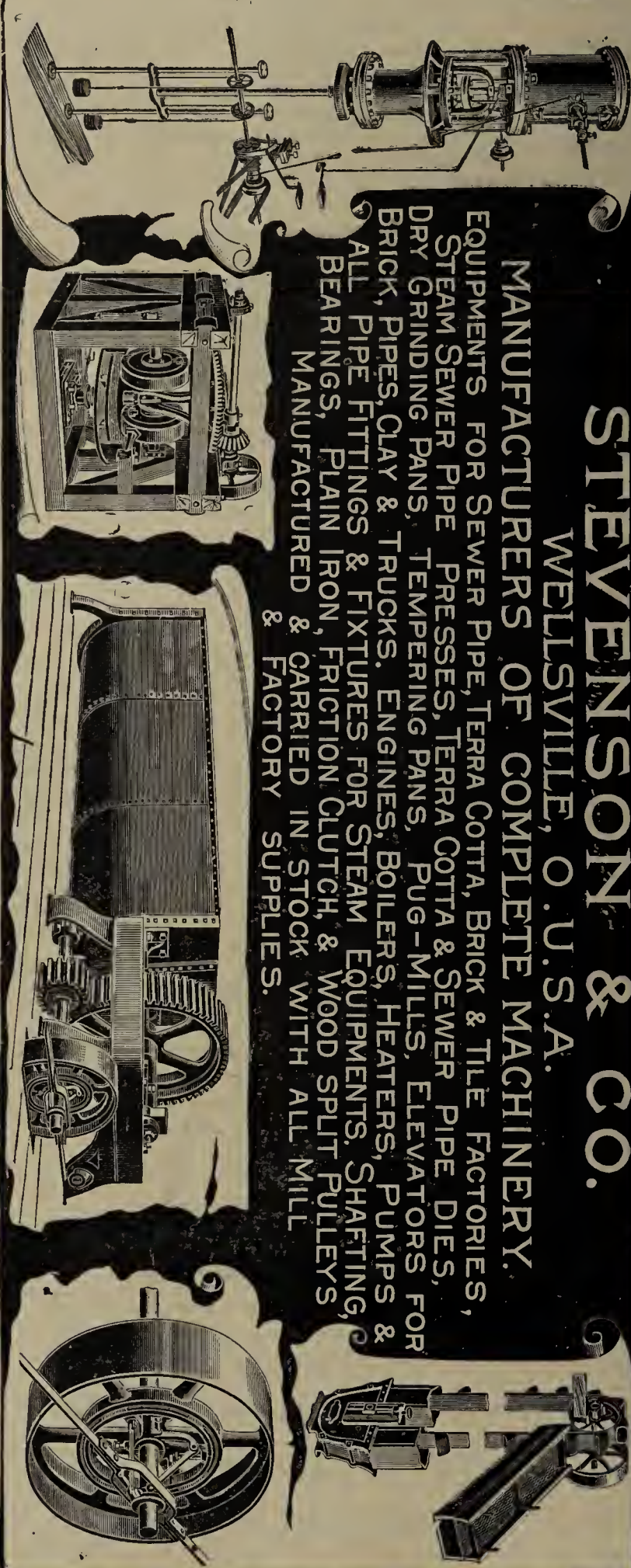
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**STEVENSON & CO.**  
WELLSVILLE, O. U.S.A.

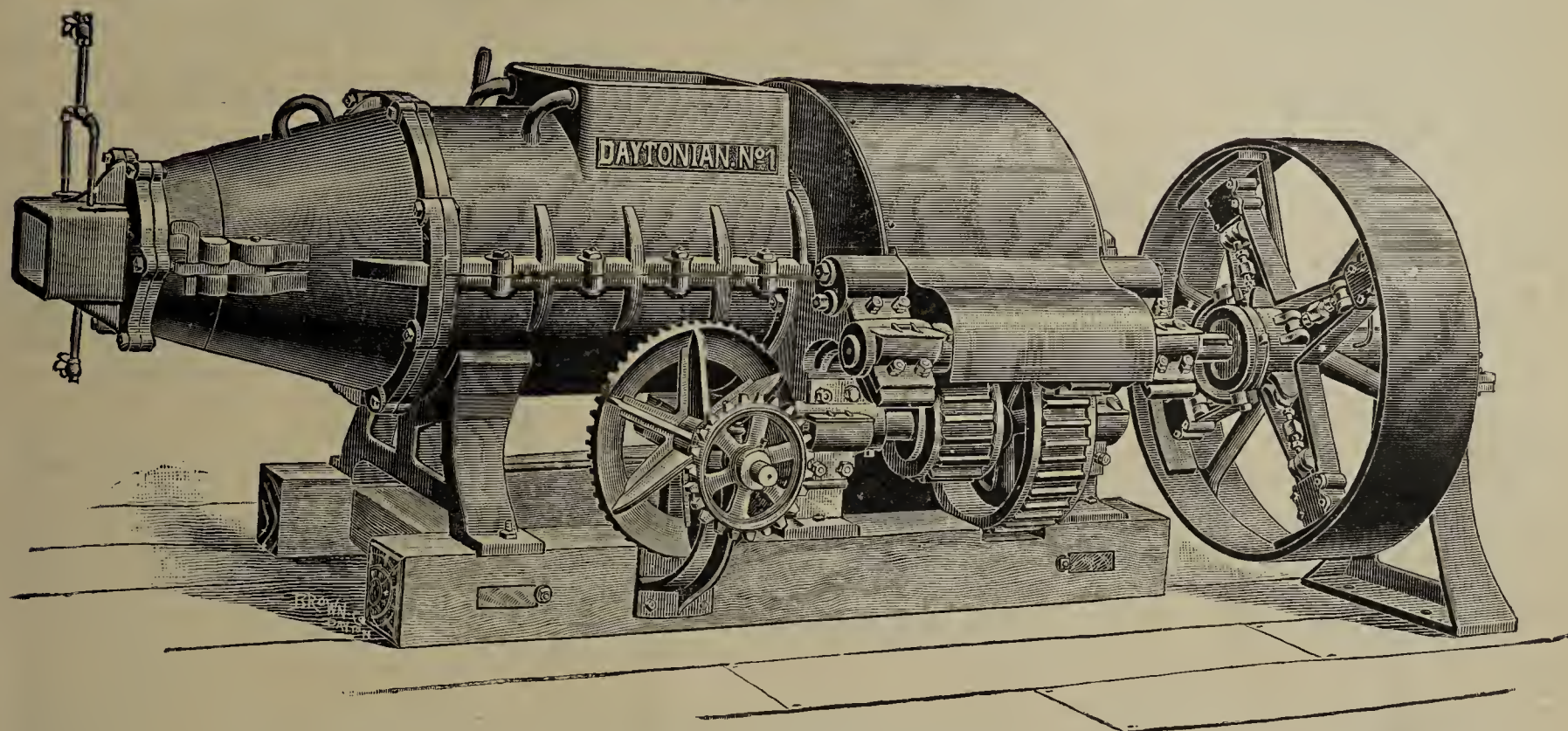
**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES,  
STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES,  
DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR  
BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS &  
ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFTING,  
BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS,  
MANUFACTURED & CARRIED IN STOCK WITH ALL MILL  
& FACTORY SUPPLIES.



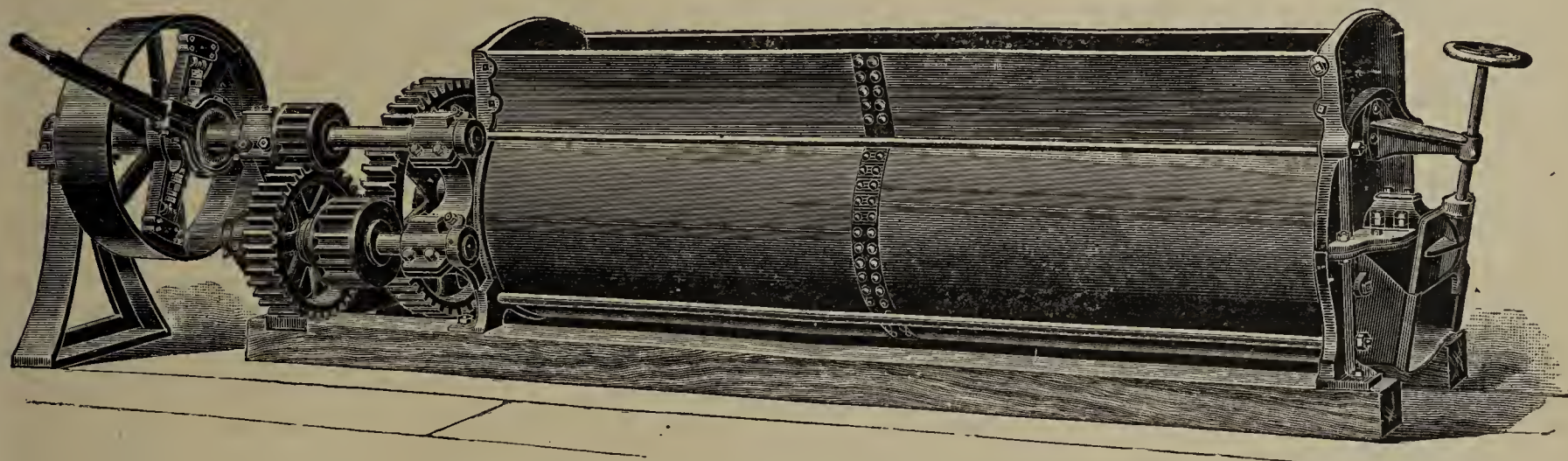
# RAYMOND'S

✦ Brick ✦  
Machinery.



DAYTONIAN No. 1 BRICK MACHINE.

The mechanical perfection of our modern line of brick machinery is astonishing the World.



No. 1 COMPOUND GEARED PUG MILL.

*Brick Machines,  
Cutting Tables,  
Pug Mills,  
Revolving Screens, Etc.*

*Disintegrators,  
Crushers,  
Dry Pans,  
Re-Presses* Adapted to  
ALL USES.

**C. W. RAYMOND & CO., Dayton, Ohio.**



## ADVERTISE RIGHT ALONG.

When trade is flush, and with a rush  
Large orders to you come,  
"You'll find it wise to advertise,"  
And keep things on the "hum."

When trade is poor don't close the door;  
The rule is still the same;  
"You'll find it wise to advertise,"  
And thereby win fresh fame.

Indeed 'tis true, whate'er you do,  
This is the safest plan,  
"You'll find it wise to advertise,"  
For then you lead the van.

—Henry Morrill Warren, in *Printers' Ink*.

## EDITORIAL NOTES and CLIPPINGS.

C. E. Bonsor has erected a new brick plant at Fredricktown, Mo.

A. F. McConnell has opened up a new brick works at Decatur, Ala.

The Hoosier Brick Co., New Albany, Ind., is in the hands of a receiver.

Seth L. Scholl's brick plant, at Lansdale, Pa., was partly destroyed by fire Sept. 1st.

The Argillo Brick Works, Carbon Cliff, Ill., will put in a new brick machine.

The Lorain (Ohio) Brick Co. has been incorporated with a capital stock of \$50,000.

Harry Davis, a well known potter of Trenton, N. J., died recently at East Liverpool, Ohio.

The Climax Brick Works, near New Bethlehem, Pa., were partly destroyed by fire recently.

Orr Bros. are contemplating the establishment of a paving brick plant at Poughkeepsie, N. Y.

A company has been organized at Rogers, Ohio, for the manufacture of fire brick and sewer pipe.

The Mosaic Tile Co. has been incorporated with a capital stock of \$100,000 at Zanesville, O.

Valuable clay, such as fine porcelain is made from, has been discovered near Huron, Lawrence Co., Ind.

Fire damaged some of the kiln sheds on Mr. John Gabe's brickyard, Henderson, Ky., to the extent of \$600.00.

McVean, King & Co., who will start a brickyard at Smithfield, Tex., are in the market for necessary machinery.

Parties desiring situations will likely find what they want by a small "ad." in the "Wanted, For Sale, etc." columns.

McCluer & Sons, suffered a loss of \$800.00 by the burning of some kiln sheds at their brickyard at Crawfordsville, Ind.

The Granite Pressed Brick Co., is the name of a new firm that will manufacture brick at Woonsocket, R. I. Ground has been broken and the work will be pushed as rapidly as possible.

Wilcox Bros. have purchased W. L. Smith's interest in the brickyard at Cadillac, Mich., and now have sole control of the plant.

A small building belonging to the Hydraulic Press Brick Co., St. Louis, Mo., and containing 200,000 stock brick was burned recently.

The brickyard of Kelsey & Mather, Richmond, Ind., was burned to the ground the 4th inst. Loss \$6,000, with an insurance of \$3,000.

Brick manufacturers in need of help, from foreman down, will find no trouble in filling the vacancy if they will insert a card in our "Wanted" columns.

The Woodland Clay Red Pressed Brick Co., Janesville, Wis., has been incorporated by O. L. DeForrest and Geo. G. Sutherlin. Capital \$117,000.

Mr. Mitchell expects to have his new brick plant at East Delphi, O., in operation by the first of October. He will employ between sixty and eighty men.

J. C. McDonald, manufacturer of brick and tile at Detroit, Mich., contemplates adding to his present plant an equipment for the production of fire proof tiling.

Brown & Fraser have commenced the manufacture of brick at Tampa, Fla., on a small scale. If they are successful, as they hope to be, a large plant will be erected.

If after making improvements during the spring and summer, you have second-hand machinery that you wish to dispose of, try a few lines in the "For Sale" columns.

The engine house on the brickyard of C. W. Montgomery, Iron Mountain, Mich., together with some machinery was destroyed by fire recently. Loss is estimated at \$4,000.

Webster, Gillespie & Co., brick manufacturers, Philadelphia, Pa., will add four tunnels to their dryer and also have in contemplation the building of some down draft kilns.

The Rumbaugh (Pa.) Brick Works recently made the largest shipment of brick ever made in that locality in one day. The shipment was made to fill two orders, one of 600,000 and another of 450,000.

The Montecello Clay and Brick Co., Reading, Pa., are putting in two additional boilers, which will enable them to double their present capacity, which is 30,000,000. They have orders on hand now that will keep them running all winter.

The Elmwood, (Conn.) Brick Co. has been organized. They will put in one of the McLagon Foundry Co's brick machines with a daily capacity of 40,000. The officers of the company are: President, W. E. Goodwin; treasurer, F. C. Rockwell; secretary, J. M. Foote, Jr.; superintendent, W. E. Loveland.

J. F. Stengel, of Buffalo, N. Y., is erecting a new brickyard at Grand Island, N. Y. He will put in the Wellington Machine Co's Monarch brick machine with a capacity of 30,000 daily, and will build one of W. A. Wilford's patent kilns.

M. A. Briggs, of Atlanta, Ga., writes that he has sold his interest in the Southern Brick Co., and expects to erect a plant in the southern part of the State and would like to receive plans, specifications, etc., for a plant of 25,000 daily capacity.

One of the plants of the Trenton (N. J.) Pottery Co, known as the Delaware Pottery, was damaged to the extent of \$30,000 by flames the 3rd inst. The fire occurred in a portion of the building where the most valuable stock was stored awaiting shipment.

Benjamin Anderson, an old citizen of Aurora, Ind., met death instantly while at work at the Wymond Brick Works of that city. He was putting a belt on a small wheel when his shirtsleeve caught in the main fly wheel and he was drawn into it and crushed almost beyond recognition.

The Columbian Brick Co. has been incorporated at Syracuse, N. Y., for the manufacture of paving and building brick. The incorporators are Amos L. Mason, William J. Gillette and Duncan W. Peck of Syracuse; Edmund Reed of Marcellus, N. Y., and John F. Gaynor of Fayetteville, N. Y.

The White Art Brick and Tile Co., Clayton, Mass., according to the *Citizen*, of Winsted, Conn., have just burned a large kiln of brick to fill an order from Cuba, West India. The company have such a demand for their brick that they will erect another kiln, in order to increase their capacity.

P. C. Roettele, of Mt. Healthy, Ohio, has a well equipped soft mud brickyard with twenty or more acres of clay land, which he would like to dispose of, as his health does not justify him in continuing the work. A good, practical man can obtain a half interest in this yard, which is well situated on favorable terms.

The Cleveland Vitrified Pressed Brick Co. have recently added to their works the following improved machines: Two of Richardson's Vibrating Screens; one Richardson's Automatic Clay Hopper and Feeder; one Hall Bros. Automatic Clay Temperer; one Freese "A Special" Brick Machine; one Cleveland Brick Machine and Hall Bros. Automatic Cut-off and Repress.

D. E. Smock, Wilkesboro, N. C., in a recent communication says: "I am unable to see how any one in the brick or tile business could even think of success without the aid of the CLAY-WORKER." Mr. S. further says they they have some of the finest clays in

*Continued on Page 264.*



## Oriental War Bulletin.

On inside cover page  
 Markets of the world. Continued  
 In this period of strife for the  
 Straights with their sterotyped  
 Be with their apparatus  
 Make war with their powdered  
 Company is with the powers that  
 Of the Wall & under ready to  
 Crusher & cutter Manchester  
 Autamatic Cuthers Pugh's  
 And all improved with Cunningham's  
 Latest improved with Cunningham's  
 Strength in each with her  
 Her magnitudes and number  
 Against the Big Wonder with  
 She is too wise to make war  
 Has made rapid advance  
 While the Little Wonder



## Editorial Notes and Clippings.

(Continued from Page 262.)

the United States for the manufacture of high grade front and ornamental brick and terra cotta, and that in his opinion it will only be a few years before Wilkesboro brick and terra cotta will be known and appreciated the country over for their superior qualities.

Mr. Anderson, the engineer at Browsky Bros. brick works, Northport, L. I., has been acting in the capacity of timekeeper and has several mornings recently reported the men late. They were rebuked by the foreman for their tardiness and becoming enraged, pounced upon Mr. Anderson, almost killing him. Warrants are out for the arrest of the leaders, but they appear to have made good their escape.

MR. N. MACKEY one of San Antonio's prominent citizens favored us with a visit recently. He has been on a prospecting tour gathering pointers relative to the manufacture of sewer pipe with a view of establishing a large plant in Texas. He has been intimately connected with the brick and pottery interests of that section and is ambitious to

establish another clayworking industry there.

## IN ASHES.

As we are going to press, word comes of a disastrous fire at the works of the American Terra Cotta and Ceramic Co., Terra Cotta, Ill. Wm. D. Gates, president of the company, writes that fortunately some of the main buildings are left. They are now carrying on their work as best they can, some of the men working under tents. The extent of the damage has not yet been ascertained, but it will run into the thousands. The work of rebuilding will begin at once, and it is safe to predict that they will ere long be better equipped than ever.

## NEW CLAY INDUSTRY.

The Atwood Faience Co., is the name of a new enterprise to be established at

Hartford, Conn. A plant will be erected for the exclusive manufacture of architectural faience and enameled brick upon a large scale. Architectural faience is enameled terra cotta and is now being made successfully by Fiske, Homes & Co., Boston, Mass., mostly for interior decoration for which purpose it is unequalled both for sanitary and ornamental purposes. It is now coming into more common use and is thought will soon be used extensively for exterior decoration, its non-absorbent qualities making it very desirable for localities when smoke and grim play havoc with ordinary building decorations. The new company is said to be well equipped for extensive operations. Its officers are Clarence E. Whitney, president; Eugene R. Atwood, secretary and general manager; and Fred. J. Bishop, treasurer.

**STRONG, WELL-BUILT, SERVICEABLE  
STEAM ENGINES**

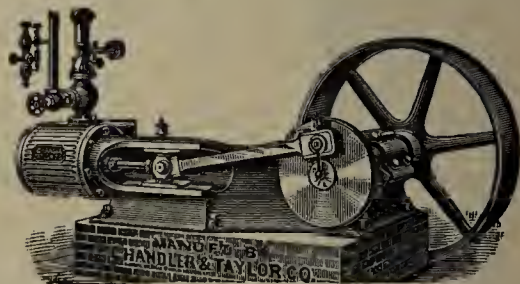
12 to 100 Horse-Power.

Adapted to heavy continuous work. Every Engine tested under full load.

Suitable Tubular & Firebox BOILERS On hand for immediate delivery

For descriptive catalogue address

**CHANDLER & TAYLOR CO., - Indianapolis, Ind.**



**A NEW DEPARTURE.**

**A Technical School for Clayworkers,**

WILL BE OPENED SEPTEMBER 12, 1894.

Education such as is most suited to the needs of all classes of clayworkers, with special provisions for teaching the chemistry and theory of clayworking.

**TUITION FREE. EXPENSES LOW. ADMISSION EASY.**

Write for circulars and information to

**Prof. EDWARD ORTON, Jr.,**

Ohio State University, COLUMBUS, OHIO.

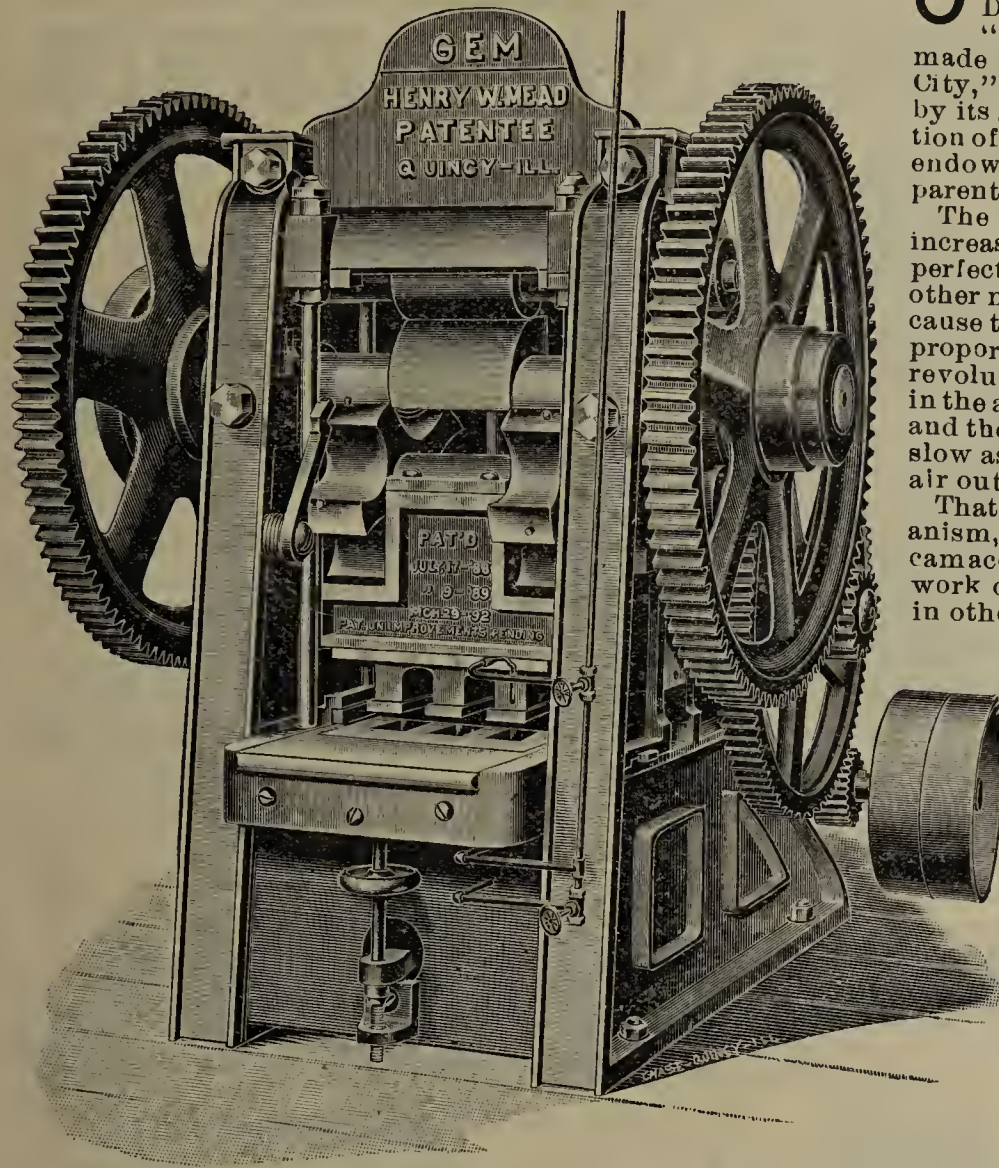
Director Department Ceramics and Clayworking.



# 100,000 BRICKMAKERS

## THE EVOLUTION OF INVENTION

....Is Crudity, Complexity, and lastly, Simplicity....



To be relieved from being the slaves of the brick machine makers by a \$1,000 REDUCTION ON A 3-MOULD BRICK PRESS.

OUR new 3 mould Dry Brick Press "The Gem," made in "The Gem City," illustrates this by its simple adaptation of means to ends endowing it with apparent intelligence.

The reason of its increased output of perfect brick over other machines is because there is a larger proportion of each revolution employed in the act of pressing, and the latter part so slow as to let all the air out.

That acme of mechanism, its original star cam accomplishes the work of many parts in other machines.

The working parts are nearly all above the dust. Other machines have only steam heated plungers. "The Gem" has also steam heated moulds.

The motions of the plungers are such that moist clay can be used.

Its many advantages are covered by four new patents. It weighs 16,500 pounds of the best steel and iron.

### THE EVOLUTION OF TRADE

Also brings simplicity. We will not pay your fare to come and see it work here in our yard nor prostitute friendship or hospitality to make a sale.

The price is \$2,425 F. O. B., Quincy, Ill. Words cannot be arranged that would lessen this price.

This \$1,000 reduction is compelled by the fact that conscience (even in business) has not become quite extinct.

The Orchardson Dry Brick Press Co.,

301 Chestnut Street,

QUINCY, ILL.

# Fire Brick

We make a special High Grade Fire Brick (all shapes) for Brick Kiln Construction.

**NOT EXCELLED** By any. Our quotations will surprise you. We sell Fire Brick on their merits and their use will prove **AN ECONOMY.** GROUND CLAY IN .....BULK OR SACKS.

We solicit your favors.

Manufacturers of.....

High Grade Fire Brick for Every Purpose.

THE AMERICAN FIRE BRICK & CLAY CO.,

MINERAL POINT, OHIO.

## SIGNS OF BETTER TIMES.

In response to an inquiry relative to their trade, the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa., write us that they have enjoyed a better trade this year than last, their sales having amounted to about one and one-half per cent. more, and at the same time they have done a much safer and more conservative business. Their outlook for the Fall or rather the Spring trade is very encouraging, and they have quite a number of new "Martin enthusiasts" on their list.

They are just about in the middle of the completion of a new and expensive plant, which they expect to occupy this winter. This plant comprises an erecting shop 108 ft. by 50 ft., three stories, together with a three story machine shop 41 ft. by 100 ft. In addition to this the necessary out buildings—the engine house, blacksmith's shop, stables, lumber yard, with shedding, etc. The facilities for turning out rapid work in the future will exceed any that they have heretofore had, and when finished, they expect to have a model plant in every particular.

## HOW THEY RUIN MACHINERY.

"Did you ever see a man just beginning in the business that knew more about the tile machines than the men who made them?"

"Well, yes; a few of them," replied the tile machine agent,—"a few of them. I have had a few of them work on machines sold from our works—great natural machinists—loved machinery from their boyhood—and they don't hesitate to change the machinery if it is in their power, and then tell why the machine does not work satisfactorily."

I have known tile manufacturers to change machinery about every three months for a year or two, and would continue the business, but for financial weakness.

Beware of the man who never had any experience as a machinist, who wants to change a machine to suit some "ideas" of his own.

When you hire a man to work in your factory who wants to improve everything in the way of machinery that has worked well so far, look out for him; tell him "hands off," and if he persists in his attempts to better things when you are not around give him the "G. B."—the sooner the better, and better the sooner.

But where the proprietor has the mechanical fever it is only a question of time, when the works will need a change, if they are to be operated successfully.—*Drainage Journal.*

MENTION THE CLAY-WORKER,

WHEN WRITING TO ADVERTISERS,

MENTION THE CLAY-WORKER



## GOOD BUILDING.

Recently we overheard a contractor say that his business had never been as good as it was this year. We think he told the truth for his work is of the better class. People of means have built this year for investment and because work could be done at a very low cost. In our city a very large number of people started in to build early in the season because each thought that in this time of great depression no one else would build and that he would have the market to himself. This did not prove entirely true but still they did build to advantage, both for themselves and for the community. They have scored an advantage and they deserve it.

## A NEW SYSTEM OF HANDLING GREEN BRICK.

D. M. Warner, of the firm of Hammond & Warner, brickmakers, Sparta, Mich., writes that he has completed an improved system of handling brick from machine to yard and thence to kiln, that will lessen the labor and liability to damage green brick as compared with methods now commonly in use. Mr. Warner's idea has been to work out a scheme for small works that will enable them to compete with large plants that handle brick in great quantities on cars, etc., very quick and cheap, and he thinks he has succeeded. As he is a practical brickmaker and knows what is required, his invention, which has been patented, will probably prove valuable both to him and the craft.

**WANTED.** In Chicago, plastic clay that will burn red. Address **FAT CLAY.**  
91 d Care Clay-Worker.

**WANTED.** Situation by a practical man in sewer pipe, fire proof gas retorts, fire brick or paving brick. Sober, good references. Address,  
91 c Box 23  
Care "Clay-Worker."

**FOR SALE.** 1 Simpson 4-Mold Brick Press, latest pattern. 1 Brewer Brick and Tile Machine. Both nearly new, in excellent condition, and used only a short time. Will include delivery in price and sell low for cash. Address,  
91 d NEW YORK HYDRAULIC PRESS BRICK CO.,  
212 Powers Bldg., Rochester, N. Y.,  
or Works, Canandaigua, N. Y.

**OUR** former superintendent knew it all, and purchased the following articles, all of which are as good as new, but are not adapted to our business, consequently they are offered at less than the manufacturer's prices. One four-mold Ross-Keller Eureka Brick Machine, for dry pressed; manufacturer's price \$5,000. No reasonable offer refused. One 42-inch Ross Disintegrator, made by George Wenger, of St. Louis, Mo.; quite new; well adapted for tile business. One Worrell's No. 2 Rotary Dryer, complete except the stack; quite new; excellent for drying various materials. One Flower Packer, made by S. Hawes. Above articles can be seen at our factory, at Clayton, Mass. **W. I. KENT,**  
92 d 94 Liberty Street, New York City.

**FOR SALE.** One 50 h. p. engine and 60 h. p. boiler; one new Departure Tile Machine, one Brewer Tiffany Tile and Brick Machine, one Martin machine and Pug Mill, Roll Crushers, Line Shafting. Belts, pumps and about 1,000 feet of 4 and 1-inch pipe. Will be sold at a bargain. Can be seen running at any time.

91 d

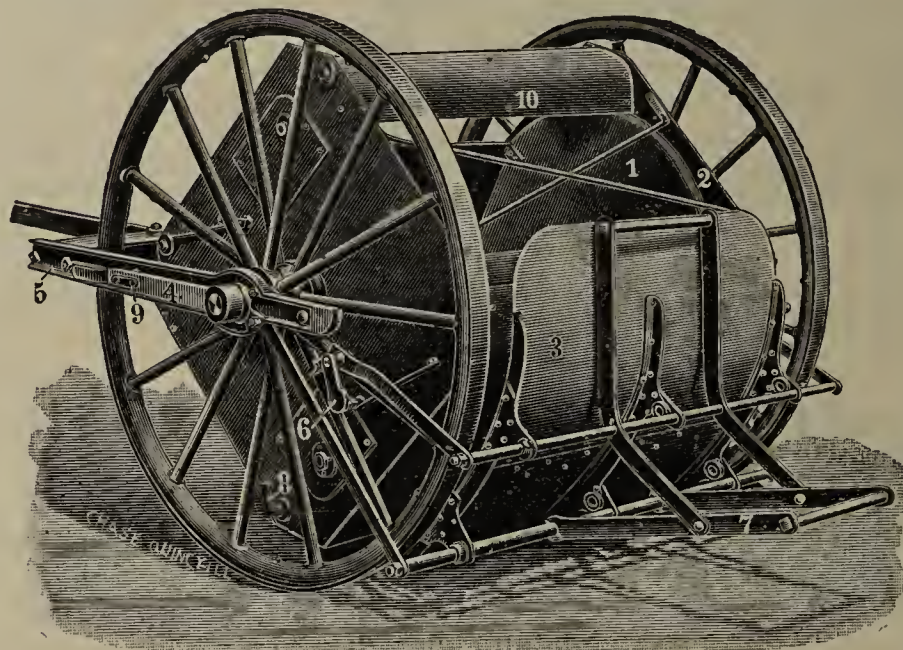
B. F. TOWNSLEY,  
Aledo, Ill

**FOR SALE.** One 5-mould Triumph press, one 9 foot Eagle dry pan, one 60 h. p. engine, one 80 h. p. boiler, belts, pulleys, shafting, elevators, screens, etc. All complete to make 30,000 dry press brick per day. All new and in perfect order. For terms and particulars, address.

91 d

Box 22, Clay-Worker.

## The QUINCY CLAY GATHERER.



This is by far the best machine that has been introduced to gather dry clay for making pressed brick. No pressed brick works is complete without one.

For gathering and shedding Dry Clay it is unequalled.

It is self-loading and unloading.

It is the cheapest and most approved Clay Gatherer.

Gathering Clay by this method dispenses with shovellers and avoids strikes.

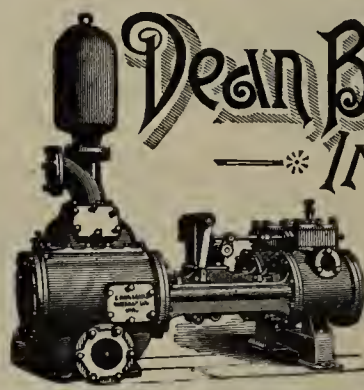
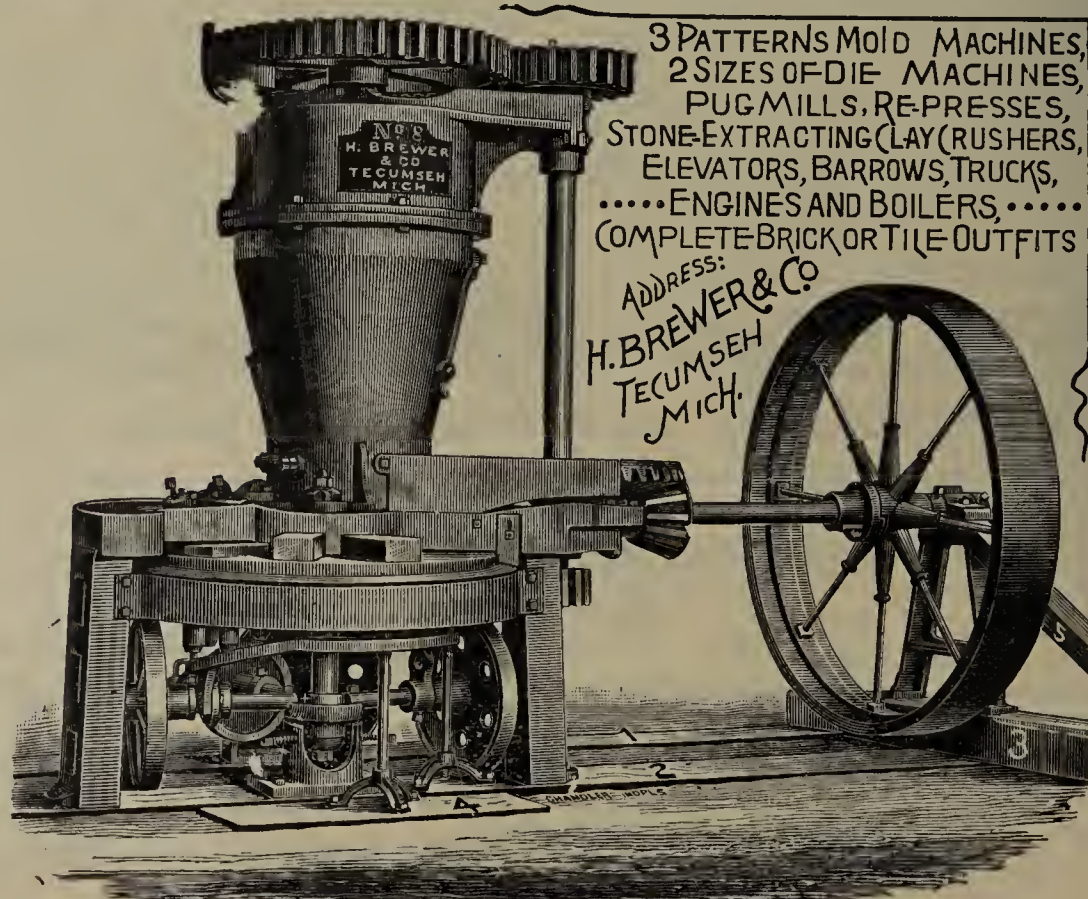
No Brickyard complete without the Quincy Clay Gatherer.

For prices and further information, apply to

**ILLINOIS SUPPLY  
& CONSTRUCTION  
COMPANY,**

**ST. LOUIS, MO.**

**Dean Bros. Steam Pump Works,**  
—\* INDIANAPOLIS, IND. \*—  
**SINGLE & DUPLEX PUMPS.**  
**HORIZONTAL AND VERTICAL PUMPS.**  
Best Design & Workmanship.  
*PRICES REDUCED Send for CATALOGUE.*

**3 PATTERNS MOLD MACHINES,  
2 SIZES OF DIE MACHINES,  
PUG MILLS, RE-PRESSES,  
STONE-EXTRACTING (CLAY) RUSHERS,  
ELEVATORS, BARROWS, TRUCKS,  
..... ENGINES AND BOILERS, .....  
COMPLETE BRICK OR TILE OUTFITS**  
ADDRESS:  
**H. BREWER & CO.  
TECUMSEH  
MICH.**



DO NOT BUY A \_\_\_\_\_ [FOUNDED 1879.]

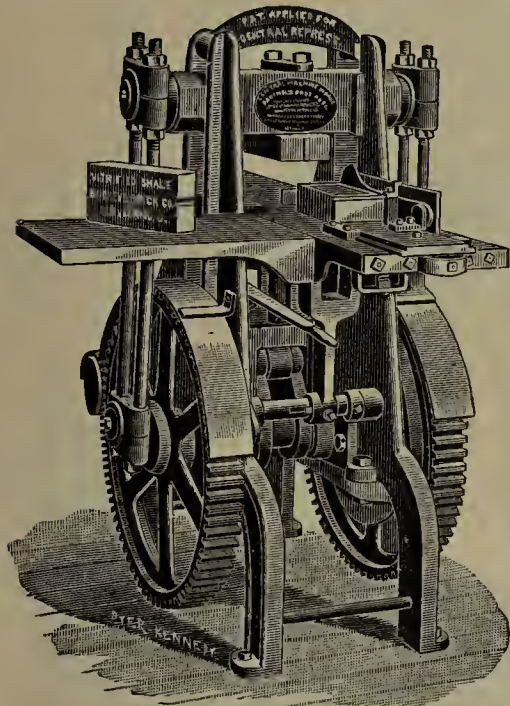
# SOFT CLAY BRICK MACHINE

Until You Have Investigated Ours.

Send for Photo.

W. E. TALLCOT & CO., Croton-on-Hudson, N. Y.

## REPRESSES and BRICK MACHINES.



.....

This cut represents one of the most complete Power Represses ever offered to brick-makers.

It has been tested in every way and given entire satisfaction. It has a capacity of 15,000 brick per day.

Our No. 2 Repress Double Mould has a capacity of 30,000 per day. They can be seen in full operation at the Buckeye Brick Company's plant at Wickliffe, Ohio.

— MANUFACTURED BY —

## CENTRAL MACHINE WORKS,

Send for Circulars and Prices.

226-236 Abbey St. CLEVELAND, O.

## THE "AJAX" BRICK MACHINE

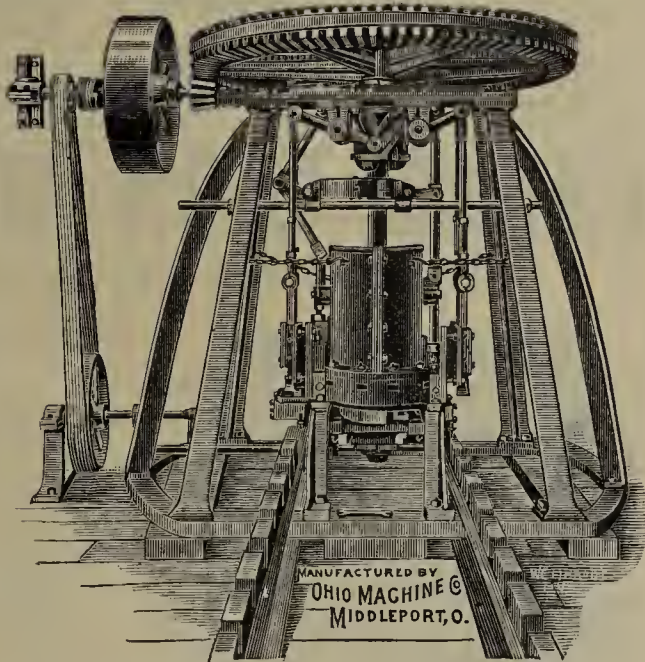
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### Ohio Machine Co.,

Middleport, Ohio.

Under the very Latest Improved Grant-Murray Patent.

This machine is constructed with the object of giving to purchasers the very best results obtainable for the money invested. It is at once Simple, Durable, Convenient, and Easily operated. We claim these machines make the strongest brick in the market, a brick that is very superior for Street Paving and building purposes. Their superior quality as pavers may be ascertained by reference to some of the leading cities of Ohio and West Virginia. This machine works the clay very stiff, pressing all the clay into each brick that it will possibly contain, thus imparting the quality requisite to a No. 1 Paving Brick. We guarantee these machines to our customers, and solicit investigation as to their merits. For further particulars please correspond with



## OHIO MACHINE CO.,

MANUFACTURERS.

We manufacture the Grant & Murray Patent Repress Brick Machine, pressing 4 brick each revolution and 40,000 per 10 hour day.

Middleport, Ohio

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When writing to advertisers

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FOR SALE, WANTED, ETC.

Advertising rates in this column 25 cents a line, or 4 cent a word, each. insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

FOR SALE. "Little Wonder" brick machine, guaranteed capacity 20,000 per diem; at a big bargain. Apply to BORCHARDT & FENDIG, 94 d Brunswick Ga.

FOR SALE. 15,000 cords of Oak and Hickory wood. Wood in good condition. Will sell at a low figure. Address T. F. ABILDGARD, Ag't, 91 c Grand Rivers, Ky.

SEND your Chicago collections and legal business to *Saylor & Frazer*, Attorneys at Law, 171 LaSalle St., (N. Y. Life Building) Chicago, Ills., 612 L

WANTED. A place as superintendent by a practical brickmaker of 25 years' experience in all methods of making. Knows how to handle men. References good. Box 7, 61 c Care "Clay-Worker."

WANTED. Purchaser or partner in large brick and tile plant in Iowa. Splendid clay and market. For particulars address, BRICK AND TILE WORKS, 82 c Cherokee, Iowa.

PARTIES wishing services of expert in dry press process to superintend the erection of new or the reconstruction of old works, at a fair remuneration, please address PRESS, 81 d Care "Clay Worker."

FOR SALE. Several Miller hand presses for repressing Standard press brick. All in good working order. Address Box 18, 81 d Care of "Clay Worker."

FOR SALE. Brick yard at St. Johnsville, N. Y. Large bank of clay; Pallet yard; fifty-horsepower engine. Sold on easy terms; nearest yard thirty miles; have lots of business; reasons for selling, poor health. Address Box 1, 81 d Care "Clay Worker."

FOR SALE. At easy terms, brick plant in a prosperous town of Iowa, located on four railroads. Good clay and good demand. Machinery in good shape. State will use 1,000,000 brick next season. Address, CEDAR, 83 d Care "Clay Worker."

SITUATION WANTED. By experienced man. Can take entire charge of plant. Thoroughly acquainted with the manufacture of fire, red, and other clays, brick tile, blocks, pipe, building, paving and other goods. Up or down draft and continuous kilns. Address Box 20, 911 p Care Clay-Worker.

A PARTY with \$35,000 cash wishes to meet with some one with like amount to engage in the manufacture of roofing tile. Has several new patents on roofing tile which will be put into the firm without charge, and has an option on suitable clay lands for the purpose, for a nominal price, situated in Illinois near Chicago. Would like to associate with a good business man to attend to office but would prefer a practical clay man, as advertiser could attend to office himself. 91 c Box 21 Care Clay-Worker.

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**FOR SALE** One Grand Automatic Brick Machine, pallets and racks for 20,000 brick. One boiler and engine; one lot of kiln doors and grate bars, cheap, and in good condition. Address, X, Care "Clay-Worker." 6 4 c

**FOR SALE.** One 40 h. p. engine, one 20 h. p. engine, two 60 h. p. boilers, one Little Wonder brick machine, one set of Drake rolls, one Drake granulator, one hoisting machine and shafting pulleys complete for a brick plant. Address THOMAS MOULDING CO., 409-34 Clark St., Chicago, Ill. 6 tf d

**WANTED** a practical brick man with capital to take an interest and management of a plant for the manufacture of building and fire brick; unlimited supply of clay that will burn light straw color, and high fire test; cheap coal; samples of clay and sand furnished. Box 19. S 3 d Care "Clay Worker."

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**FOR SALE.** One Brewer Tie machine, good order. One New Departure Tile machine, good as new. One 40 horse-power engine, good as new. One Brewer Crusher, absolutely new. EDGAR M. HEAFER, Bloomington, Ill. 7 tf d

**WANTED.** To purchase a dry press of the Whittaker make second-hand, in good repair; also dry pan. Address L. C. BARNES, Bloomington, Ill. 7 ?

**SITUATION WANTED.** A competent and thorough burner of dry pressed brick, at present employed as head burner by a leading concern, desires similar position elsewhere. Can refer to present employer. Address H. S. H., 732p Care Clay-Worker.

**SECOND-HAND MACHINERY.** We offer the following second-hand machinery cheap for cash:  
One Wallace Brick and Tile Machine.  
One Ohio Brick and Tile Machine.  
One Acme Brick and Tile Machine.  
One Hoosier Soft Mud Brick Machine.  
One Hoosier Auger Brick and Tile Machine.  
One Brewer Brick and Tile Machine.  
One Bucyrus Crusher.  
One Hoosier Crusher.  
One Cunningham Automatic Cutting Table, in good order.  
One Adrian Automatic Cutting Table, in good order THE DECATUR LEADER MFG. CO.  
8 tf d Decatur, Ill.  
See our Advertisement on page 195.

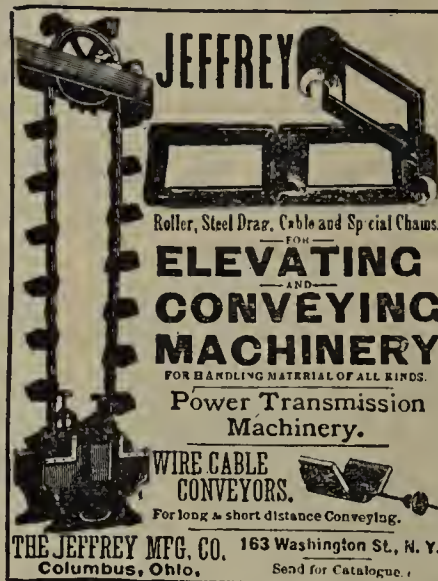
#### HALF RATES

(with two dollars added) will be made by THE WABASH LINE, to points in twenty-one States of the great West, Northwest and Southwest, for the Homeseekers' Excursion, September 11th and 25th, and October 9th, 1894. Don't forget the dates, and that these rates will apply to Kansas City, Omaha, Denver and other prominent cities. Tickets will be good returning twenty days from date of sale. Stop-over privileges allowed. For full particulars apply to the nearest railroad ticket office of the Wabash or connecting lines, or to C. S. CRANE, Gen'l Pass. & T'k't Ag't., St. Louis, Mo., or GEO. D. MAXFIELD, D. P. A., Indianapolis, Ind.

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For Handling  
CLAY,  
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SAND,  
BRICK,  
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PACKAGES.  
Also Furnish  
RUBBER,  
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SHAFTING,  
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CLUTCHES,  
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ETC.

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Patented April 13, 1886, June 12 1888, Nov. 17, 1891.

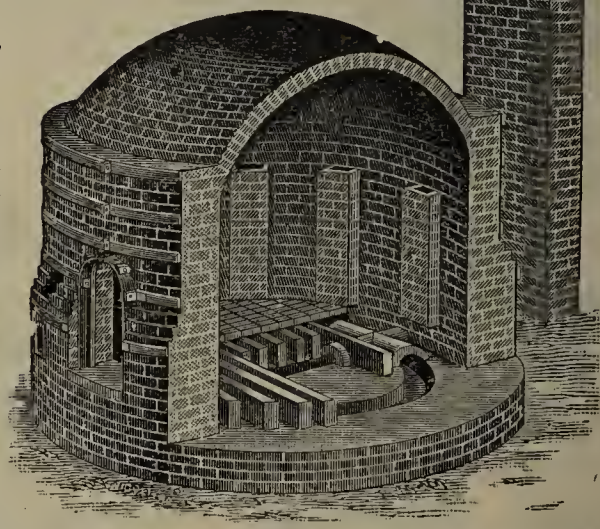
More Than 1,000 Now Stand as Monuments of Fame to its Inventor

It is neat, compact, durable, easy to handle, constructed on scientific principles. Has been improved and now burning almost everything made from clay, such as Sewer Pipe, Vitrified Pavers, Etc., to Pottery and finer wares. Built any size up to 100,000. In short it leads the way.

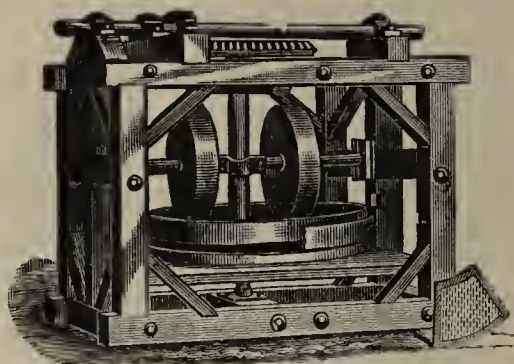
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E. M. PIKE, Patentee

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DRY AND WET PAN CLAY CRUSHERS. CLAY ELEVATORS AND CONVEYING MACHINERY TO ELEVATE AT ANY ANGLE. ENGINES, BOILERS, POWER PLANTS AND TRANSMISSIONS.

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Look out for our *New Iron Frame Dry Pan*, which we are now perfecting.

It embodies new and valuable patented features peculiar to itself, and will easily lead them all.





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**DON'T FAIL** to get our descriptive Circular and References.

For Burning All Kinds of Brick.

BOTH ROUND AND SQUARE KILNS.

FULLY PROTECTED BY PATENTS.

THIS Kiln has worked its way to the front by results, which is the highest test of merit.

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SANDING MACHINES.

This cut represents the latest improved Champion. No belts, apron or gearing. Simple, strong, and Serviceable.

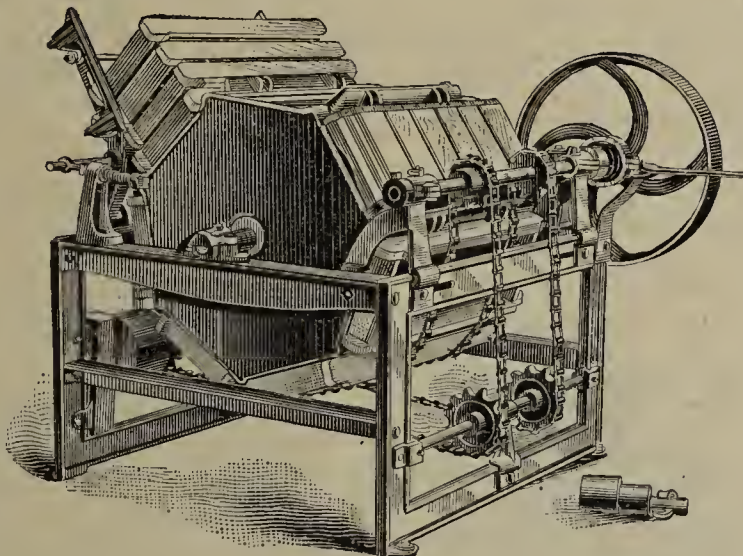
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Manager and Sole Agent,  
HAVERSTRAW, N. Y.

**NOTICE** To Brickmakers, Dealers and Others.....

Any person purchasing Champion machines from other than the above, render themselves liable to damages, as no other person has the right to manufacture said machines.

The suit brought against one of my purchasers by Buck has been abandoned, and suits are now being brought by me against users of Buck Machines as infringers of my patents. A. H. NEWTON



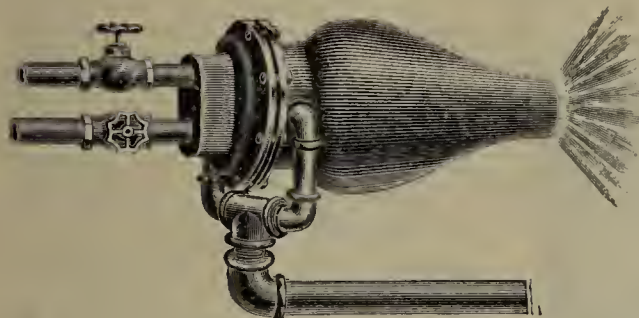
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Designers, Contractors and Engineers, Fuel Oil Equipment,

GENERAL OFFICES: 35 and 36 Cordova Building,

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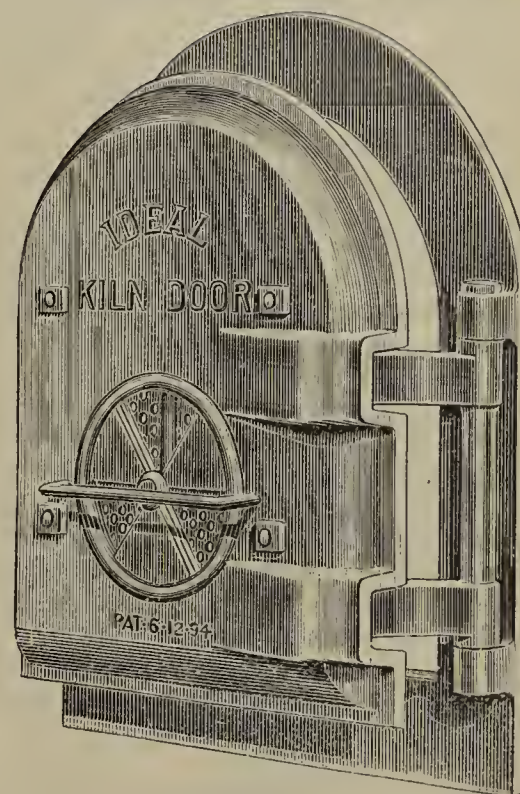
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By using the **IDEAL DOOR** all evil effects of exterior air currents are obviated. Increased percentage of high grade brick and of uniform color.

Economy in fuel consumption. Absolute control of fire under all circumstances. Address for particulars and cost,

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\*Daily.

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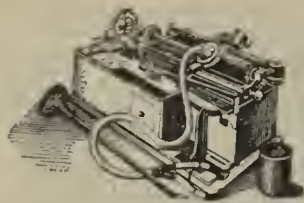
From Indianapolis	Leave.	Arrive.
St. Louis Accomodation...	! 7:30 am	! 7:40 pm
St. Louis Fast Line.....	*11:50 am	* 5:00 pm
Trains 21 and 20.....	*12:55 pm	* 2:50 pm
Terre Haute Ac'motion..!	4:00 pm	!10:00 am
Evansville Express.....	*11:20 pm	* 3:35 am
St. Louis Express.....	*11:20 pm	* 4:40 am

Trains connect at Terre Haute for E. and T. H. points. Evansville sleeper on night train. Sleeping and parlor cars are run on through trains. Dining cars on trains 20 and 21.

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Potter's Chemist,

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GIVES special attention to the analyzing of clays, flint spar and all materials necessary to the manufacture of pottery, sanitary ware and brick. Clay beds examined and if necessary experiments made on the spot, showing the adaptation of the clay. After twenty-five years of experience as a manufacturer and potter's chemist, Wm. Clayton has now given up the whole of his time to analytical chemistry as it is applied to clays, etc., their compounding and manipulation and practical use. Mr. Clayton gives opinions and practical advice to those intending to build and operate potteries and can furnish bodies, glazes, etc., etc. Particulars on application.

## THE MANUFACTURE OF GLAZED BRICKS AND GLAZED SAN- ITARY WARE.

A complete and trustworthy guide, giving full particulars concerning production together with the latest English recipes, which have cost many thousands of pounds to discover.

Published by the

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Remittances to be made payable to H. Greville Montgomery, and crossed London & Westminster Bank, Templer Bar, London.

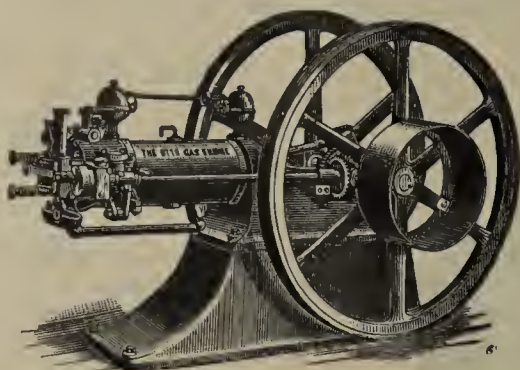
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Direct From the Tank.

Cheaper THAN Steam.

No Boiler. No Steam. No Engineer.

BE T POWER FOR BRICK YARDS.

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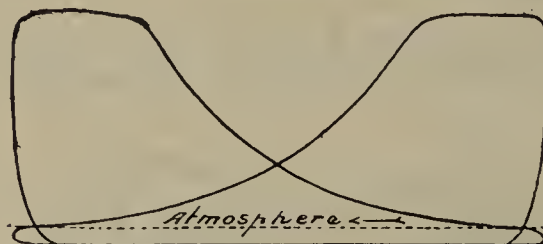
1 to 50 H. P.

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Send for Catalogue, Prices, etc., describing work to be done.

# INCOMPARABLE ECONOMY,

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DEAR SIR:

The above shows 5 lbs of vacuum, and more may be obtained in winter. Mr. Raabe also reports that it cost 16 h. p. to drive the fans, but the 5 lbs of vacuum, due to their use, added the 16 in. di. "Corliss" engine to the extent of 16.65 h. p., and the 5½ lbs 18.33 h. p.

Rahway, N. J.

FORDS, N. J., April 9th, 1894.

MR. S. G. PHILLIPS

DEAR SIR—I refer you to the indicator diagrams, showing a vacuum of 5—5½ pds. You can easily see that the fans will create a vacuum.

The vacuum pump was not employed—neither did any cooling water assist to draw the exhaust steam through the pipes.

You may refer to me for full explanation.

I am yours very truly,

H. RAABE, M. E.

## The Effective Utilization Of Exhaust Steam A Specialty.

"And Met the Requirements in Every Case."

PHILADELPHIA, December 14, 1892.

MR. S. G. PHILLIPS, Woodbridge, N. J.

DEAR SIR:—Replying to your favor of recent date, it gives us pleasure to state that all of the Dryers erected by us under your patents for customers have given satisfaction and met the requirements in every case. The bricks have been dried uniformly without cracks. Yours respectfully,

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"I think you have the Dryer the brick people are looking for."—Jno. C. Gibson, superintendent of the Fulton Brick Works, Richmond, Va., thus writes after having their Steam Pipe Dryer reinforced to dry in one-fourth of the time formerly required, by applying the fans inside; and the manager writes, also recently: "Not over 12 hours to make them very dry—the best by great odds of any in the market—the writer has looked the matter of Dryers up very fully, and been to see about all of any importance."

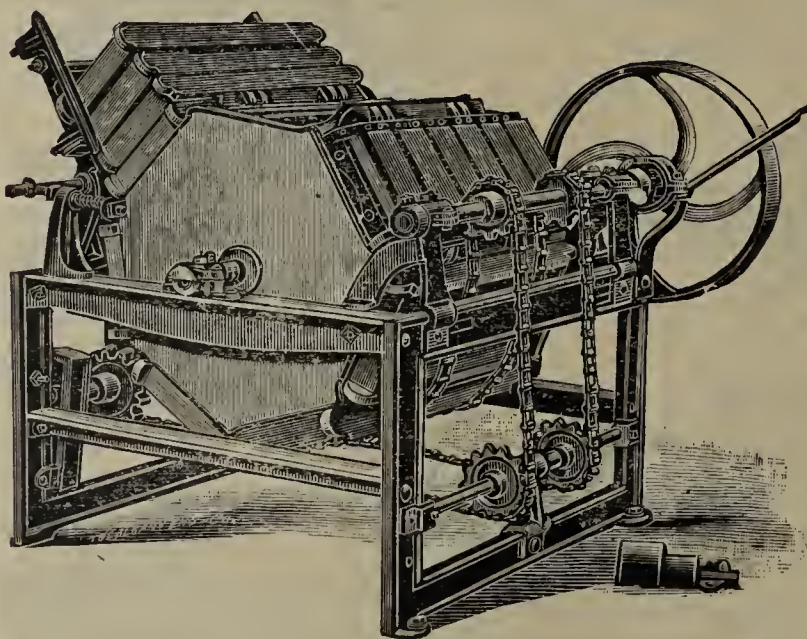
S. G. PHILLIPS, Agent and Patentee, 161 Grand St., Rahway, N. J.

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NEW CHAMPION

BRICK MOULD

## SANDING MACHINE.



J. A. Buck, the Inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine, having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton to letters patent for said machine.

The "New Champion" is a great improvement over the old "Champion," doing away with belts and gearing, and being much more simple and durable.

There has been a large number of the Improved Champion Sanding Machines sold this season and they are giving the very best satisfaction. Prices so reduced that no yard can afford to be without one.

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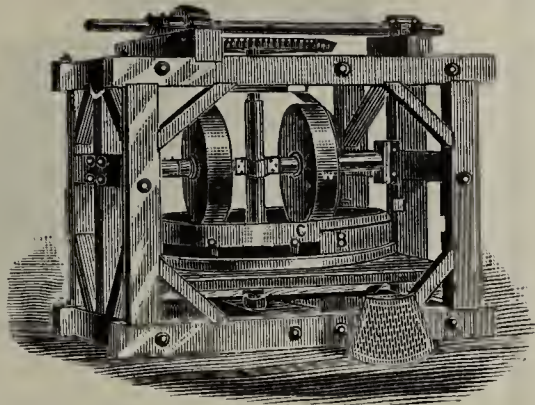
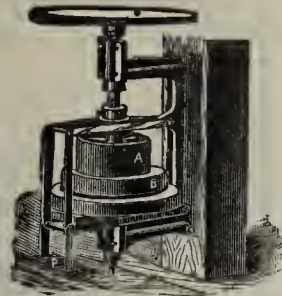
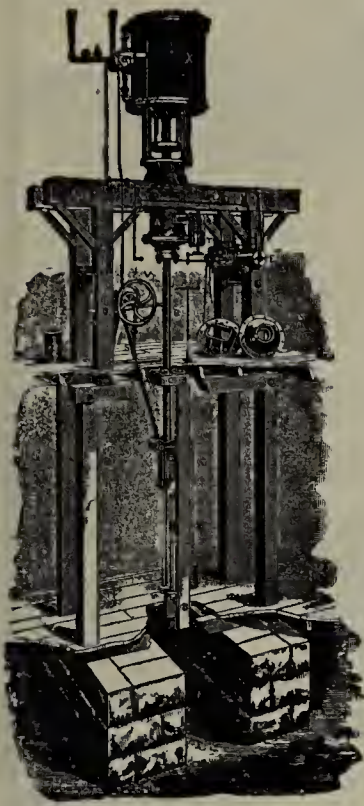


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4000 TO 5500

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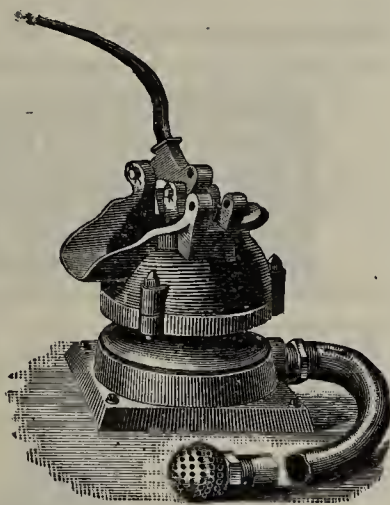
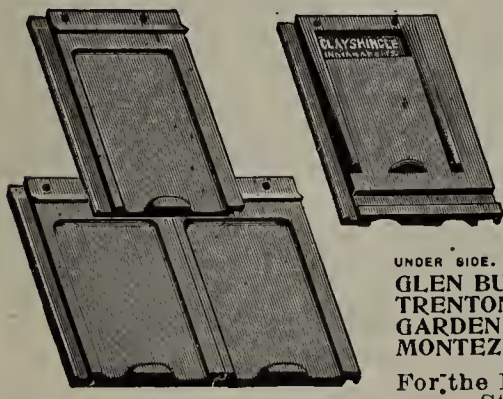
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These Pumps are simple, durable and low-priced.

A large capacity and easy working pump for **Brick Yards, Water Works, Sewer Contractors, Foundation Builders, Miners, Quarries** or wherever it is desired to raise a *large quantity* of water by *Hand-power*. The pump has large valves (*accessible by hand*) and will pump water containing *sand, gravel, mud, sewage matter, etc.*, without *choking* or any *perceptible wear*.

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Hard burned, of the best clays. Color, bright terra cotta red. Weight seven pounds per square foot, lighter than slate.

**Fire-Proof, Water-Proof, Frost-Proof, Everlasting.**

No cement. No paint. A non-conductor—Cooler in summer. Roofs now on show for themselves. The most beautiful and cheapest tile roofs in the country. Orders promptly filled. For prices, etc. address the nearest of the following factories:

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For coloring Brick, Mortar and all Clay Products a deep and permanent red. Most, if not all, colors in the market, are artificially prepared. Colorific is a natural color. References and directions furnished for use. Sample free. Ask for price of  
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ESTABLISHED 1845.

Clay in stock in any quantity, in barrels and bulk by the carload.

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The Baltimore and Ohio Southwestern Railway has arranged a series of Home-Seekers' excursions to points in Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi and Louisiana at one fare for the round trip.

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Tickets will be good for twenty days, with stop-over privileges in State to which tickets are sold.

A splendid opportunity to visit the Valley of Virginia and other points South.

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DEPART.	
No. 20 Passenger.....	7:05 a. m.
*No. 22 Passenger.....	1:20 p. m.
No. 24 Passenger.....	7:00 p. m.

ARRIVE.	
*No. 21 Passenger.....	10:30 a. m.
No. 23 Passenger.....	2:50 p. m.
No. 25 Passenger.....	6:20 p. m.

Trains not marked run daily except Sunday  
\*daily, †daily except Saturday.

No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. & A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west.

For time tables or any other general information call on any agent of Lake Erie & Western or Ft. W. C. & L. railroads, or address C. F. DALY, H. C. PARKER, General Pass Agt Traffic Manager, Indianapolis, Ind.

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A hole in the rim—

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Constitute the greatest improvement ever attempted in Pneumatic Tire construction.

Found on Victor Bicycles only. Best things are always reserved for Victors.

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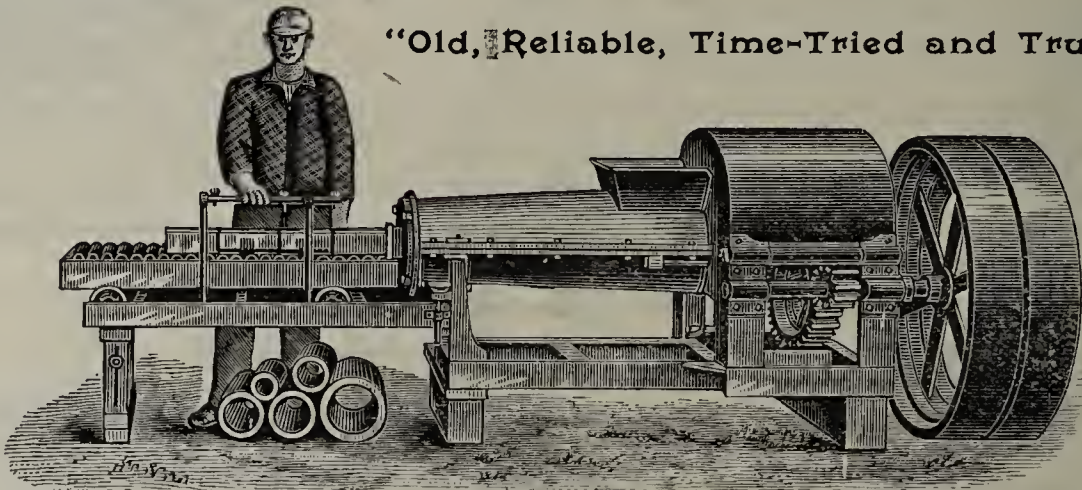
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"Old, Reliable, Time-Tried and True."



## P. H. Kells, the Original Inventor of the Auger Machine.

This machine works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. Patented June 22nd, 1880; and February 12, 1884. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

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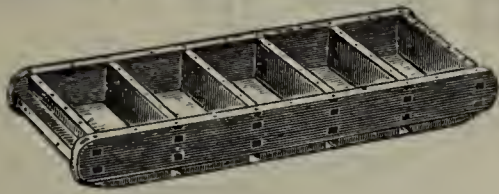
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Sole Manufacturers for the Dominion of Canada of the above machines, also makers of the NEW QUAKER BRICK MACHINE.



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—MANUFACTURERS OF ALL KINDS AND SHAPES OF—



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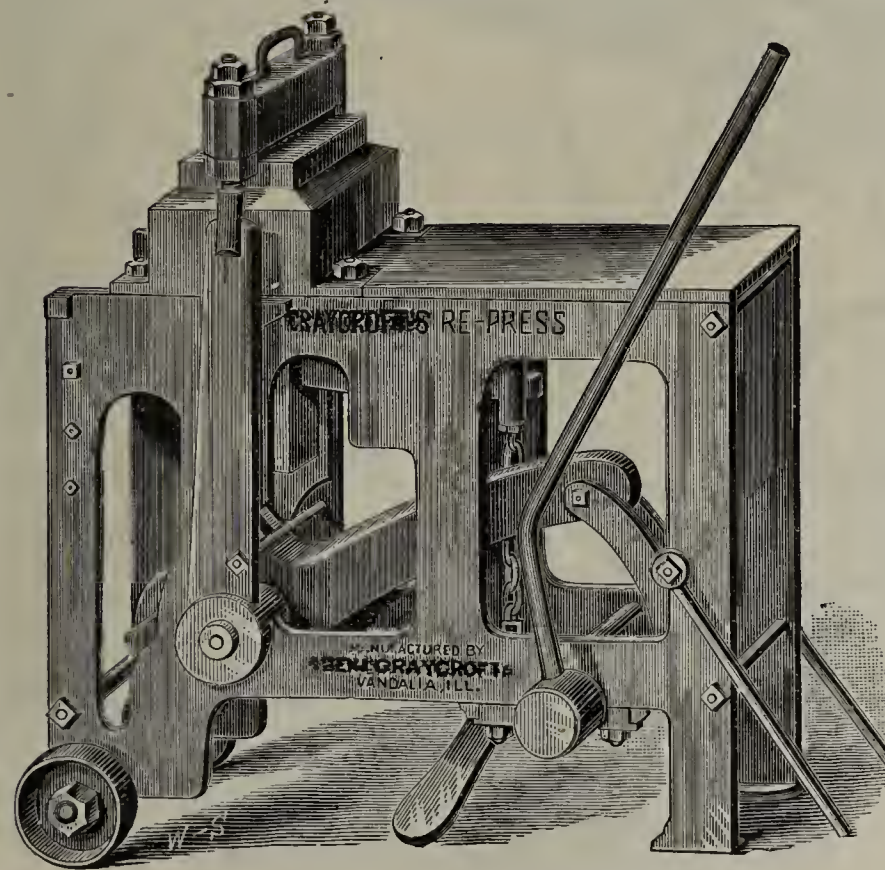
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Approximate Weight, 900 Pounds.

This Re-press, Fully Guaranteed, will be shipped to Responsible Parties on Trial for a Reasonable Time.

This press has all modern improvements, and is equal to any in the market.

It is manufactured of steel, wrought and cast iron, and combines strength, power and durability.

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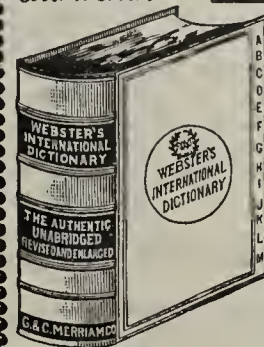
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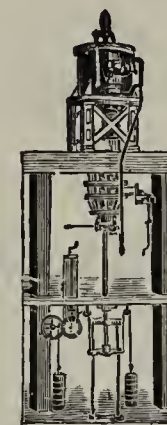
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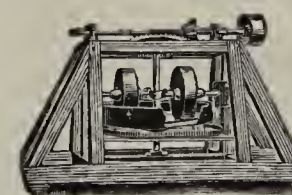
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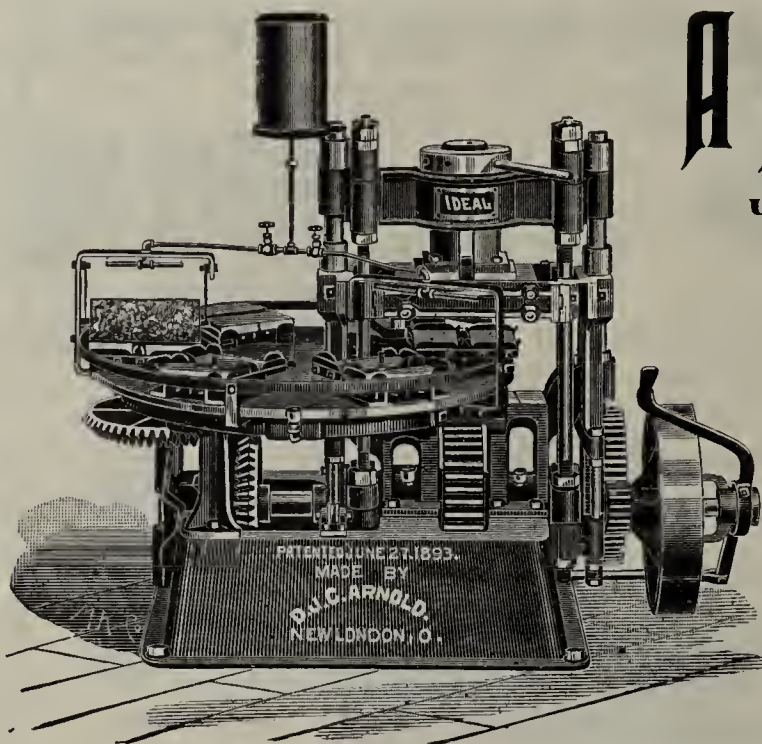
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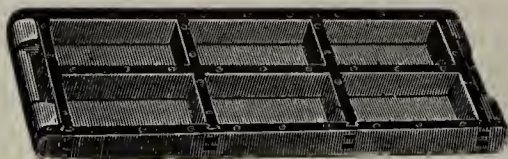
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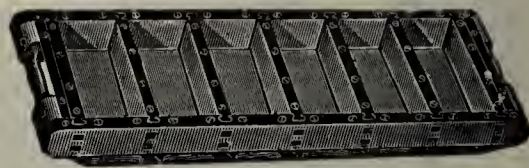
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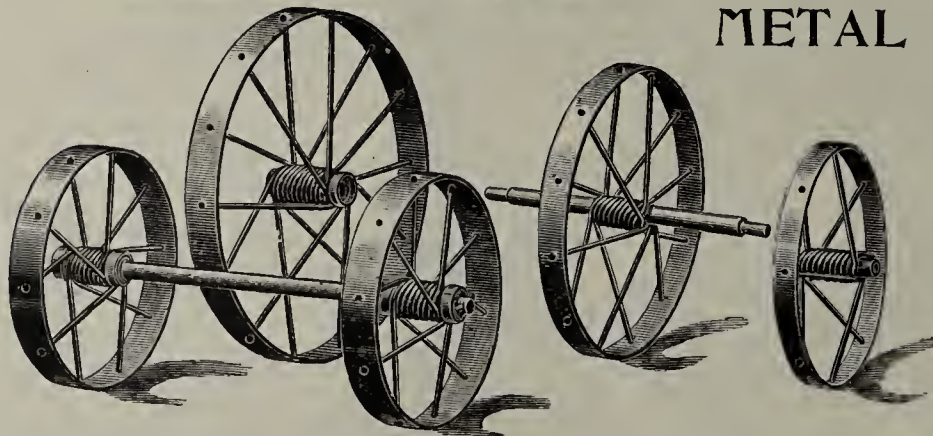


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A Full Line of Brick and Tile Yard Supplies.

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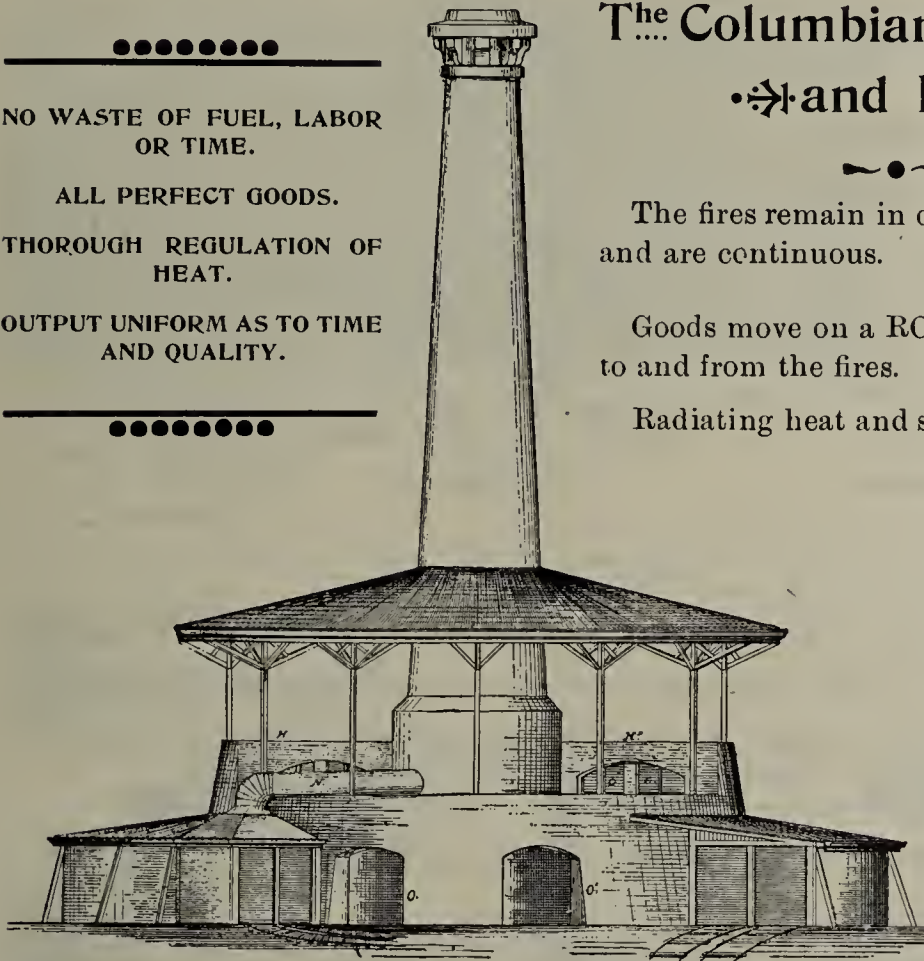
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ALL PERFECT GOODS.

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The fires remain in one division ONLY  
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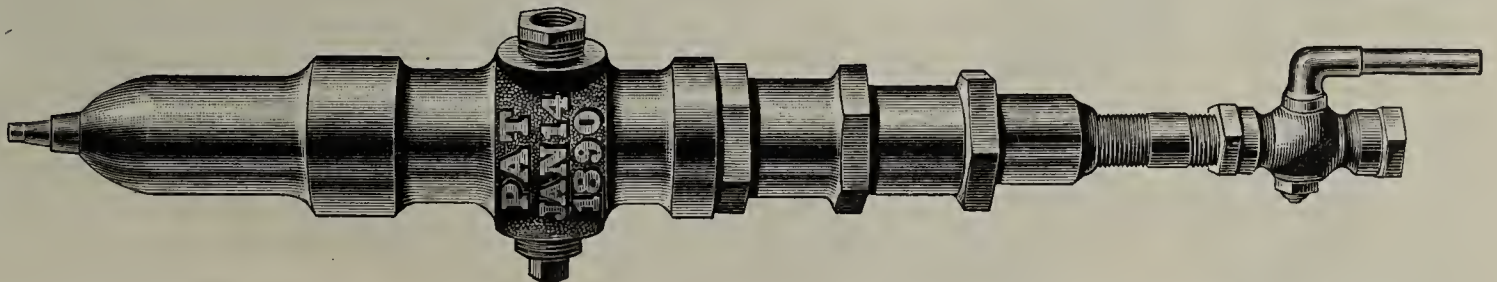
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Office Waters Pierce Oil Company.

HYDRAULIC PRESS BRICK CO., ST. LOUIS, July 21st, 1894.  
CITY.

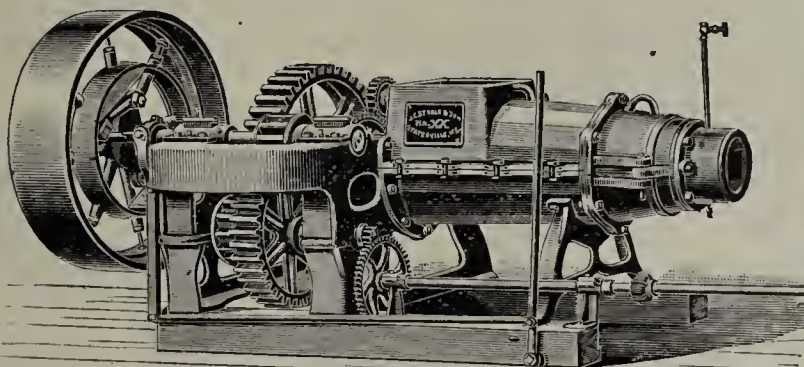
GENTLEMEN:—Thinking you would like to know, we advise you  
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a saving of about 16 per cent. in consumption of fuel oil over other  
burners we have been using and experimenting with. We will take  
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Yours truly, (Signed) A. M. FINLAY, Vice-President.

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For particulars write

HYDRAULIC PRESS BRICK CO.,

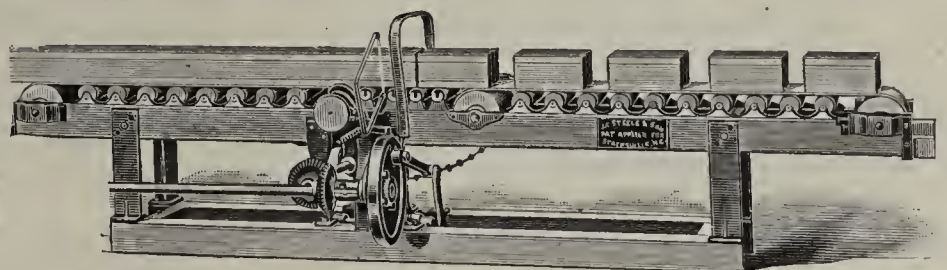
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The New South XX.

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Write to us for catalogue and prices of our New  
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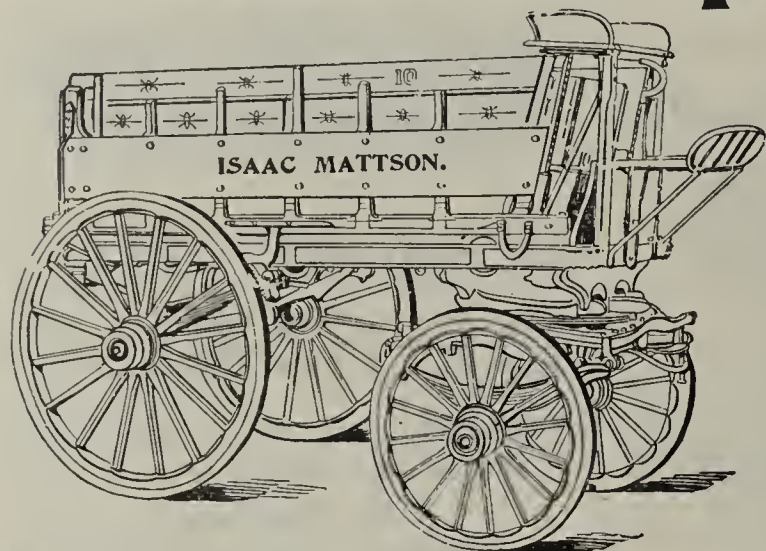


J. C. STEELE & SON, Statesville, N. C.

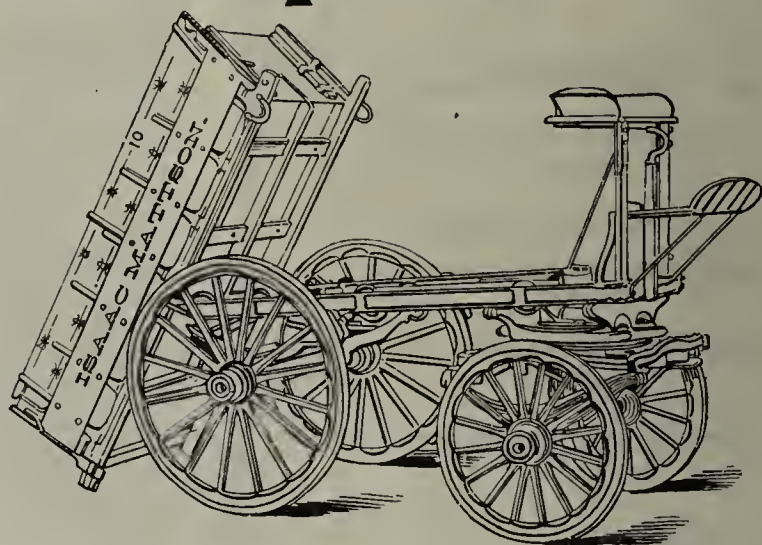
[Mention the CLAY-WORKER.]



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FOR  
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LIME,  
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**W**eight about 2,500 pounds, light running, strong and durable, consequently the best wagon made for brick. Made to carry from 1,000 to 2,000 brick and can be handled as easy as a two-wheel dump cart. The body runs back on rollers. Also manufacture a line of carts, wheelbarrows and brick yard supplies. Send for price list, etc.

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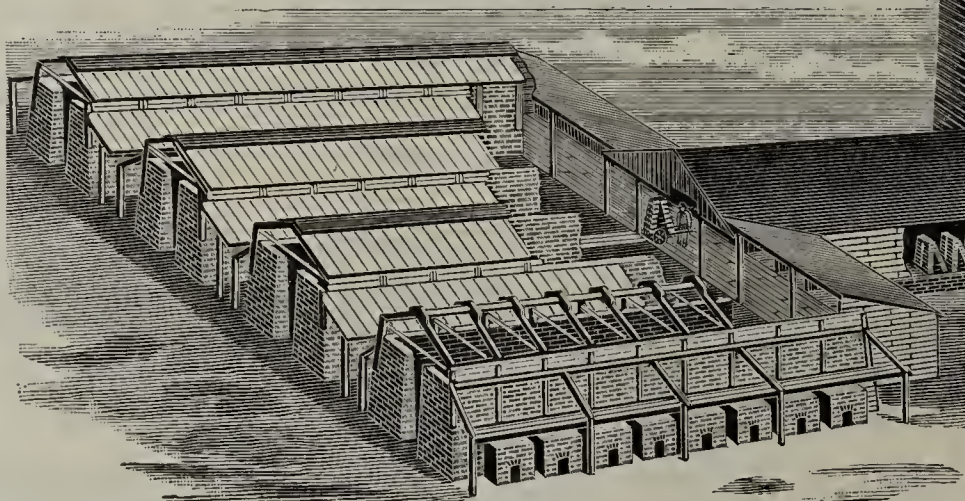
## The Mock Portable Rack and Pallet System FOR HANDLING BRICKS.

The Most Expeditious, the Safest and Easiest Method of Handling Brick from Machine to Kiln.

**IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.**

What Users say of the  
MOCK SYSTEM.

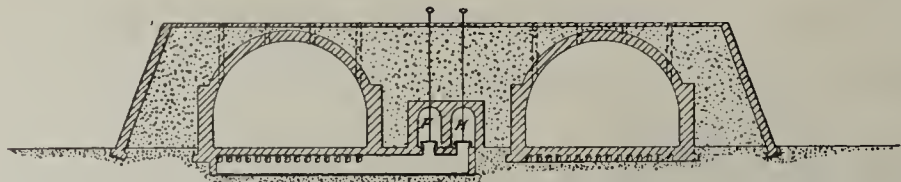
Mr. J. C. Adams, Indianapolis, Ex-Pres. of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for four seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."



**W**E are prepared to furnish complete plans and specifications for the erection of brick works of any desired capacity and solicit correspondence from those desiring further information relative to our system of handling brick.

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**Marks a Great Advance in the Art of Continuous Burning**

Accuracy of results reduced to a certainty.  
Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.  
Under ordinary circumstances the kiln pays for itself in six months.  
Do not decide on kilns before making a thorough investigation.  
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Yours truly

SAN JOSE, Cal., Aug. 25, 1893.

PETERSEN BRICK CO.,  
Per H. M. STAMMER, Superintendent.

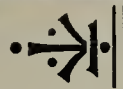
For particulars address

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# The BOSTON BRICK ASHLAR.

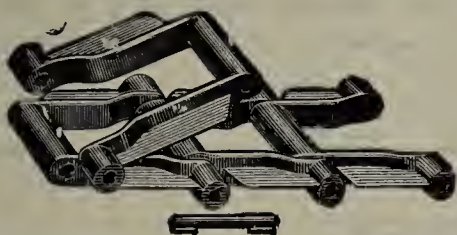
(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)  
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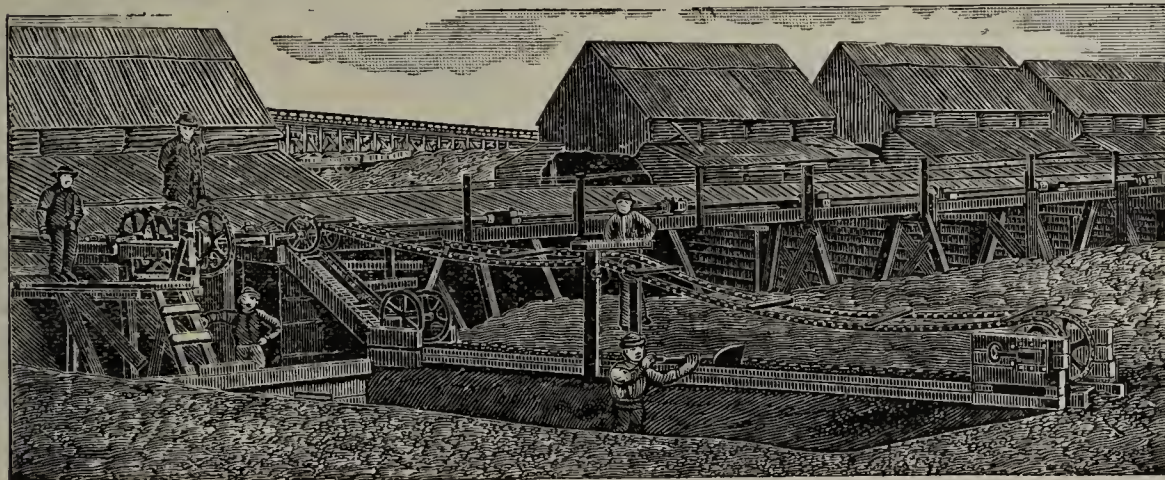
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ENGINEERING WORKS,  
APPROVED APPLIANCES FOR  
Elevating, Conveying & Transmission of Power

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Mey Patent Clay Elevator.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

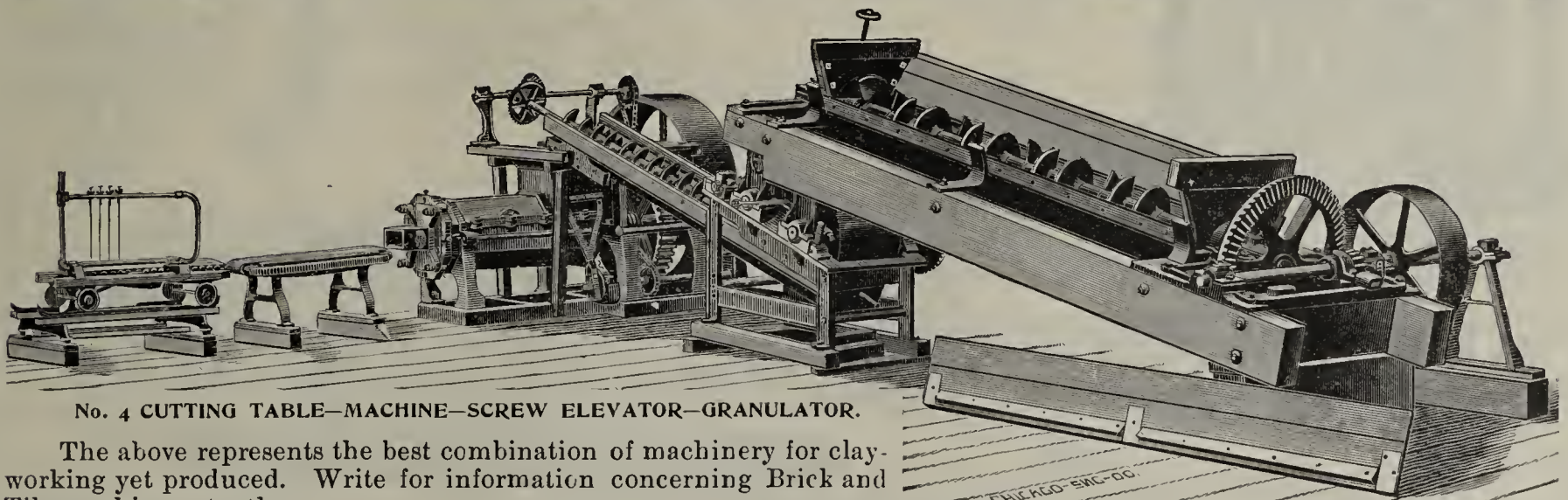
**Make Many More  
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
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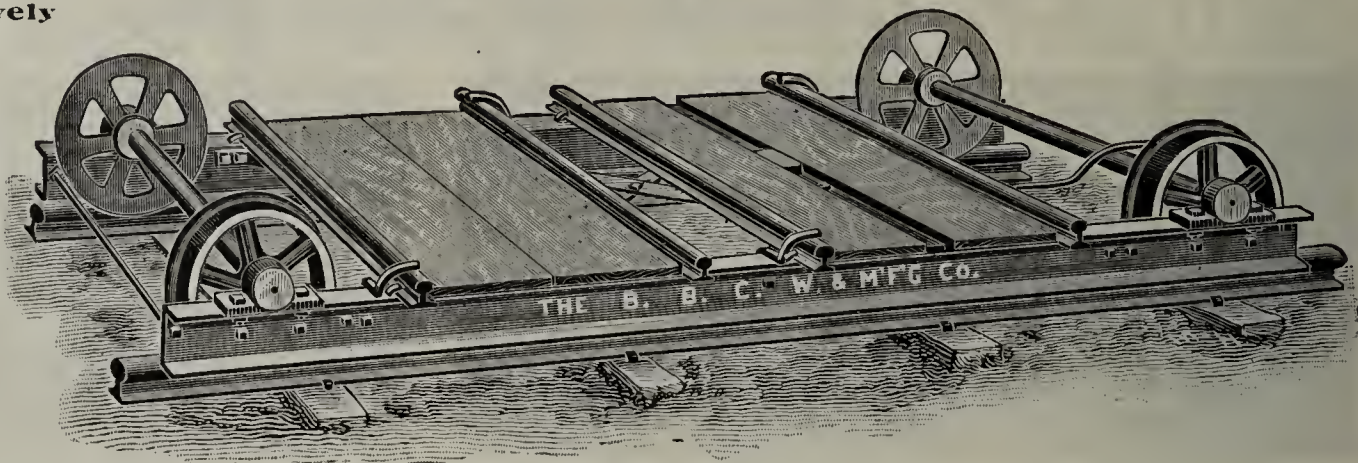
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ALL OTHERS manufacture them simply as a side-line. This enables us to turn out better goods for less money than others and our experience has taught us to build nothing but

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Please mention The Clay-Worker.

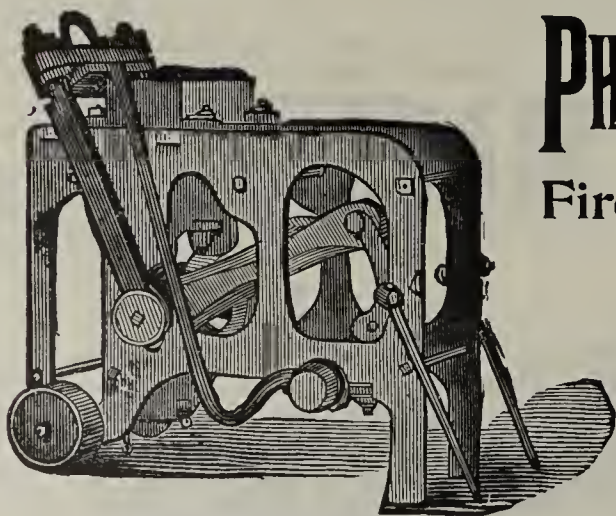
## Brick Machines, Pug Mills, . . . Disintegrators,

...OF THE **L**ATEST  
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COMPLETE OUTFITS A SPECIALTY.

GET OUR PRICES AND EXAMINE OUR RECORD.

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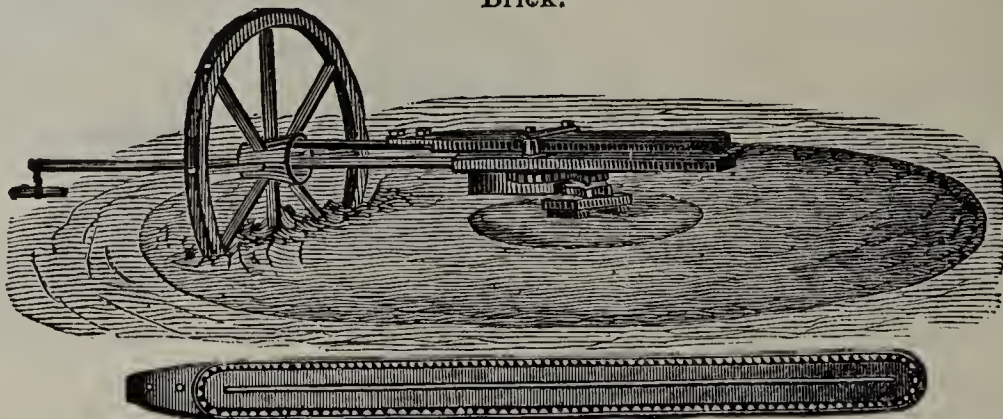
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## PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.

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Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.



STEAM ENGINES,  
STEAM BOILERS,  
STEAM PUMPS,  
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## DO YOU MAKE DRY PRESS BRICK?

PLAIN AND ORNAMENTAL  
... BRICK MOLDS,  
FORMS AND PLUNGER  
FEET, FOR DRY  
PRESSED BRICK.

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DESIGNERS AND MANUFACTURERS OF

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MANUFACTURED BY

# A. M. & W. H. WILES,

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These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

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We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



# BRICK

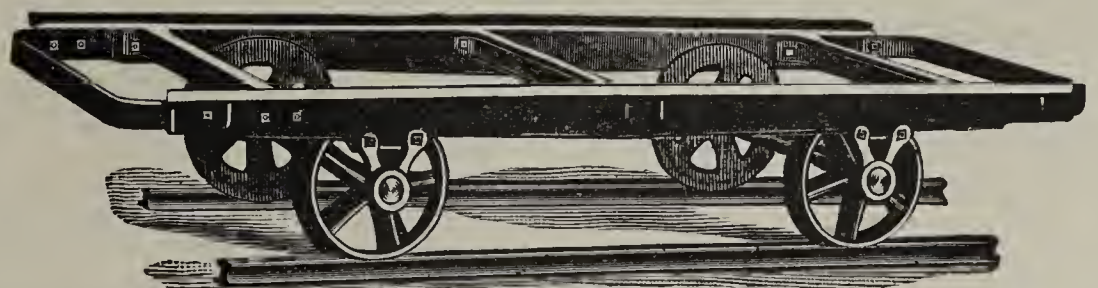
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STYLE 28.

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The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

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February 28, 1890.

Messrs. Main Belting Co., Chicago:

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our clats of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

## MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

Thompson's Water-Proof Belt Dressing for

Leather, Rubber and Canvas Belting.

No user of Belting can afford to be without it.



# IMPORTANT IMPROVEMENTS

IN BURNING ALL KINDS OF BRICK.

BRICKMAKERS before deciding upon putting in new kilns or altering old ones, ing address for information. We control the Patents of the W. A. WILFORD which holds the lead, also, our Up and Down Draft to meet the requirements of They can be built for one half the cost of any other kiln of the same capacity, and, ness and color, and with from 50 to 75 per cent. less fuel. Easy and simple to handle, by the burner while burning, therefore, leaving no excuse for bad burns. Results The leading Brickmakers are using our Kilns with complete success. Our charges builders and burners for same.

should write to the follow-  
CONTINUOUS KILN,  
all Brick and Tilemakers.  
burns all of uniform hard-  
as every brick can be seen  
are guaranteed or no money.  
are low. We keep expert

OFFICE OF  
**BRUSH BROS.,**  
MANUFACTURERS OF  
**ALL KINDS OF BUILDING BRICK.**

OFFICE: No. 2 Builders' Exchange.

WORKS at East Buffalo.

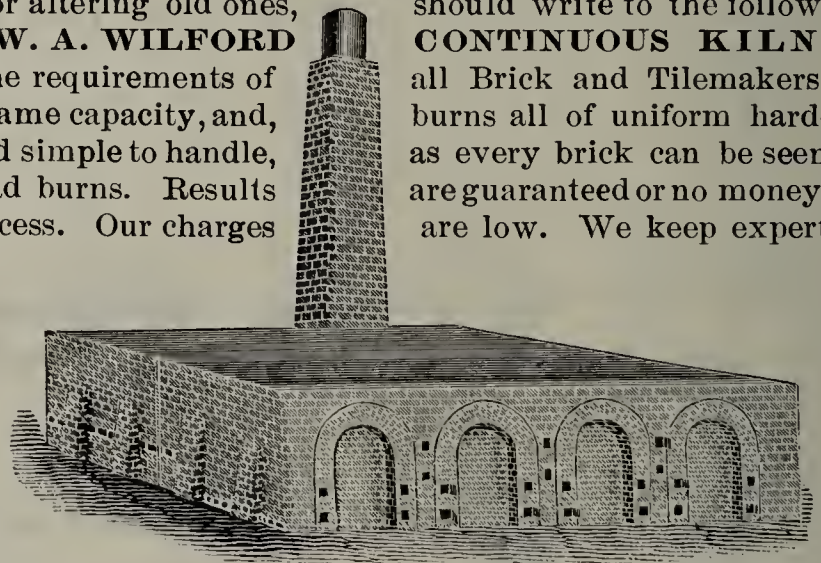
Wilford Patent Kiln Co., Toronto.  
W. A. Wilford, Man.

DEAR SIR:—Having seen your Kilns in operation, which, in our opinion, meets the requirements of Brickmakers in bringing out uniform burns, with a small amount of fuel, we have decided to put in one of your large size kilns, and herewith enclose order for same, with the amount charged, and ask you to come on at once, and superintend erection of same.

Yours truly,

BRUSH BROS.

Write us for Information and Testimonials.



BUFFALO, N. Y., July 7, 1894.

## The Wilford Patent Kiln Co.,

Correspondence Solicited.

TORONTO, CANADA.



# THE BEST KILN ON EARTH.

Is none too good, and for that reason, if you wish to improve your method of burning, we solicit a thorough investigation of our kiln, which has MORE COMBINED POINTS OF MERIT THAN ANY OTHER KILN.

Read the following testimonial, then come and judge for yourself:

ST. LOUIS, Mo., Nov. 29th, 1892.

MESSRS. WM. & S. H. ALSIP,  
BELLEVILLE, ILL.

GENTLEMEN:—After using eight of your 170,000 capacity Patent Down and Up Draft Kilns for the best part of two seasons, I take great pleasure in saying, that in use for burning fine pressed and ornamental brick, I do not think it has its equal in the market, or in use to-day. In your kiln, on account of its hollow patent bag wall where all other kilns that I have any knowledge of, require common brick to be packed tight in order to protect the pressed brick, or else have same overburned at this point and destroyed as pressed brick, we burn our most costly brick, being the shaped and ornamental brick. The reason of the delay in sending you unsolicited this testimonial is accounted for in the unsatisfactory results we were meeting with in drying off in the beginning (no fault of the kiln however) and I did not want any qualifications or explanation contained therein. Since the application and aid of the exhaust fan in drying off our brick with the escaping heat of a cooling kiln, the results are under proper attention on the part of the man in charge of the kiln most satisfactory and complete. Bespeaking for you and your kiln the largest prosperity, and the best success, I remain

Yours very truly,

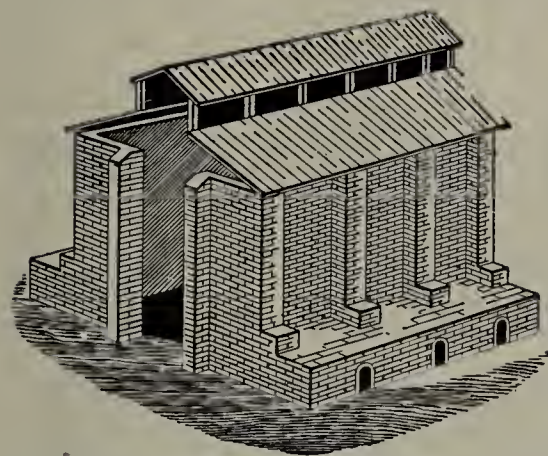
ANTHONY ITTNER.

For further information and Illustrated Circular, address,

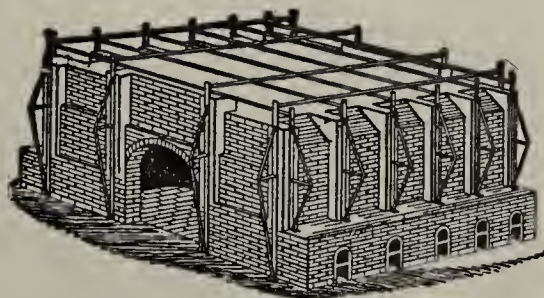
WM. & S. H. ALSIP,

[Mention the Clay-Worker.]

BELLEVILLE, ILLINOIS.



## LOUIS H. REPPPELL'S IMPROVED - KILNS For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

### MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

.. .. VITRIFIED PAVING BRICK. .. ..

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

## TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, Mo., July 17, 1892. }

H. REPPPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }  
ST. LOUIS, Mo., October 18, 1892. }

MR. LOUIS H. REPPPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,  
COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

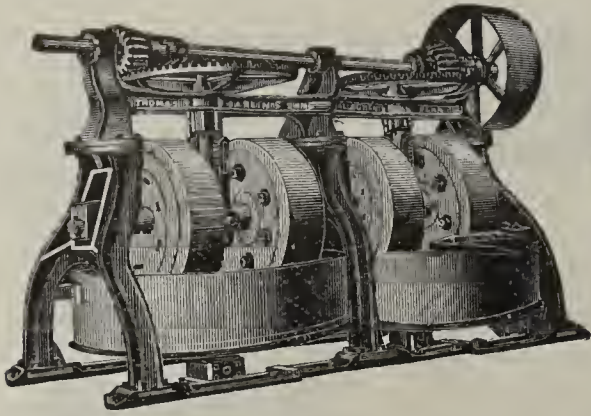
For further particulars and full explanation, please address me, and oblige

LOUIS H. REPPPELL,

1,913 Indiana Ave.

KANSAS CITY, MO.





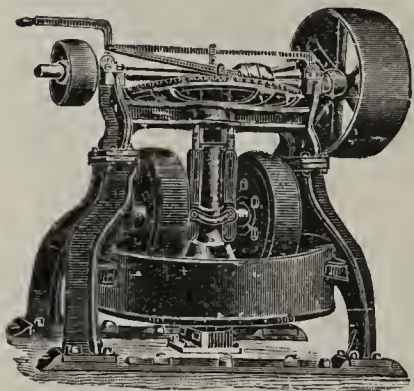
OUR SPECIALTY.

# GRINDING AND MIXING PANS

## Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.

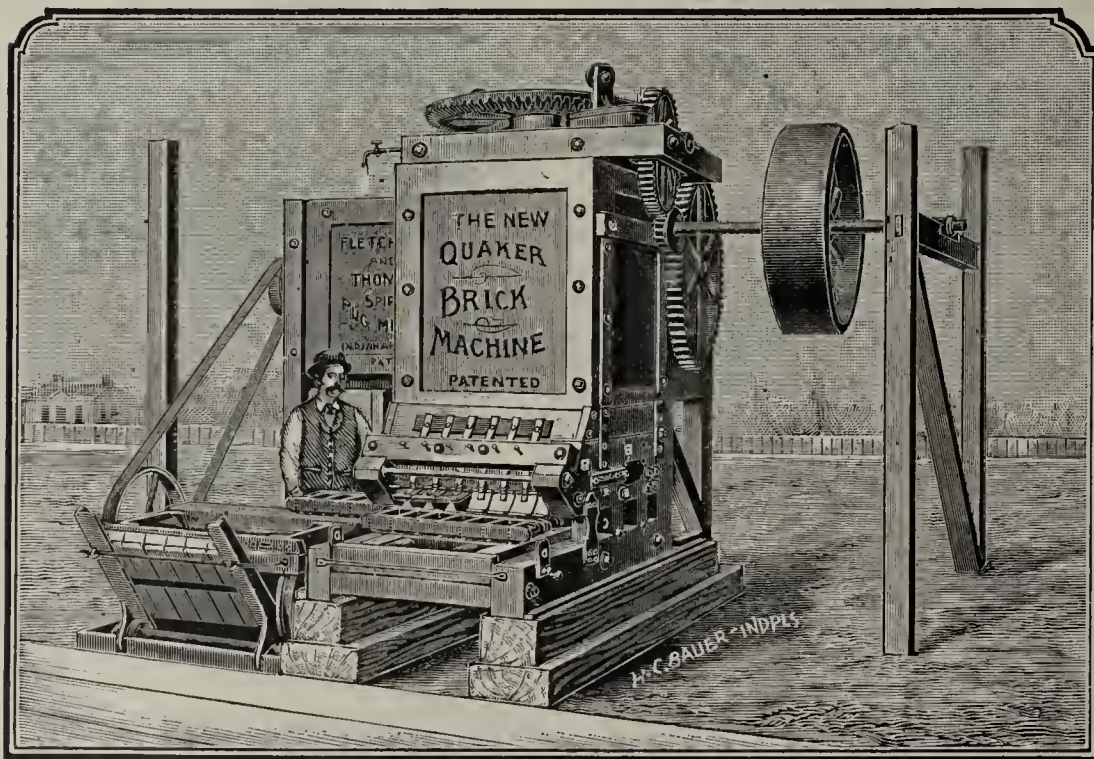
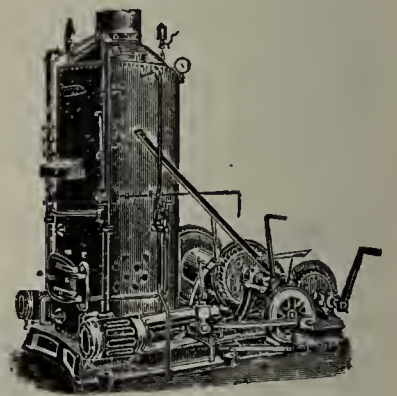


**Thomas Carlin's Sons,**  
 ALLEGHENY, PA.

One 9 foot Dry Pan.  
 One 6 foot Dry Pan.

} IN STOCK:

{ One 8 foot Wet Pan.  
 { Eight 3 foot gauge Dump Cars.



EXTRA HEAVY, COMBINED OUTFIT CAPACITY 40,000 TO 50,000 PER DAY.

LATEST IMPROVED

## Brick Machinery and... Brickmakers' Supplies.

SPECIALTIES:

The NEW QUAKER and MONARCH

Tempered Mud Machines and

The NEW DAYTONIAN

Stiff Mud Brick and Tile Machines.

Paving Brick, Fire Brick, Building Brick,  
 Repress Machines, Disintegrators, Pug Mills, Mold  
 Sanding Machines, Molds, Barrows, Trucks, Engines,  
 Boilers, Shafting, Pulleys, Belting, etc., Dump Brick  
 Wagons, Clay Carts, Kiln Doors, Grate Bars, Steam  
 Pumps.

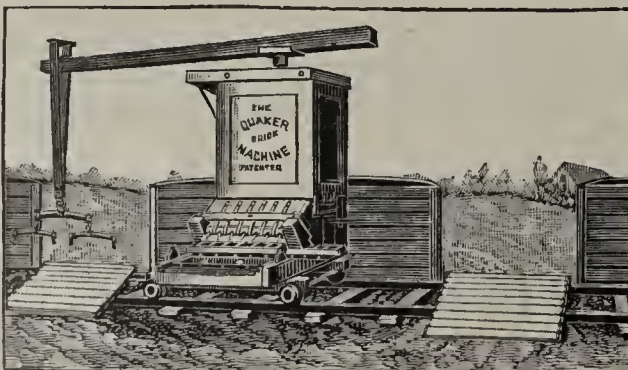
THE NEW MODEL

### QUAKER

HORSE POWER.

The best machine for  
 the man of moderate  
 means ever used.

Capacity 15,000 to  
 20,000 per day.



WE CONTRACT TO ERECT AND EQUIP

PLANTS COMPLETE IN EVERY DETAIL.

Send for Illustrated Catalogue and Special prices before placing  
 your order, as we can save you money.

## S. K. FLETCHER, General Agent,

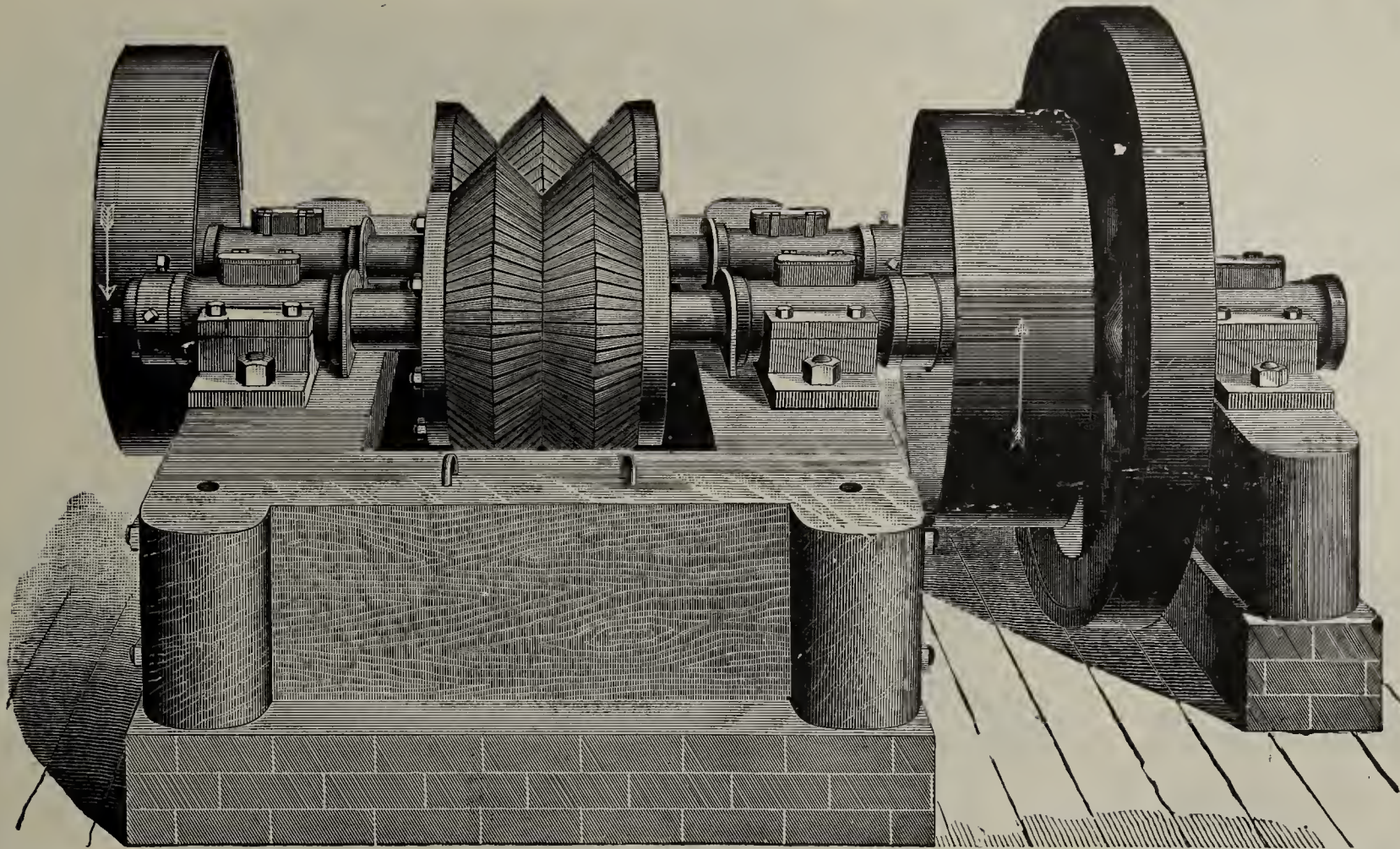
Successor to FLETCHER & THOMAS,

INDIANAPOLIS, IND.



# NEWELL IMPROVED CLAY PULVERIZER

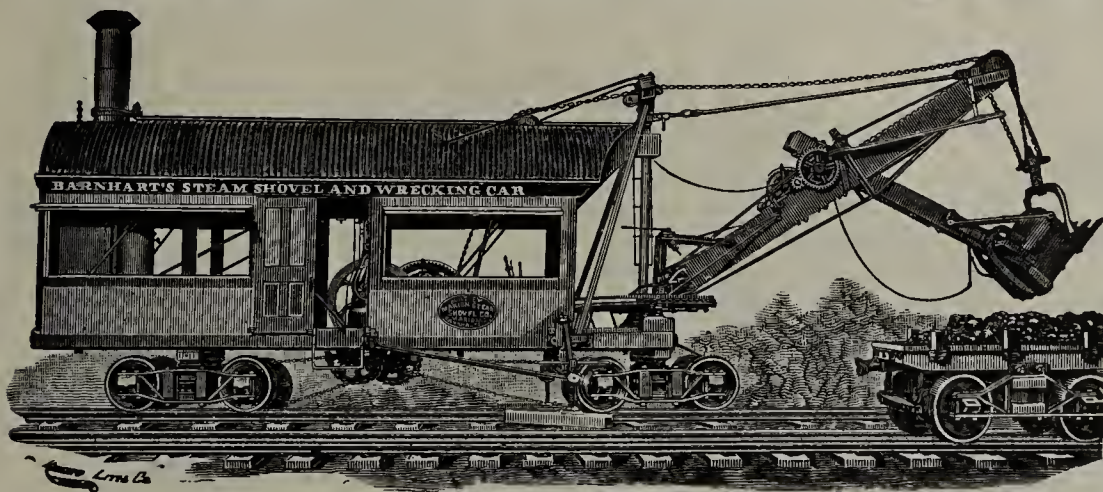
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremyer Building, New York, U.S.A.  
26 Cortland and 21 Dey Streets,

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**  
603 West Center Street,  
**MARION. OHIO.**



STYLE C—¾ YD

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick



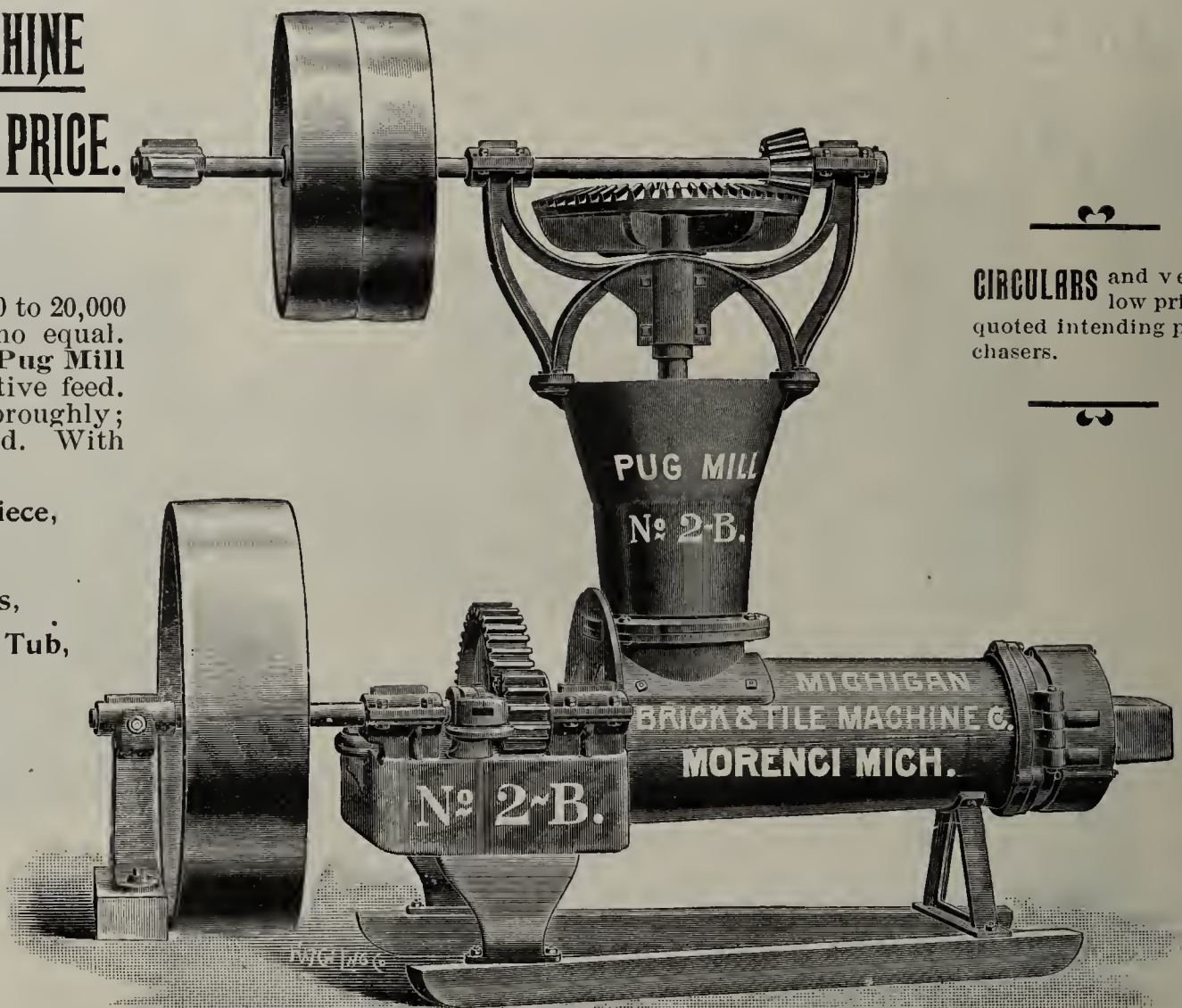
## A SMALL SIZED MACHINE AT A VERY LOW PRICE.

FOR a daily output of 12,000 to 20,000 first class brick it has no equal. For tile it is superior. With Pug Mill as shown in cut it has a positive feed. Mixes and pugs the clay thoroughly; making the output unexcelled. With

Safety Hinged Nose Piece,  
Steel Shafts,  
Extra Long Bearings,  
Solid Main Frame and Tub,

And many other important improvements; it is a very desirable machine to have. Address the Manufacturers,

MICHIGAN BRICK AND  
TILE MACHINE CO.,  
Morenci, Mich.



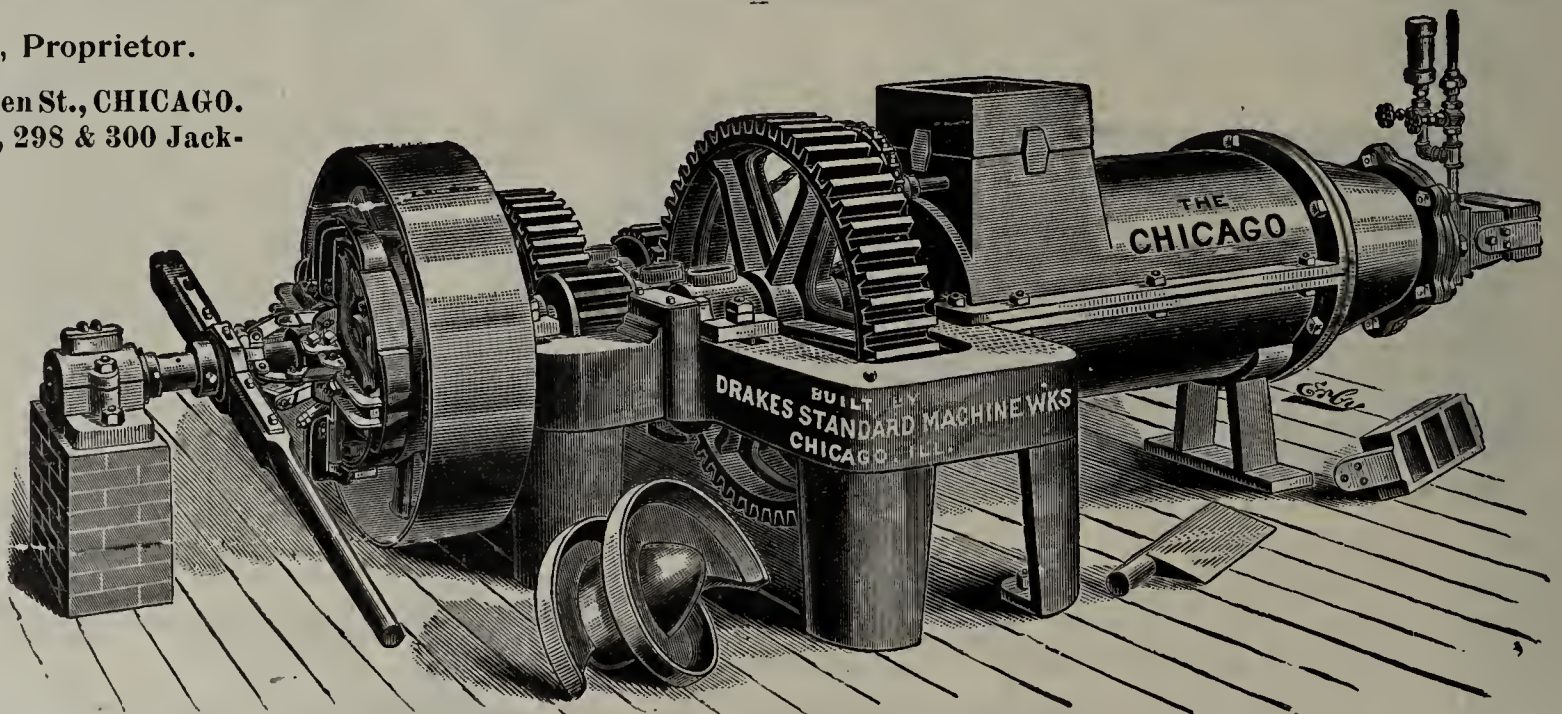
CIRCULARS and very low prices quoted intending purchasers.

# DRAKE'S STANDARD MACHINE WORKS,

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY.

C. T. DRAKE, Proprietor.

Factory, 7 & 9 Garden St., CHICAGO.  
Office & Salesroom, 298 & 300 Jackson Boulevard.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 50,000 brick per day. Surpassed by none. References: Turner Brick Co., Turner, Ill.; John Mooney, Highland Park, Ill.; A. H. Maynard & Son, Waukegon, Ill.; Myers & Toll, Chicago, and others.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, CLAY CRUSHERS, HAND REPRESSES, ETC., ETC.

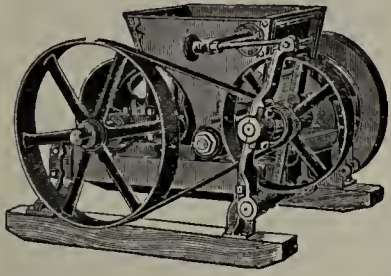
Our "GRANULATORS" are the leaders in Chicago. So says Alsip Brick Co., who are running 11 Granulators; also Hayt & Alsip May, Purington & Bonner Brick Co.; Purington-Kimbell Brick Co.; Purington Brick Co., and many others.

**PRICES REASONABLE.**

**CORRESPONDENCE SOLICITED**



# It's a Sure Thing



That a POTTS DISINTEGRATOR will work any clay direct from the bank. It pulverizes the clay, separates the large stone and grinds the small ones. It never chokes or clogs.



YORK CORNERS, ME., July 30, 1894.

C. & A. POTTS & Co.,

GENTLEMEN:—In reply to your letter of inquiry as to how the two disintegrators purchased of you were doing, will say they are ALL RIGHT.

They do the work satisfactorily in every way. It separates the stone from the clay, and disintegrates the clay thoroughly.

I can recommend it to any one that wants a Disintegrator, believing it to be as good, if not the best in the market.

Very truly yours,

J. P. NORTON.



We ship every machine on trial, if they fail to do as claimed for them, no sale. Write for prices and terms.

**C. & A. POTTS & CO.,**

420 West Washington St.,

INDIANAPOLIS, IND.

MANUFACTURERS OF  
IMPROVED

## CLAY WORKING MACHINERY

OF EVERY DESCRIPTION

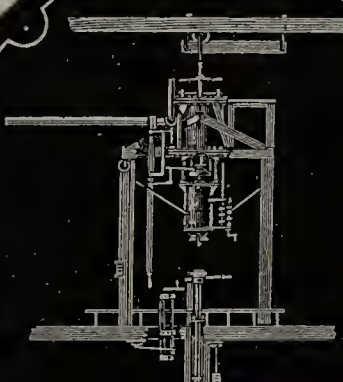
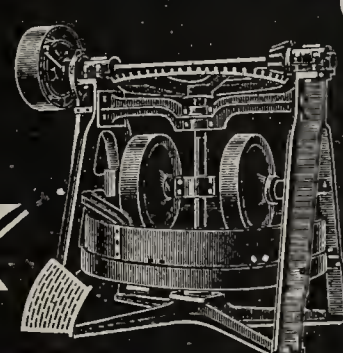
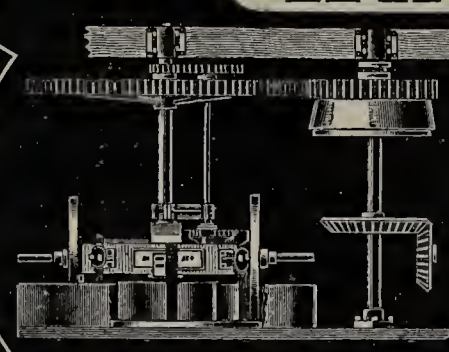
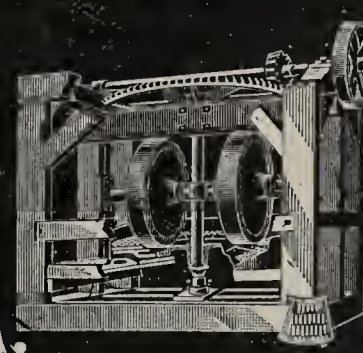
# TAPLIN RICE & CO.

(CLAY MILLS,  
STEAM SEWER PIPE PRESS,  
DRY & WET PANS, DIES, CLAY BLOCKERS,  
POTTERS' WHEELS AND  
MACHINERY OF ALL KINDS.)

## AKRON, OHIO, U.S.A.

PROMPT ATTENTION  
& DISPATCH GIVEN  
TO ORDERS

SEND FOR  
CATALOGUE  
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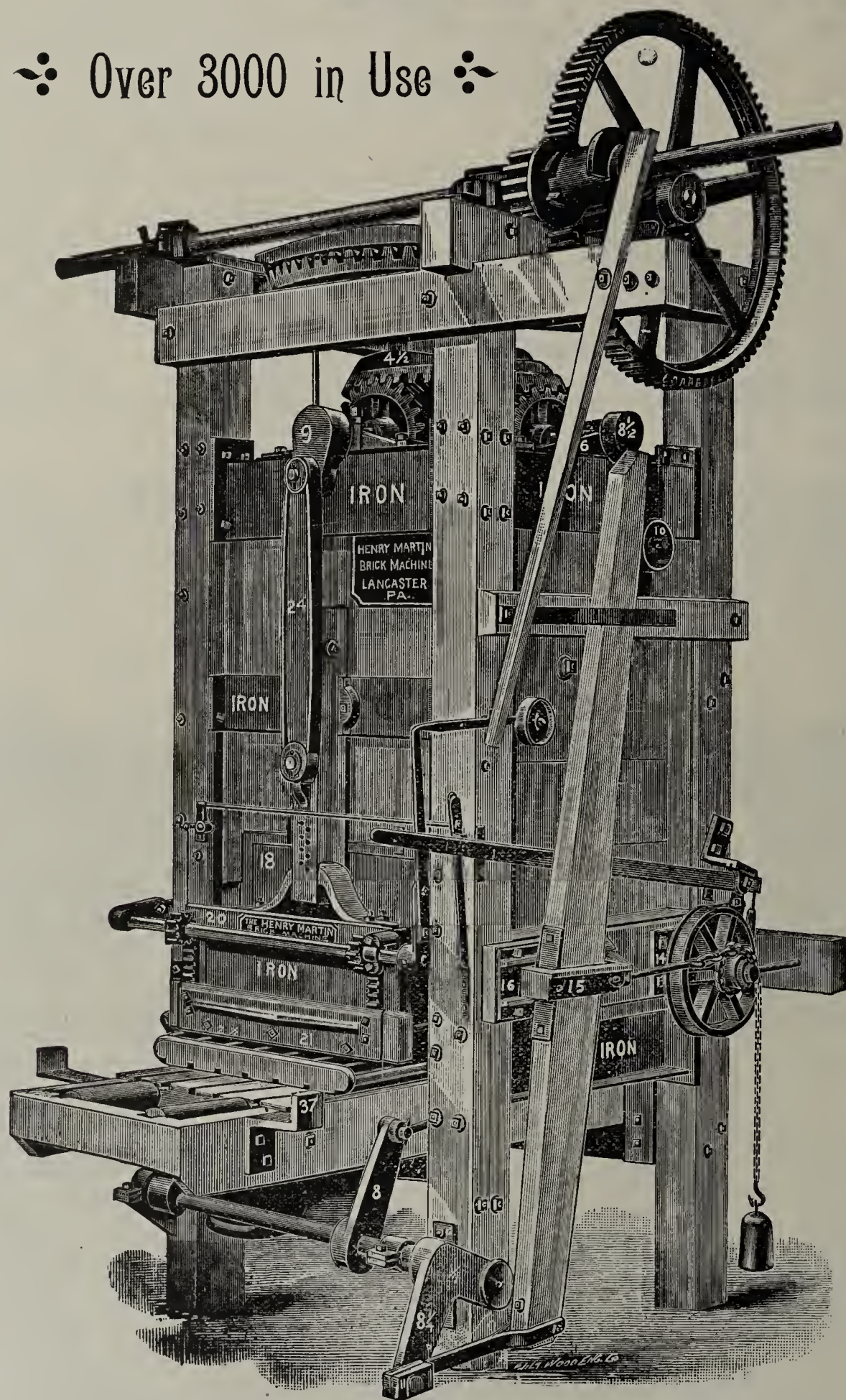







# The PRACTICAL BRICKMAKER'S FAVORITE

❖ Over 3000 in Use ❖

It will work successfully where others have failed.



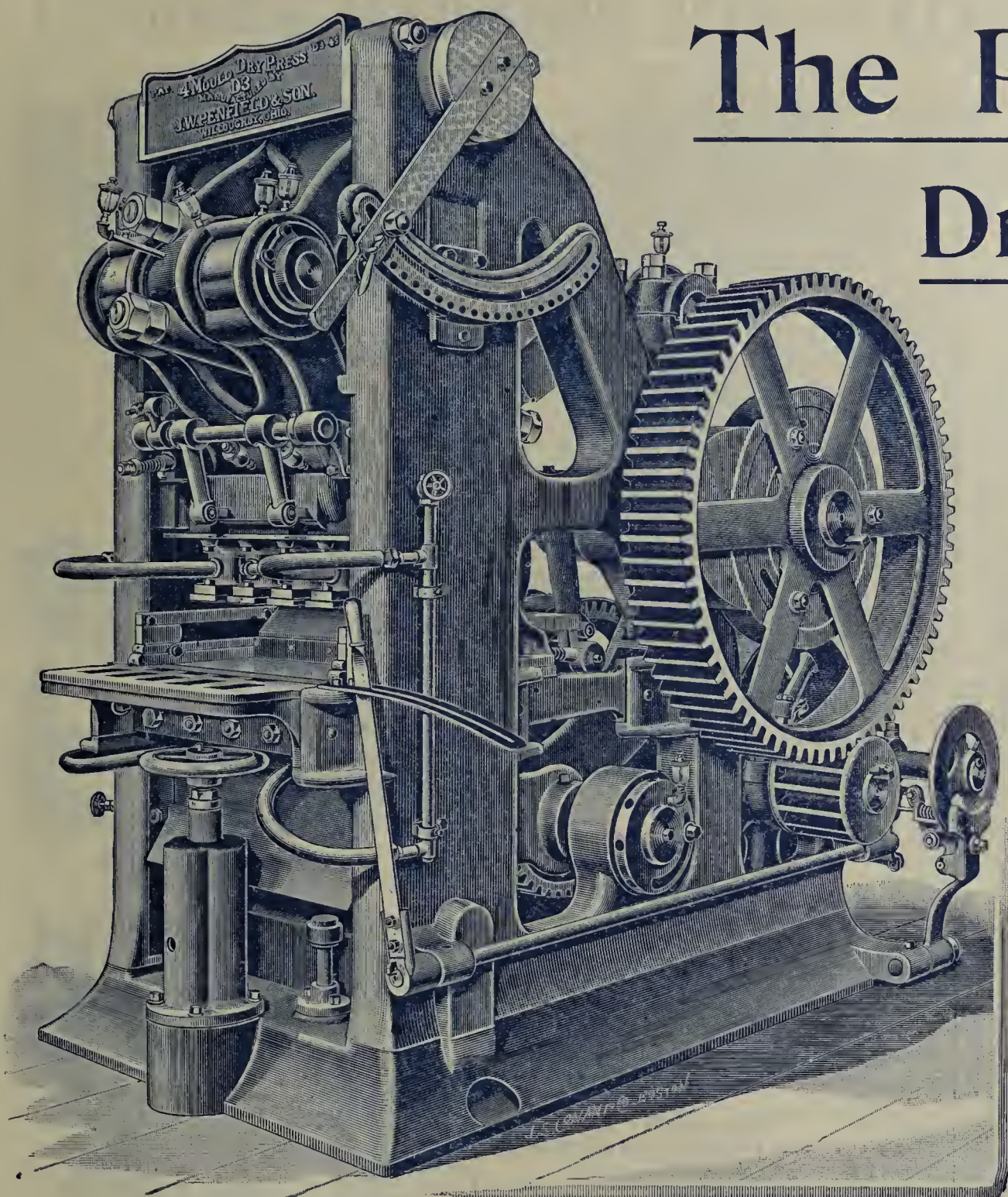
Reliable Estimates and Plans of Complete Plants furnished on application.

WEIGHT, 8000 Pounds.

Send For Catalogue. ~~~~~

THE HENRY MARTIN BRICK MACHINE MFG. CO., Lancaster, Pa.



J.W. PENFIELD & SON  
WILLOUGHBY, OHIO

(THE PENFIELD 4-MOLD PRESS, Model D3.)

# The Penfield

## Dry Press

### Brick Machine

Accomplishes all that other dry press machines do, and then goes ahead and gives the brick an extra pressure with increased force and length of stroke, making the brick denser, stronger and more perfect in every way.

It puts more clay into a brick of a given size than is done by any other machine on the market.

Strength of pressure, length of pressure and repetition of pressure are three of the features which place the Penfield Press and its products ahead of all others.

For particulars, address,

# J. W. Penfield & Son,

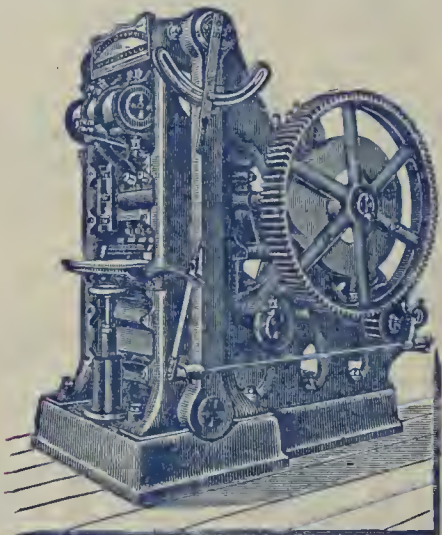
Willoughby, Ohio, U. S. A.

J.W. PENFIELD & SON  
WILLOUGHBY, OHIO



# J. W. PENFIELD & SON, WILLOUGHBY, OHIO, U. S. A.

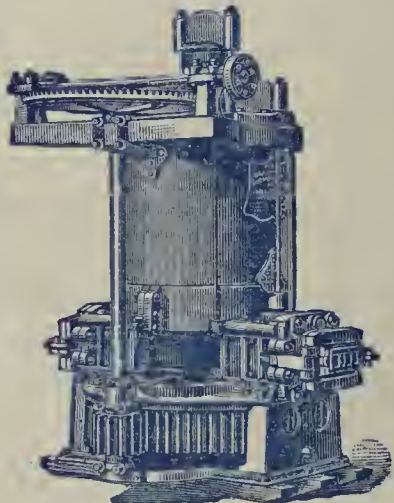
Some Things We Make:



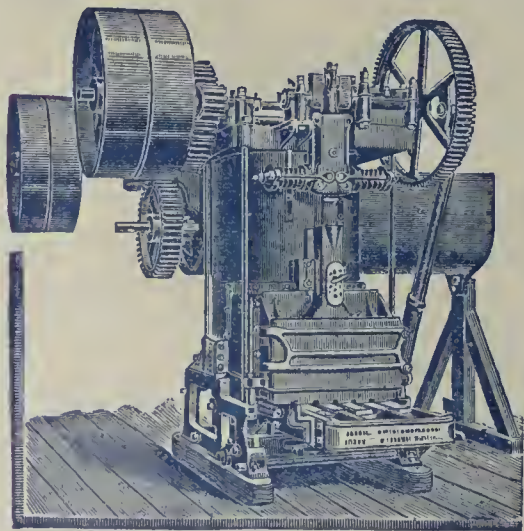
Dry Press Brick Machines.



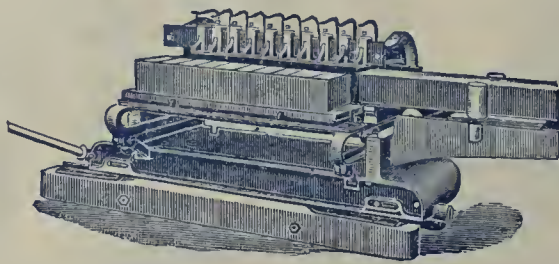
Auger Brick Machines;  
Auger Tile Machines.



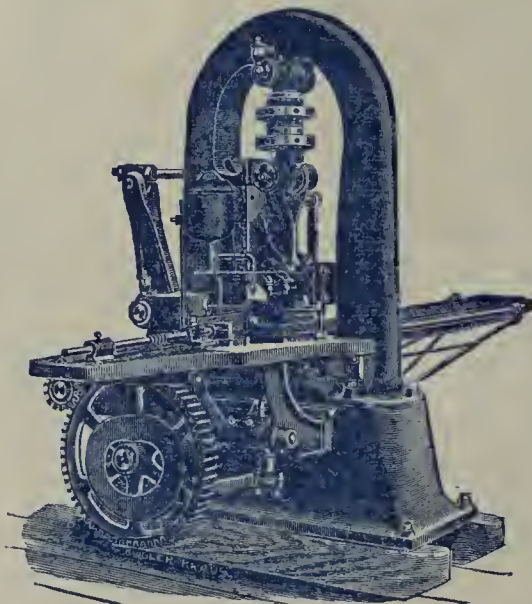
Plunger Brick Machines,  
Also suited for making Tile, Fireproofing, Etc.



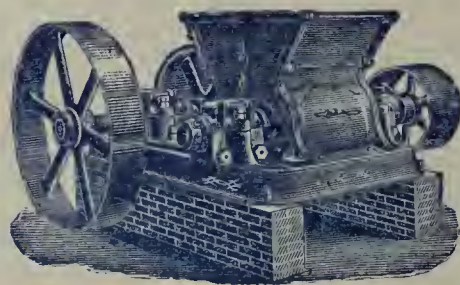
Stock Brick Machines,  
For Sand-Mold Brick.



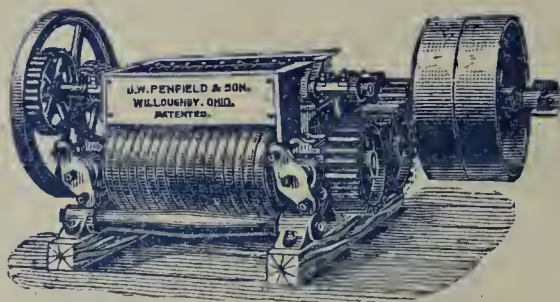
Board Delivery Brick Cutters.



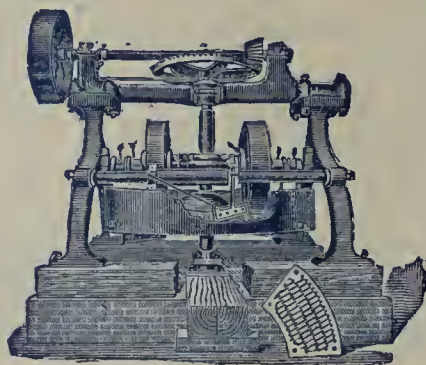
Brick Represses.



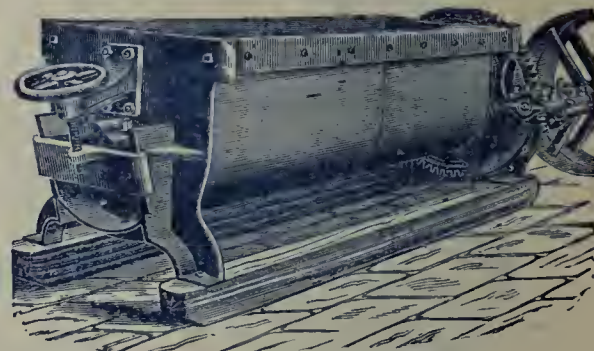
Disintegrators,  
Singly or combined with Crushers or Pug Mills.



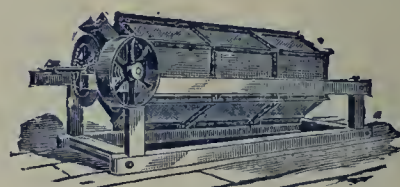
Clay Crushers; Stone Separators.



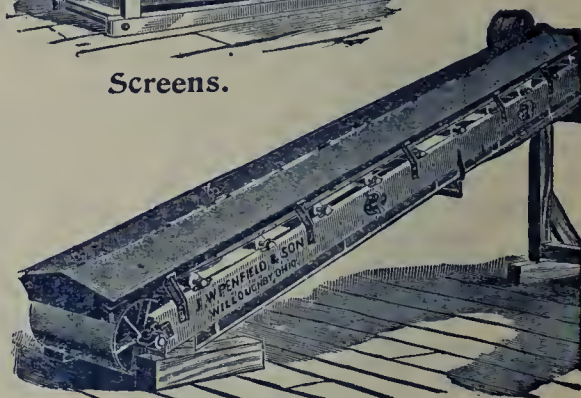
Dry Pans; Wet Pans.



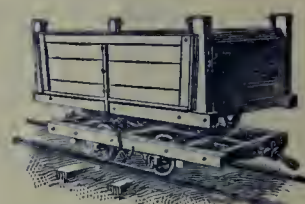
Pug Mills; Granulators.



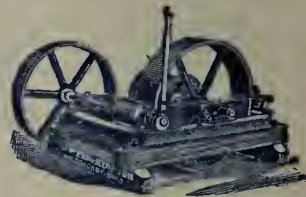
Screens.



Clay Elevators; Conveyors.

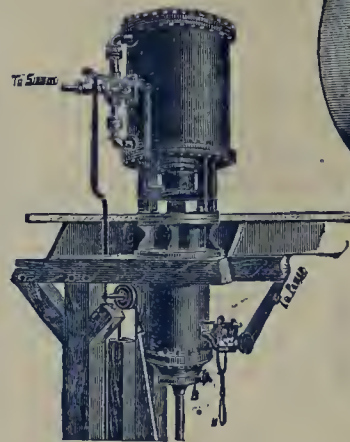
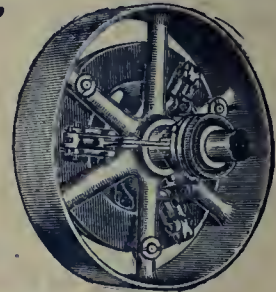


Clay Cars.



Winding Drums.

Barrows; Kiln Castings, Clutch Pulleys,  
Sewer Pipe Presses,  
Etc.



Send for Catalogue.

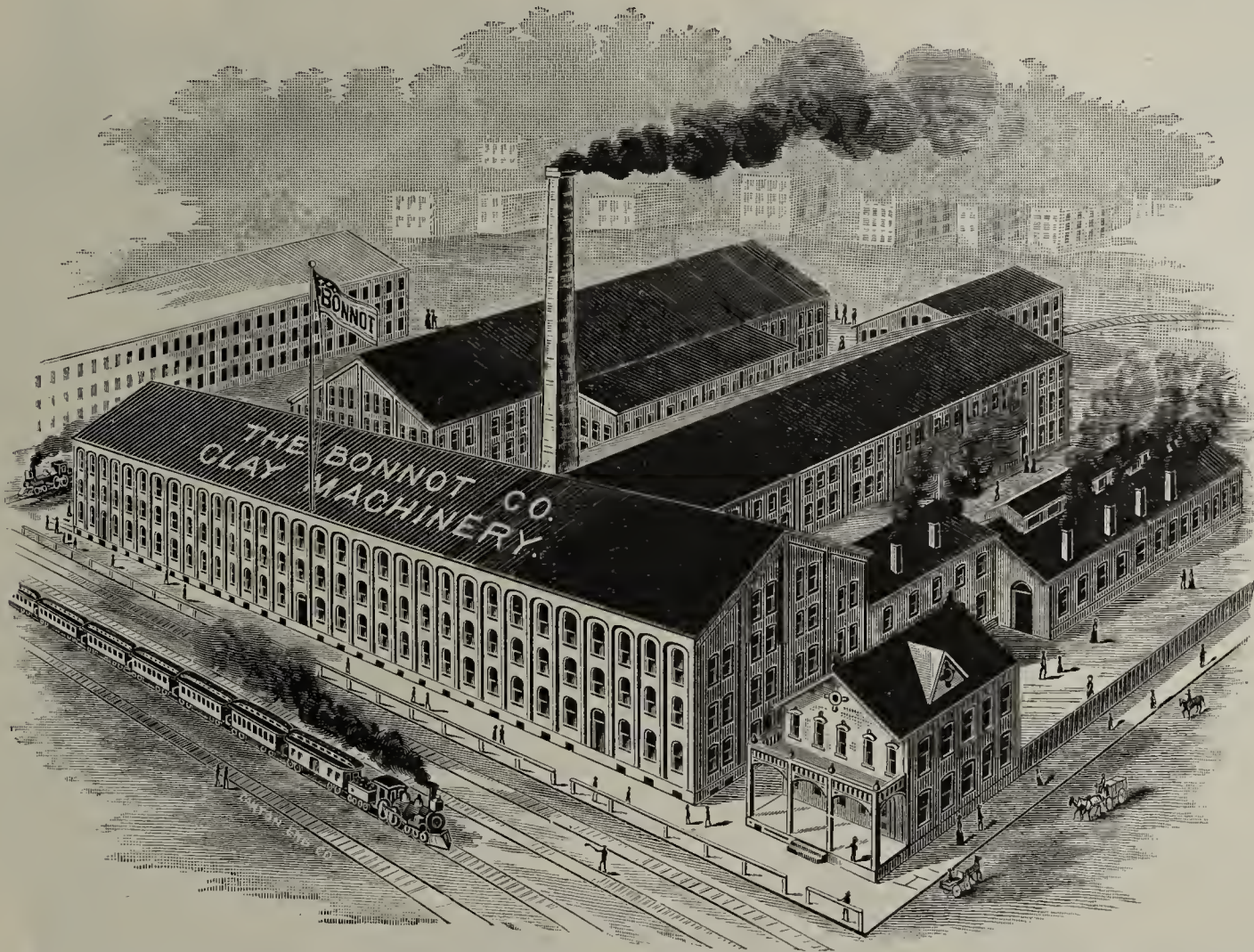
J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A.

J. W. PENFIELD & SON,  
WILLOUGHBY, O.

J. W. PENFIELD & SON,  
WILLOUGHBY, O.



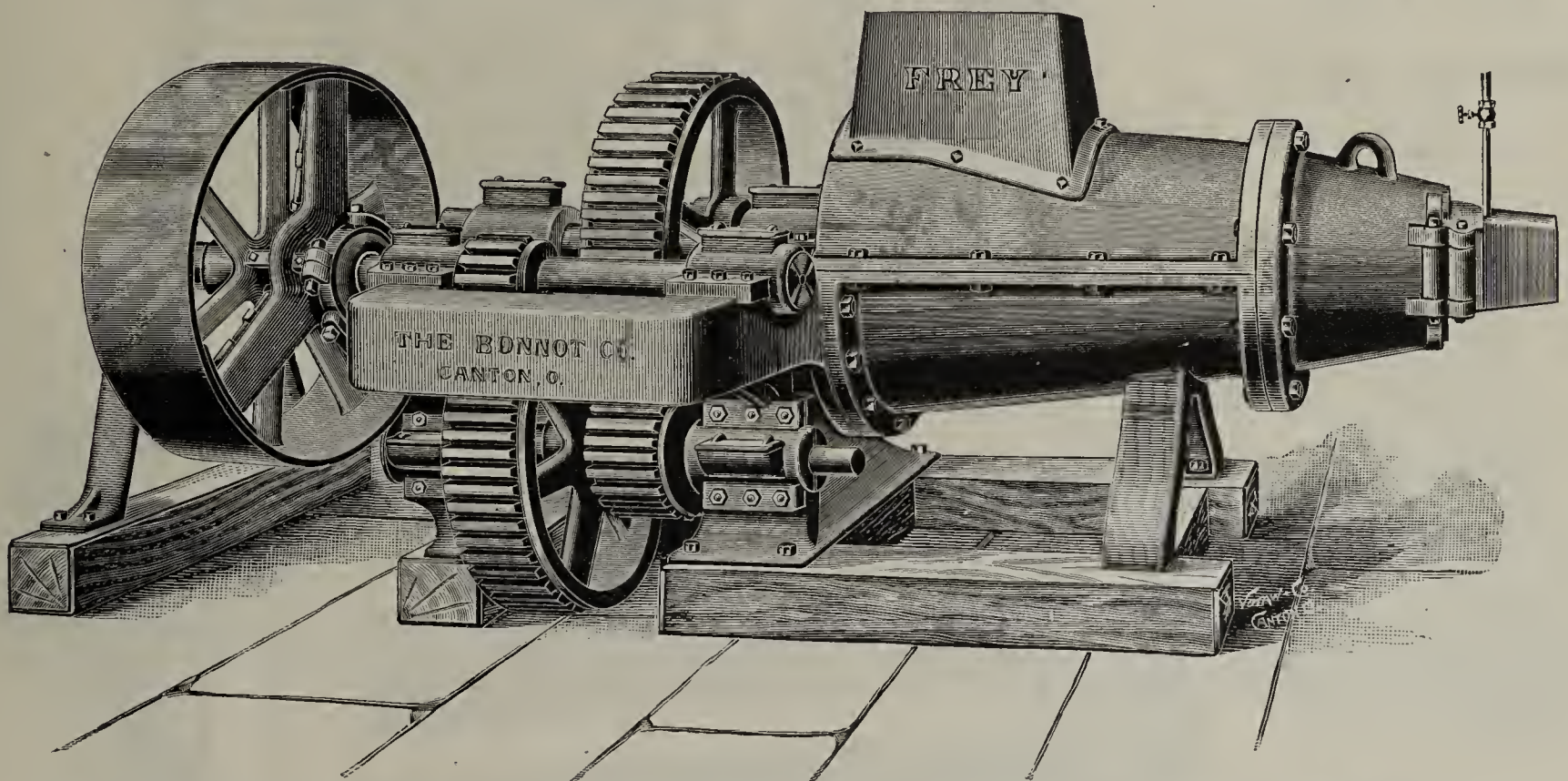
# The Bonnot Co., Canton, Ohio.



## DO YOU WANT THE BEST?

We suggest that you visit Canton. A plant has just been erected at Canton in which every machine is of Bonnot Company make.

*If You see it Work You Will be Convinced.*



## Brick Machines in Three Sizes.

Write for catalogue of brick or pottery machinery.

THE BONNOT COMPANY, = Canton, Ohio.





# Fisher Engine, Foundry and Machine Works.

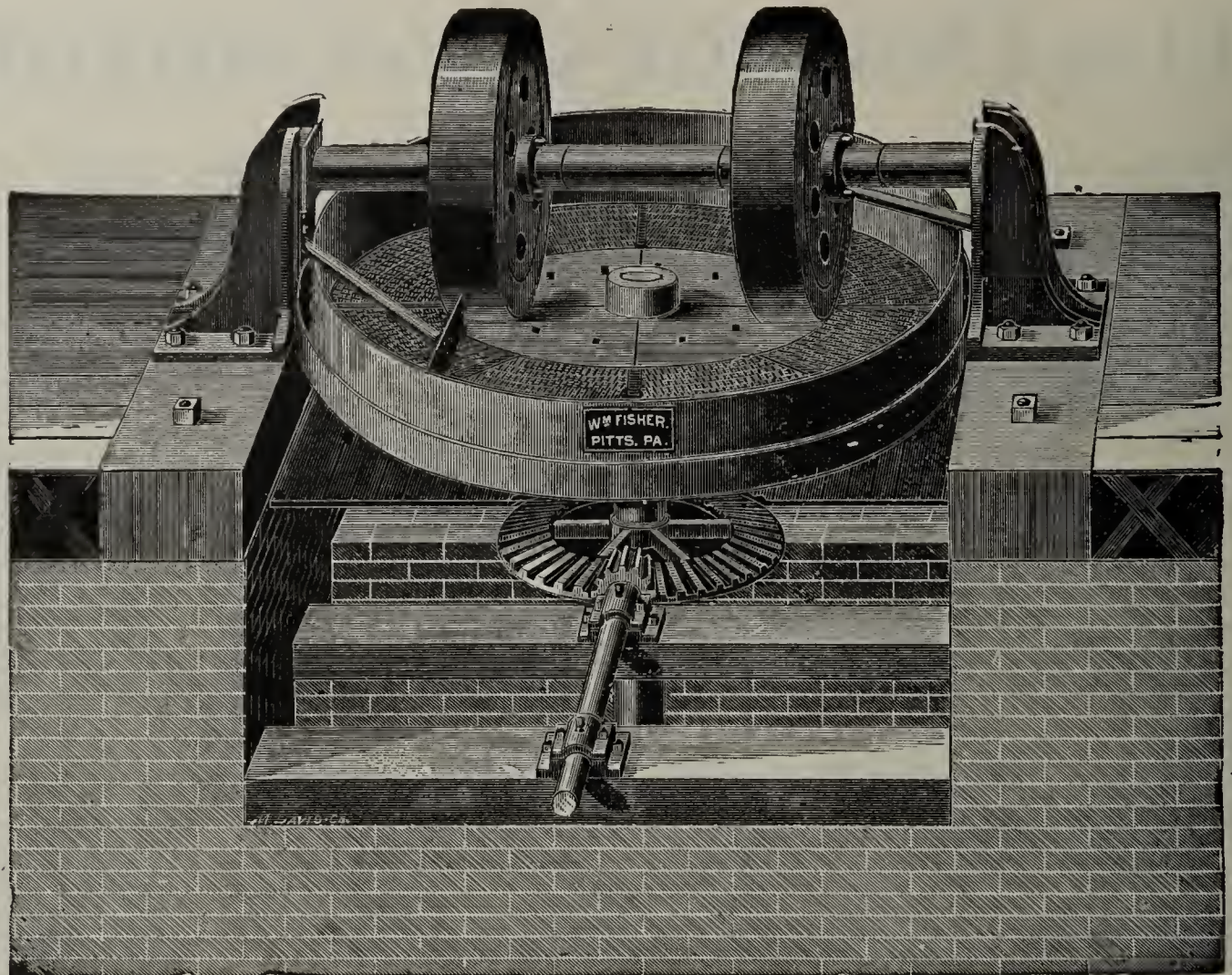
WM. FISHER, PROP.

Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,  
FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

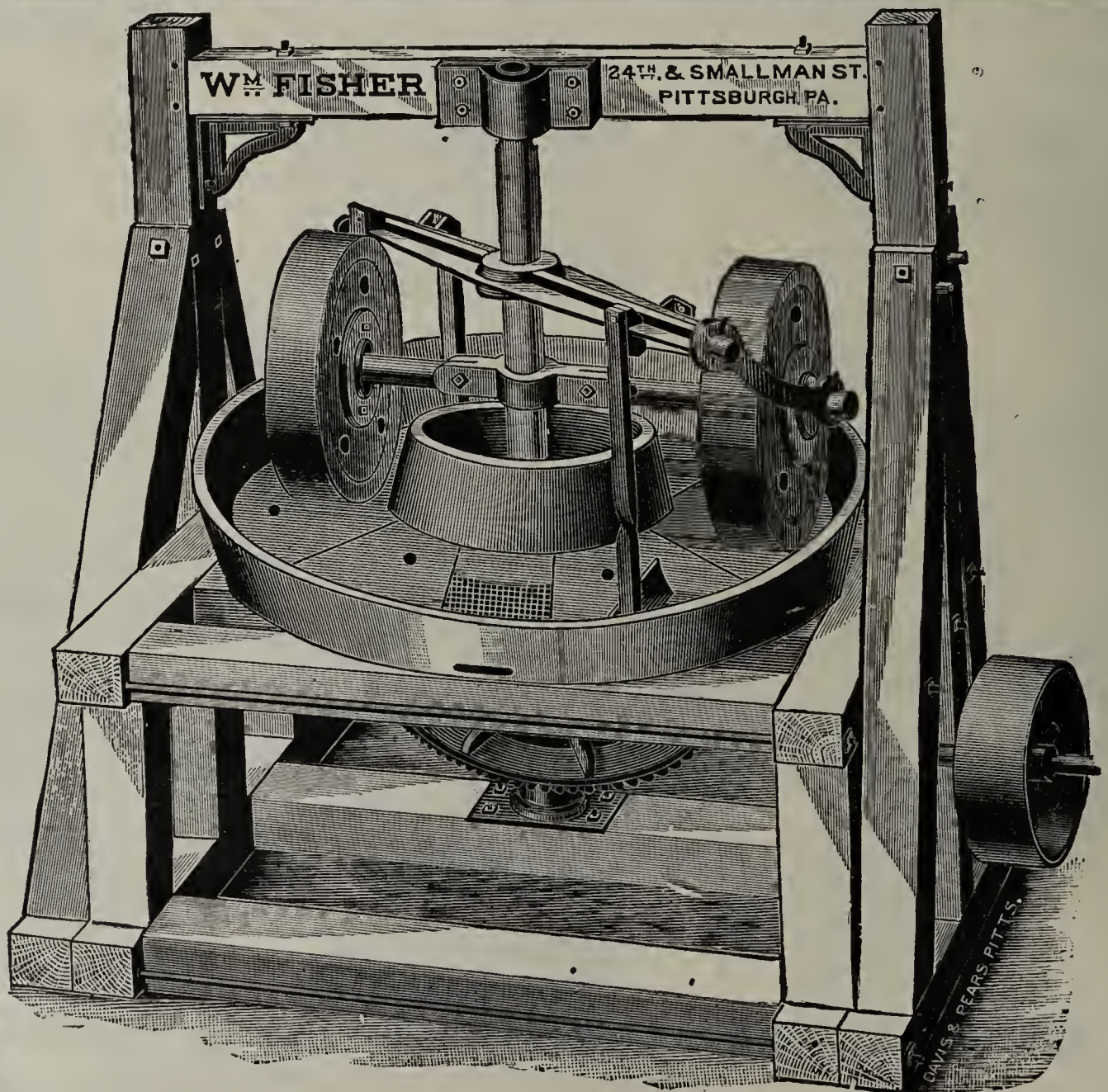
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.

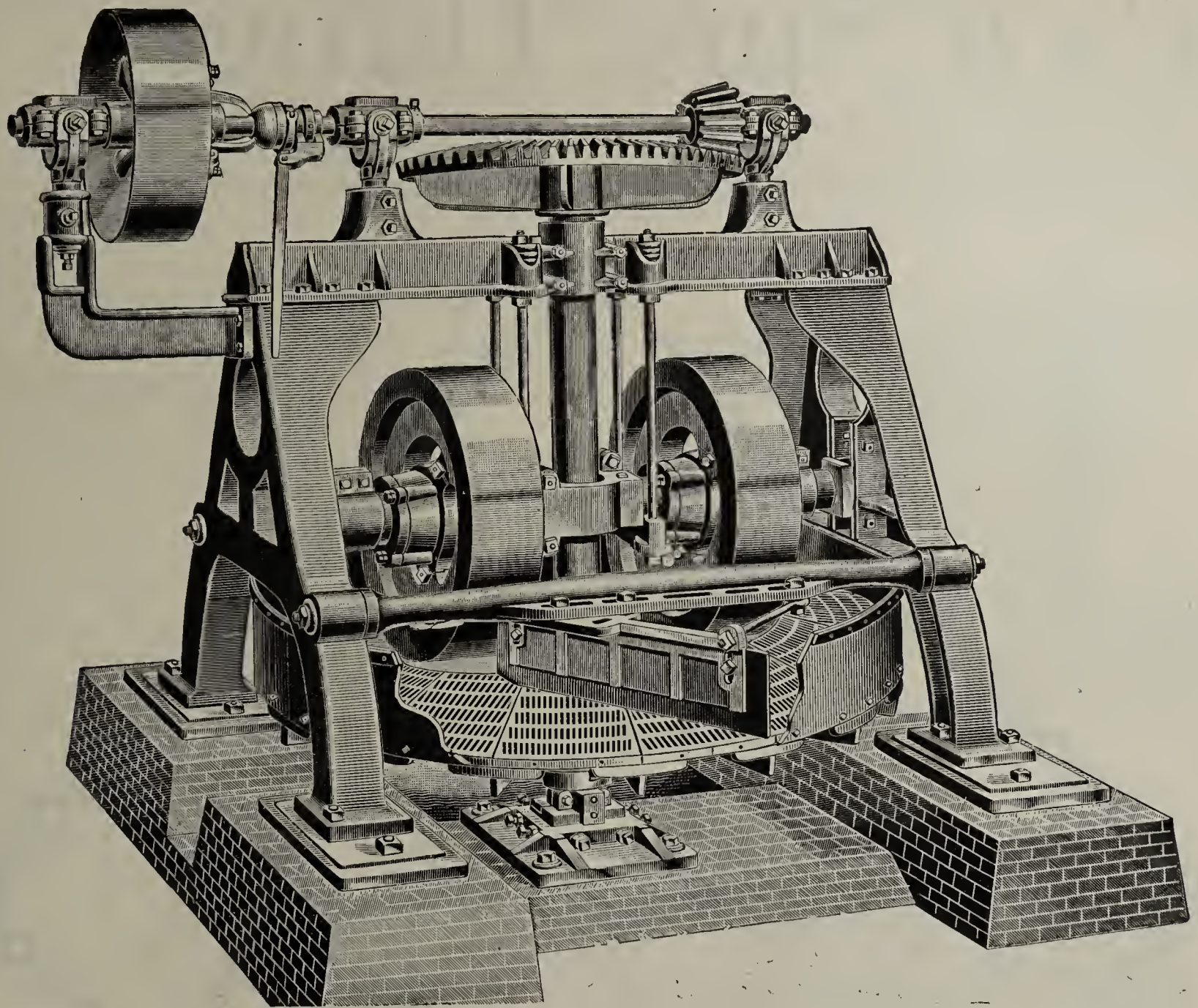


PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.



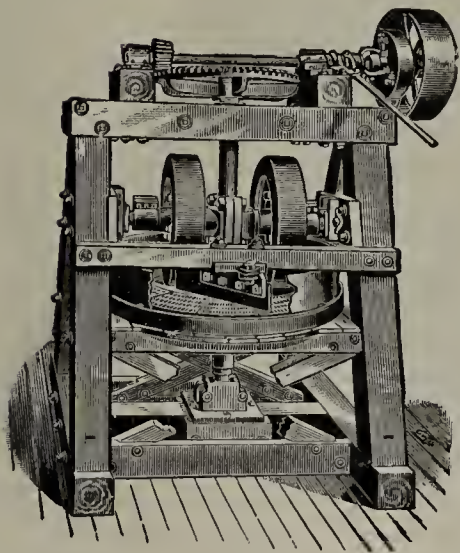
When writing for prices, state kind of material and capacity required.





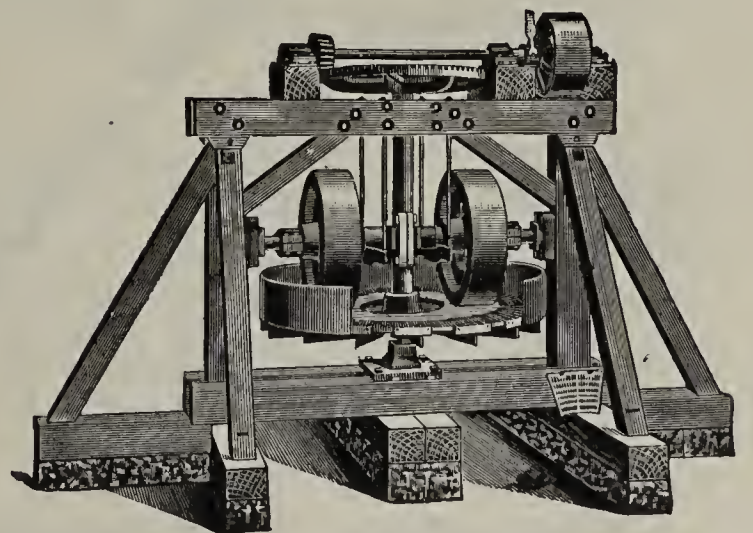
OUR SPECIALTY IS

**DRY PANS.**



IRON FRAMES,  
WOOD FRAMES.

~~~~~  
All Sizes and Price
to suit
Any Size Plant.
~~~~~



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

**FROST ENGINE CO.,** Galesburg, Ill.,  
U. S. A.



# It's a Sure Thing,

That the Potts Horizontal Stock Brick Machine will make more and better brick with less labor and power than can be done by any machine now on the market.

## It's a Sure Thing

That this machine will work any clay direct from the bank, without the use of an extra PUG MILL.

## It's a Sure Thing

That it is the largest, strongest and most durable machine made.

F. M. MULLER, President.

San Joaquin Brick Company,

MANUFACTURERS OF

FRESH WATER BRICK,

Stock, Pressed and Common Brick,

River sand.

C. HORTON, Secretary.

STOCKTON, CAL., August 10, 1894.

C. & A. POTTS & CO., Indianapolis, Ind.

GENTLEMEN:—We have used your Horizontal Stock Brick machine since June 1st, and find it superior in every way to the "\_\_\_\_\_," machine which we formerly used. We can make the 40,000 per day as you guaranteed.

Several old Brickmakers have been on our yard and all say that the Potts is the best machine they have ever seen. We are satisfied and will recommend your machine, for it makes first class brick, with good sharp edges and corners, the brick please our customers, and consequently we are pleased.

Yours truly,

SAN JOAQUIN BRICK CO.,

C. Horton, Secretary.

## It's a Sure Thing

That it will make brick which always have clean sharp corners and smoothe surfaces, that will dry and burn as straight and square as the moulds they were made in.

## It's a Sure Thing

That you will make no mistake when you purchase a plant of POTTS MACHINERY.

We manufacture a full line of clayworking machinery, and are prepared to make estimates on plants of any desired capacity. Write for prices and terms.

**C. & A. POTTS & CO.,**

420 West Washington Street,

INDIANAPOLIS, IND.



# A New Departure in Brick Machinery

## THE HORIZONTAL ANDERSON

OUR latest and most complete combination of Brick Machine, Pug Mill and Disintegrator for the price of one Machine. No out side Plunger with bothersome Gibs and Plates. A Machine that will run for years without requiring any adjustment and never leak. **UNEXCELLED** for **GRINDING** and **PUGGING CAPACITY**; simple in construction and durable.

This Machine is self-contained and requires no other Shafting, Pulleys, Hangers or even Foundation, other than that shown in cut. Manufacturers of Brick by the soft mud process will find it to their interest to investigate this Machine before making their contracts for new Machinery. Write for descriptive circular, prices, etc. We can save you money in the beginning, and make you happy in the end. Capacity equal to any other Machine on the market. We extend a cordial invitation to all prospective purchasers to pay us a visit and allow us to show them the Machine in operation.

INDIANAPOLIS, IND., March 20, 1894.

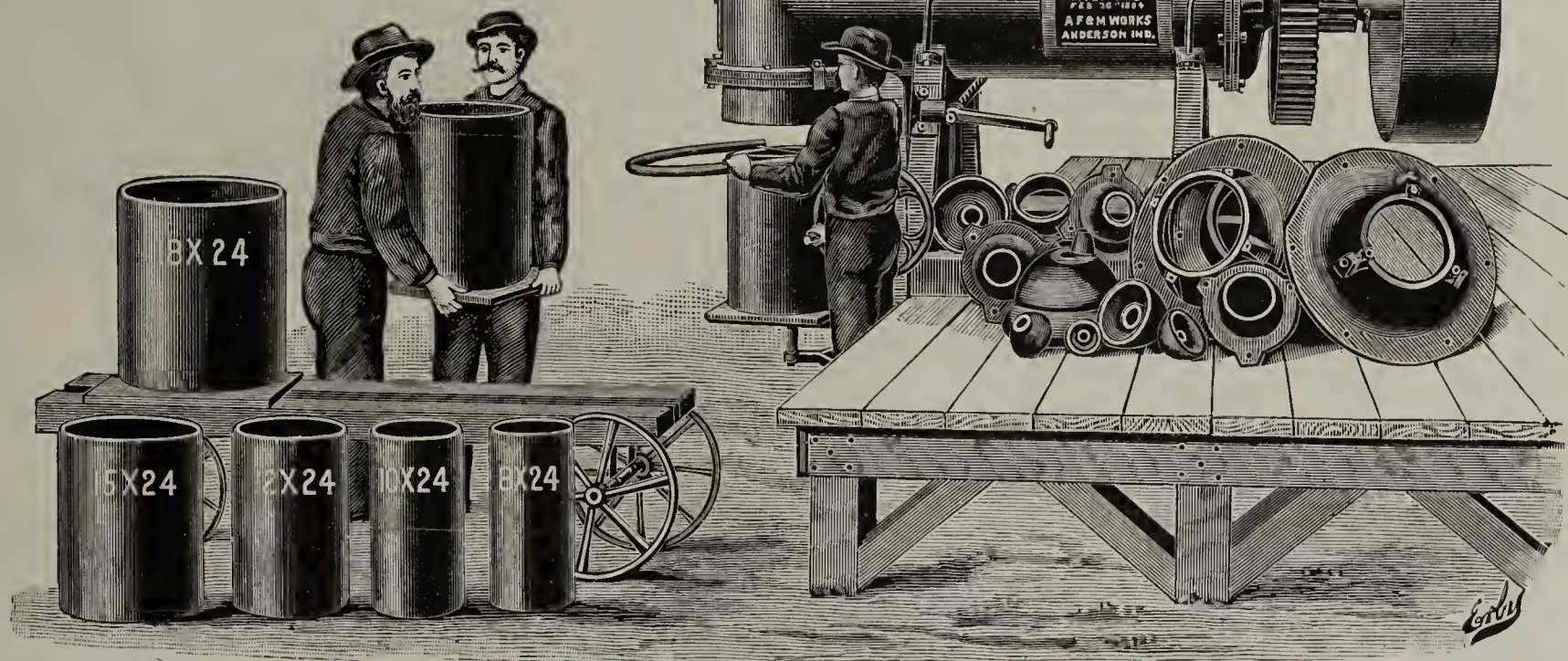
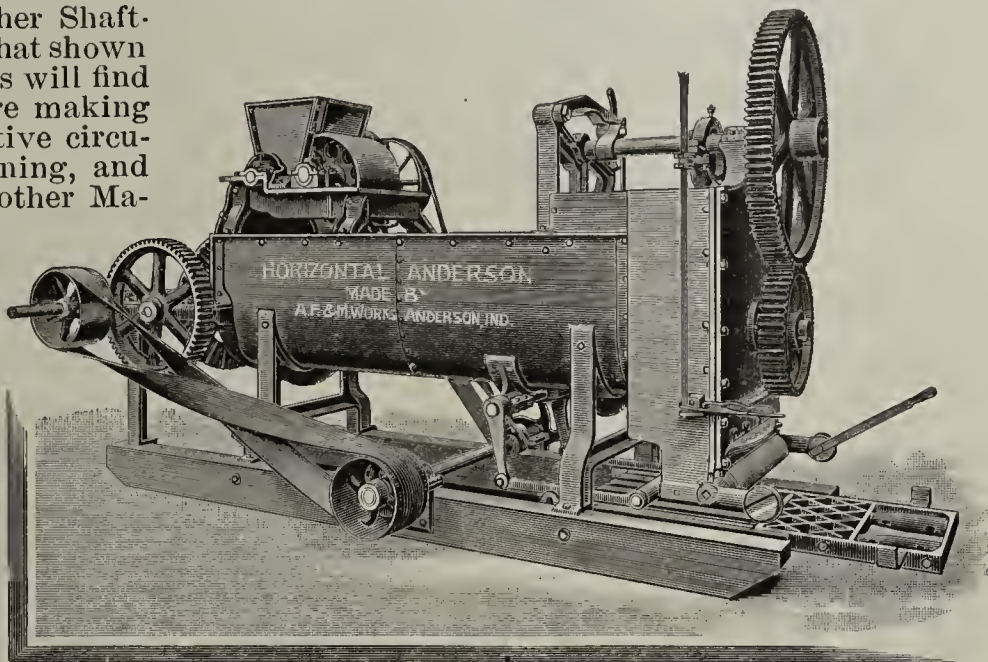
ANDERSON FOUNDRY AND MACHINE WORKS,  
Anderson, Ind.

GENTLEMEN:—It affords us much pleasure to state that the Horizontal Anderson Brick Machine purchased of you last season has given us the best of satisfaction. We have owned and operated eight different Brick Machines previous to this one, and we do not hesitate to pronounce the Horizontal Anderson superior to any and all of them.

We operated the machine during the extremely dry weather of last season and found that no matter how dry and hard the clay was when taken from the bank, the machine thoroughly pulverized and pugged it to the proper consistency for making first-class brick, and at the same time dispose of all stones, of which, unfortunately for us, we have a great many to contend with.

We are willing at all times to show the Horizontal Anderson to our competitors who are in the market for new machinery.

A. BRUNER & CO.,  
Willis Privett, Manager.



## THE GREATEST ON EARTH

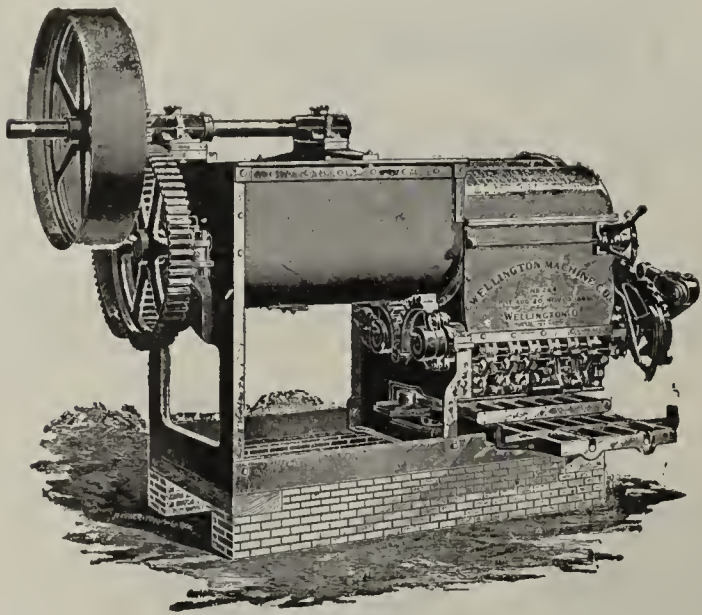
We have imitators but no competitors. The **NEW DEPARTURE** makes all sizes of tile from 3 inches to 24 inches in diameter in a manner that defies competition.

DOWN DELIVERY FOR LARGE TILE.

SIDE DELIVERY FOR SMALL TILE.

THE ANDERSON FOUNDRY & MACHINE WORKS, - - Anderson, Indiana.





# THE "MONARCH"

## Brick Machine.

ALL iron and steel. Takes clay from the bank. Double pug mills. 14 feet. "Up one side and down the other." Most thorough tempering. Presses are entirely "in the mud;" this is the greatest idea of all, for all wear, leakage and friction in the press box is entirely done away with. All bearings outside and "stuffed." Only four gears and none bevel. The acme of simplicity. Runs with much less power than any other of its class. Four years in use and thoroughly proven. Used by 50 of the very best manufacturers. Send for list and "go and see."

THE MOST ECONOMICAL and LONGEST LIVED MACHINE MADE.

# THE "QUAKER"

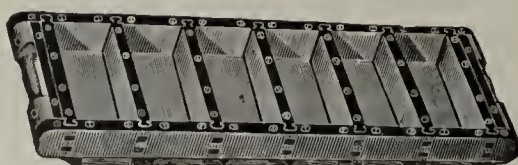
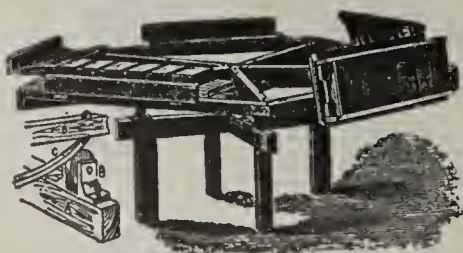
Family of Machines, are the Most Used of Any Single Make of Machine.

## The "New Model Quaker" Horse-Power Machine.

Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



## Two Sizes of Steam Power "Quaker" Machines.



FOUNDERS AND MACHINISTS.)

Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

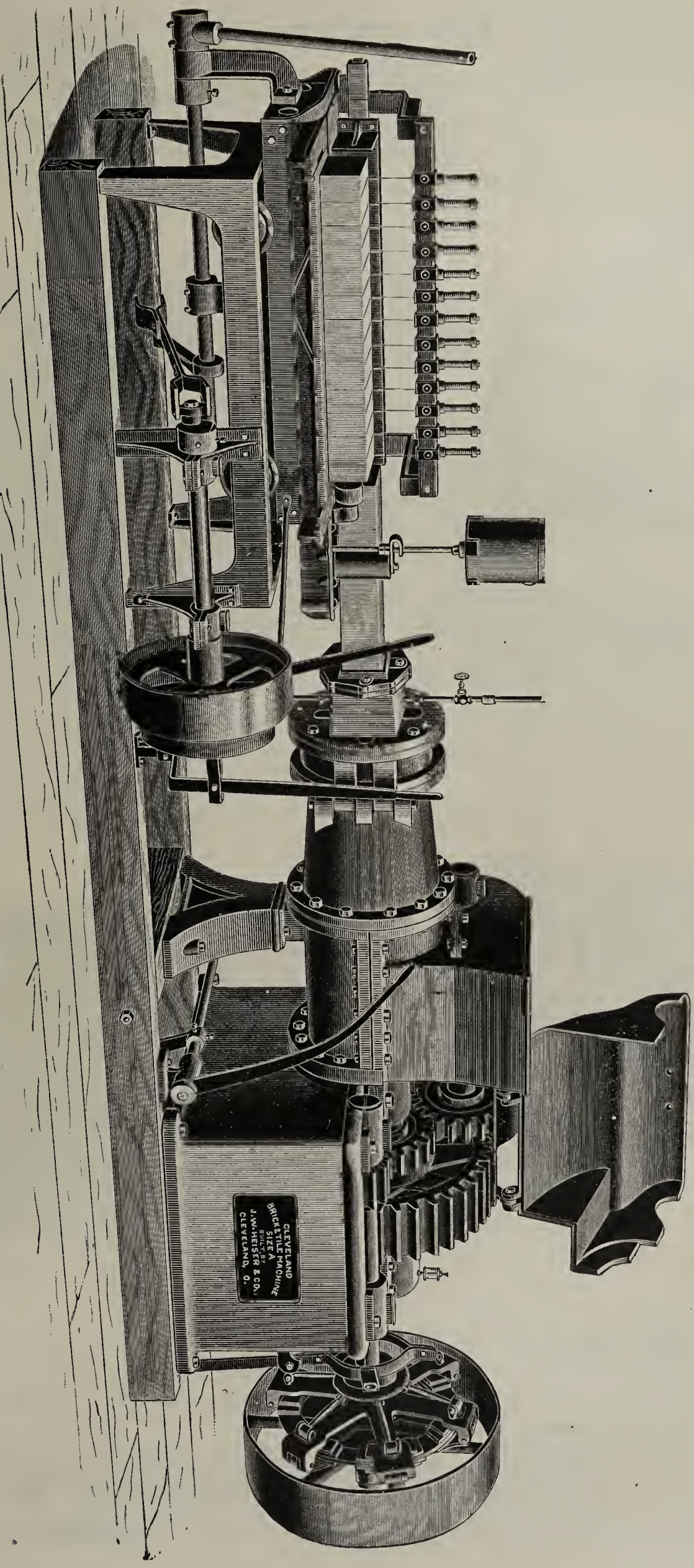
Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

**The Wellington Machine Co.**

*Wellington, Ohio.*



# The "CLEVELAND" CLAY WORKING MACHINERY.



Size "A" Machine with Patent Board Delivery Power Cutting Table. Capacity from 25,000 to 40,000 Brick per day.

ALL OF OUR MACHINERY IS BALL AND PIN BEARING AND...  
GUARANTEED FOR ONE YEAR AGAINST WEAR OR BREAKAGE.

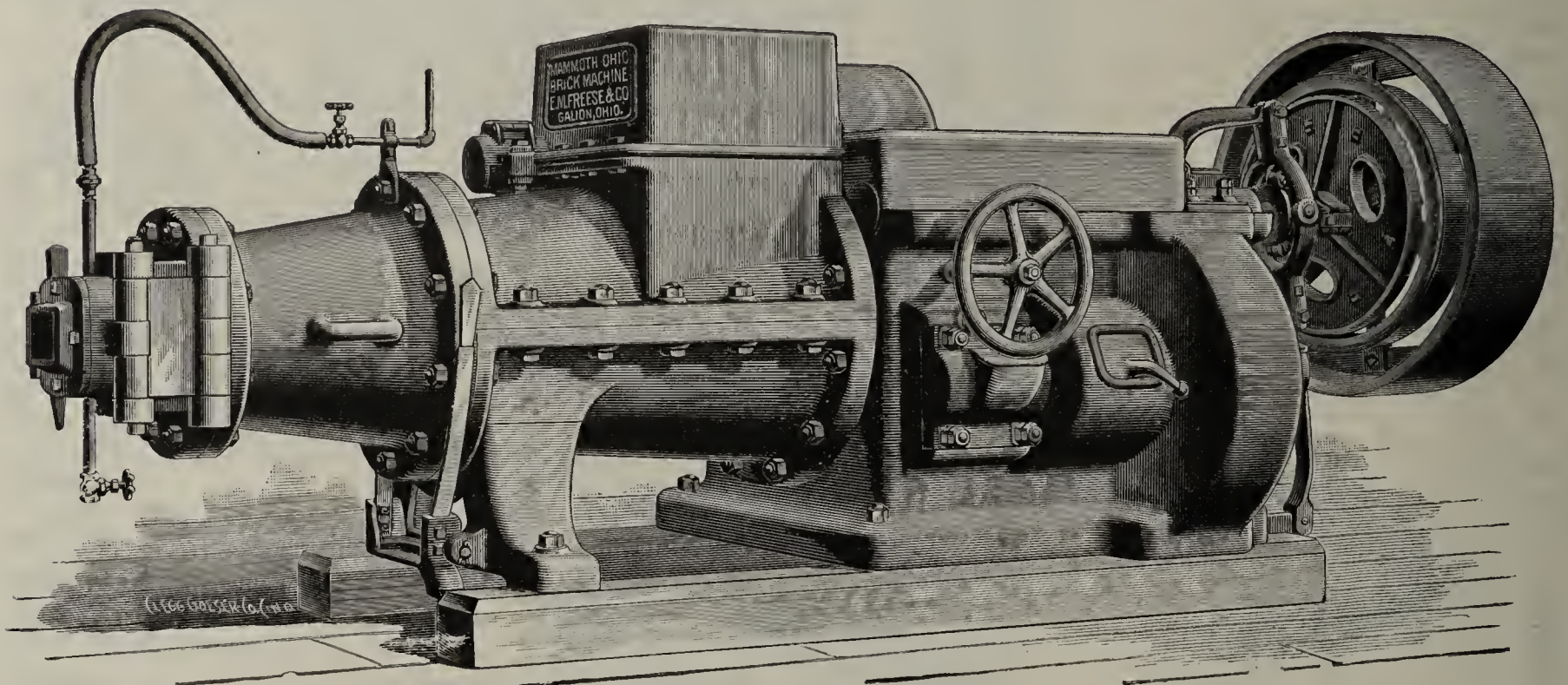
If you want superior machinery, improve your product, save money and have a balance on the right hand side of your Ledger, write to us for Catalogue and description of our machinery.

**J. W. HEISER & CO.,** Manufacturers of CLAYWORKING MACHINERY, Cleveland, Ohio.



# SUPERIOR BRICK MACHINERY.

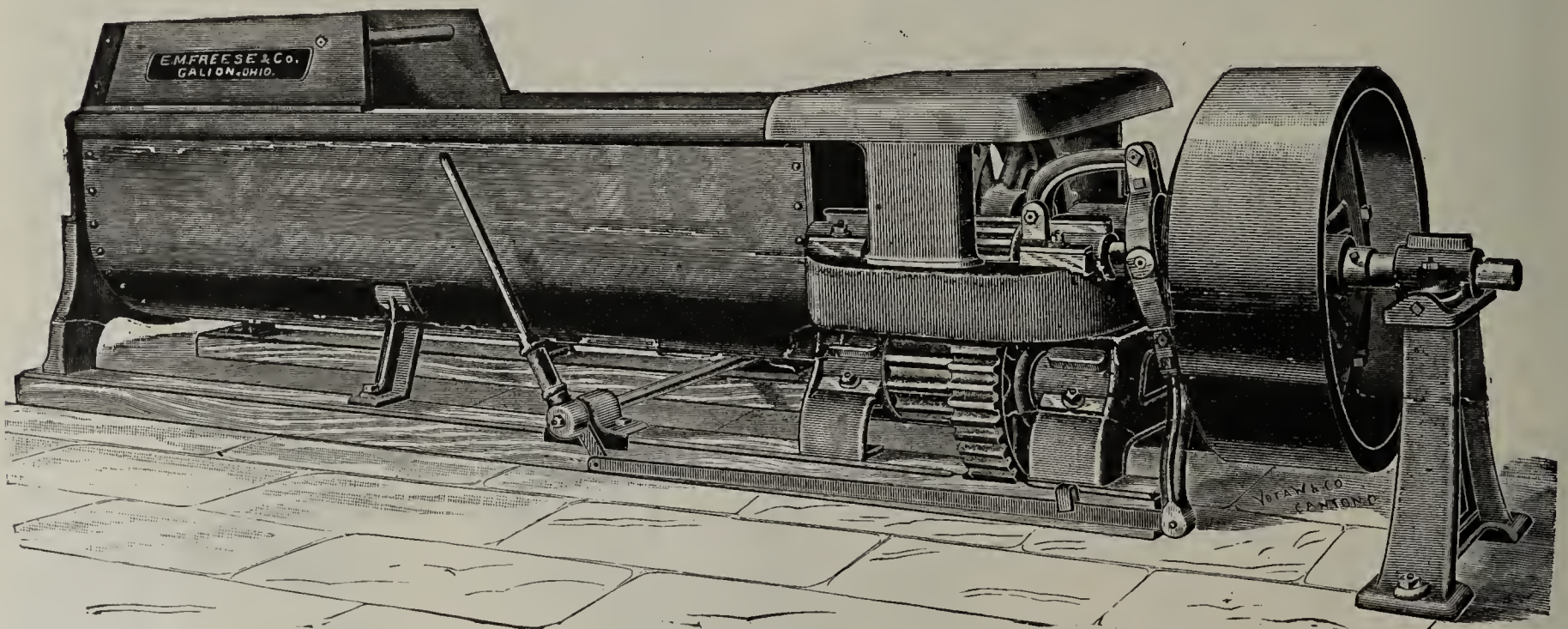
*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

## *PUG MILLS THAT PUG THE CLAY.*



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

IT WILL PAY~~~~~

ADDRESS **E. M. FREESE & CO.,**

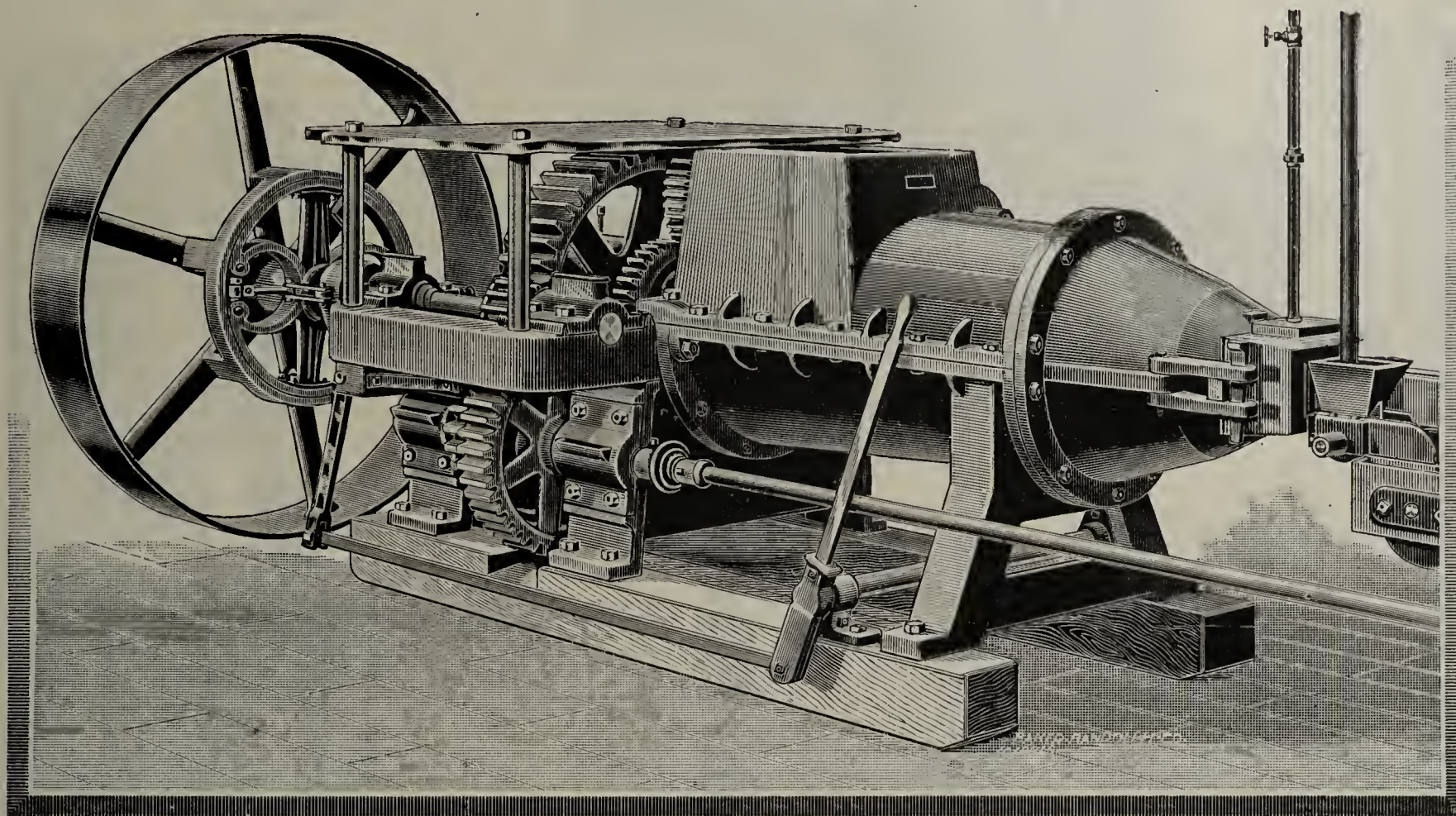
**GALION, OHIO.**



# IMPROVED BRICK AND TILE MACHINERY,

MANUFACTURED BY

THE DECATUR LEADER MFG. CO.



Auger Brick Machine.

WHAT THEY THINK OF US AT HOME. . . .

—OFFICE OF—

## The Tuttle Brick Company.

DECATUR, ILL., March 26, 1894.

THE DECATUR LEADER MFG. CO., City:

GENTLEMEN—The outfit of Brick machinery made by you for us gives entire satisfaction. We understand your automatic cutter is a recent design, and we would say that it deserves especial mention for its simplicity and perfect working.

Yours truly,

THE TUTTLE BRICK CO.,

JOHN DILLER, Manager.

Our line is complete. Send for printed matter.

## THE DECATUR LEADER MFG. CO.,

[Mention the Clay-Worker.]

## Decatur, Ill., U. S. A.



# NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

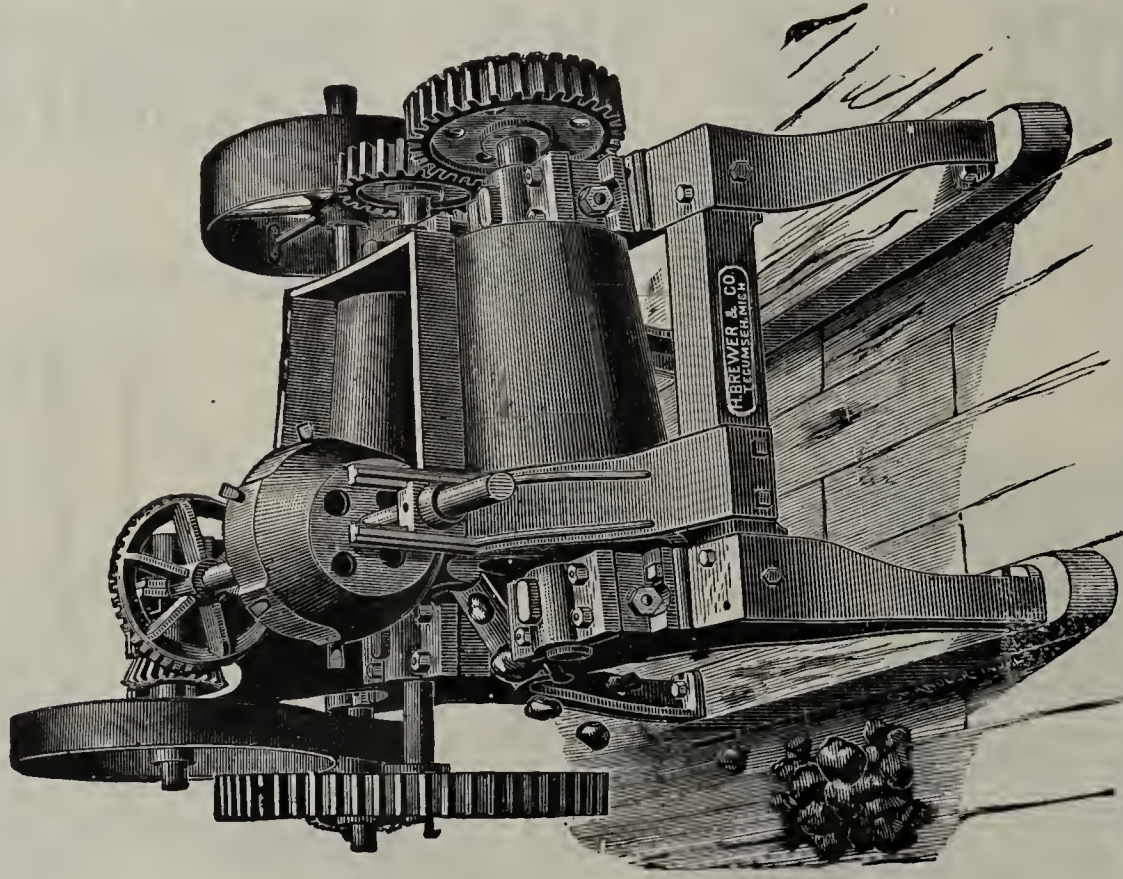
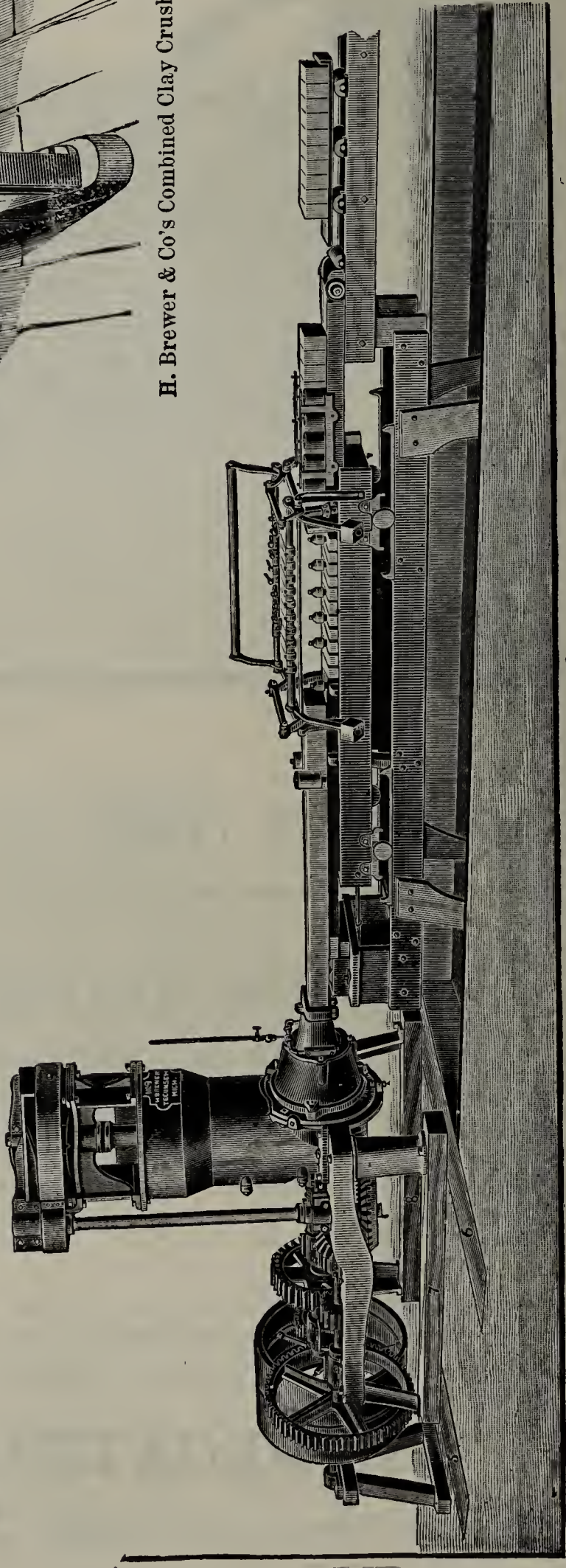
The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

**H. BREWER & CO.,**  
**Tecumseh, Mich.**

[Mention the Clay-Worker.]



H. Brewer & Co's Combined Clay Crusher and Stone Separator.

The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



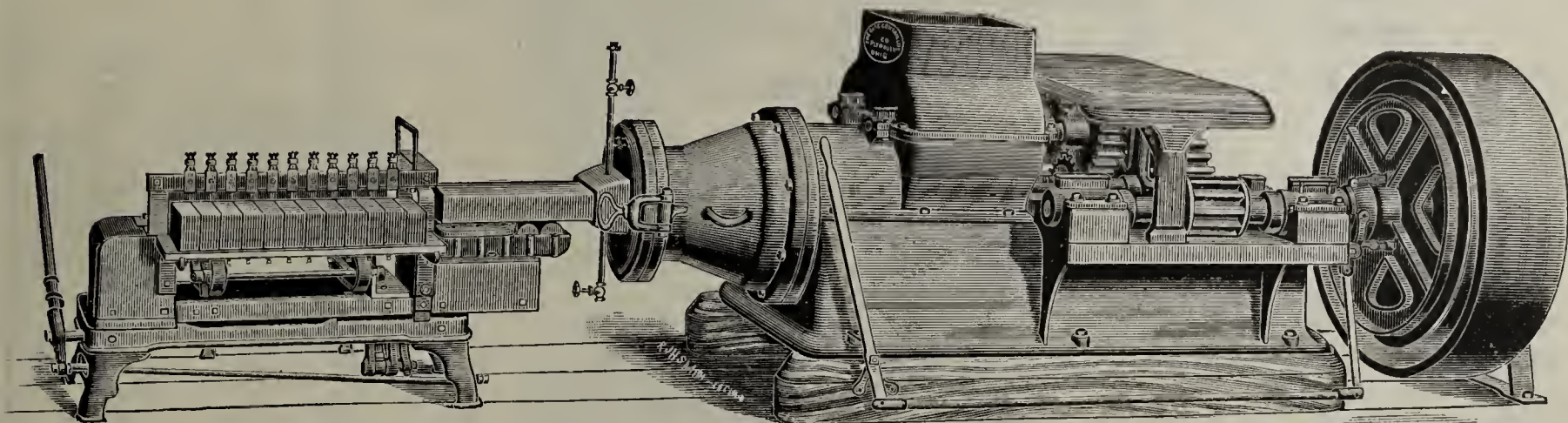
• • THE • •  
**“PLYMOUTH”**  
 Brick and Tile Machines.

“The Best we ever saw,” that’s what they all say!!

Kirby, Ohio, June 11, 1894.

Dear Sirs:—The tile machine that I bought of you is a perfect machine. I am running it the second year. This year I bought the automatic self-cutting table and it is the best thing I ever saw. It saves one man, also cuts them true, every tile is like the other.

GEORGE FISHER.



“A” Machine, with Board Delivery Cutting Table.

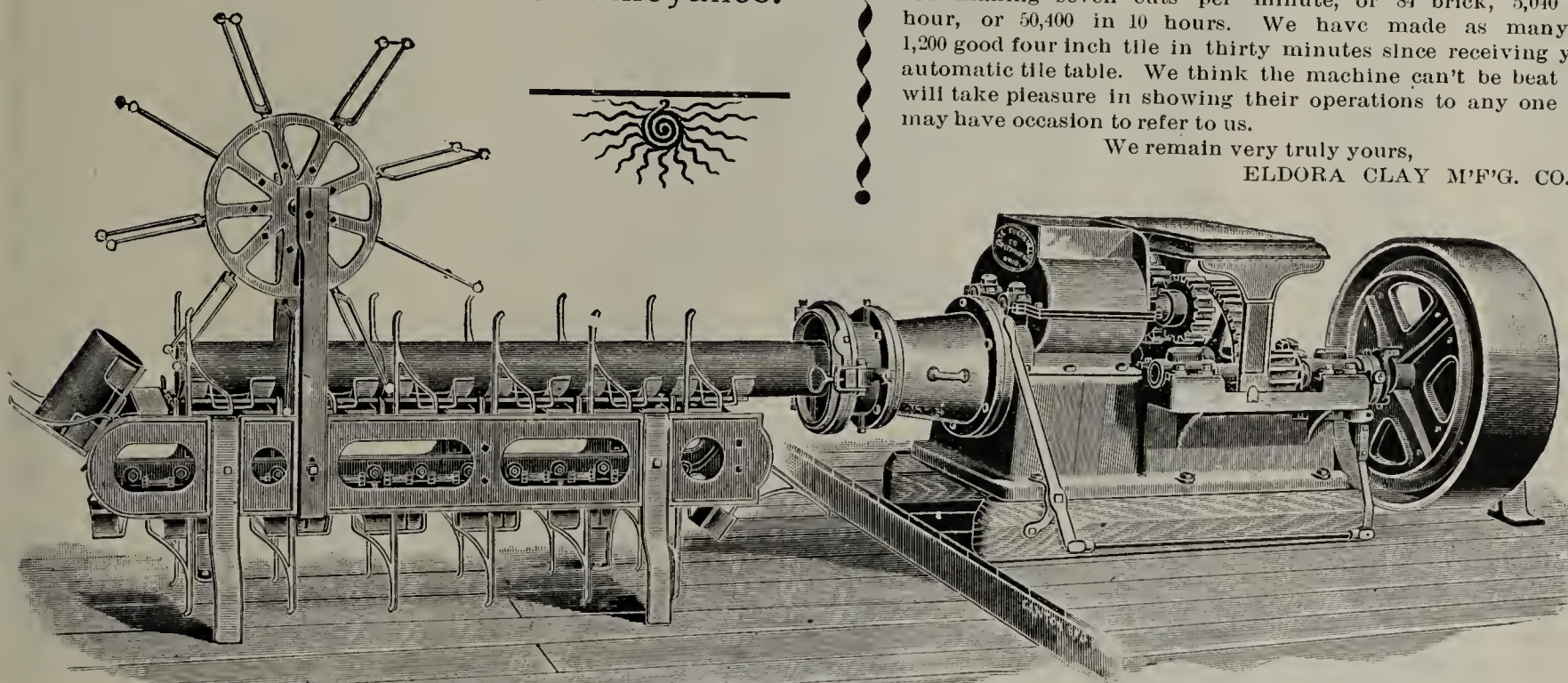
**IT PAYS . . .**

To buy our machines because they save you money, time, labor and a vast amount of annoyance.

ELDORA, IOWA, July 16, 1894.

Gentlemen:—In response to your inquiry concerning the Brick and Tile Machines you sold us, we are happy to state we have both in operation and each is giving entire satisfaction, even beyond our expectations or your representations. We easily turn out 30,000 good bricks in ten hours, and 18,000 to 20,000 three inch, three and one-half inch, or four inch tile is our regular 10 hours work. To-day we are making brick and much of the time are making seven cuts per minute, or 84 brick, 5,040 per hour, or 50,400 in 10 hours. We have made as many as 1,200 good four inch tile in thirty minutes since receiving your automatic tile table. We think the machine can't be beat and will take pleasure in showing their operations to any one you may have occasion to refer to us.

We remain very truly yours,  
 ELDORA CLAY M'FG. CO.



“D” Machine, with Automatic Cutting Table. For cutting tile from 2½ to 8 inches; also building blocks.

Write for further particulars and estimates on entire outfits,

The . . . .  
**Fate-Gunsallus Co.,**  
 Richland Co. Plymouth, Ohio.

KELLEY, IOWA, June 11, 1894.

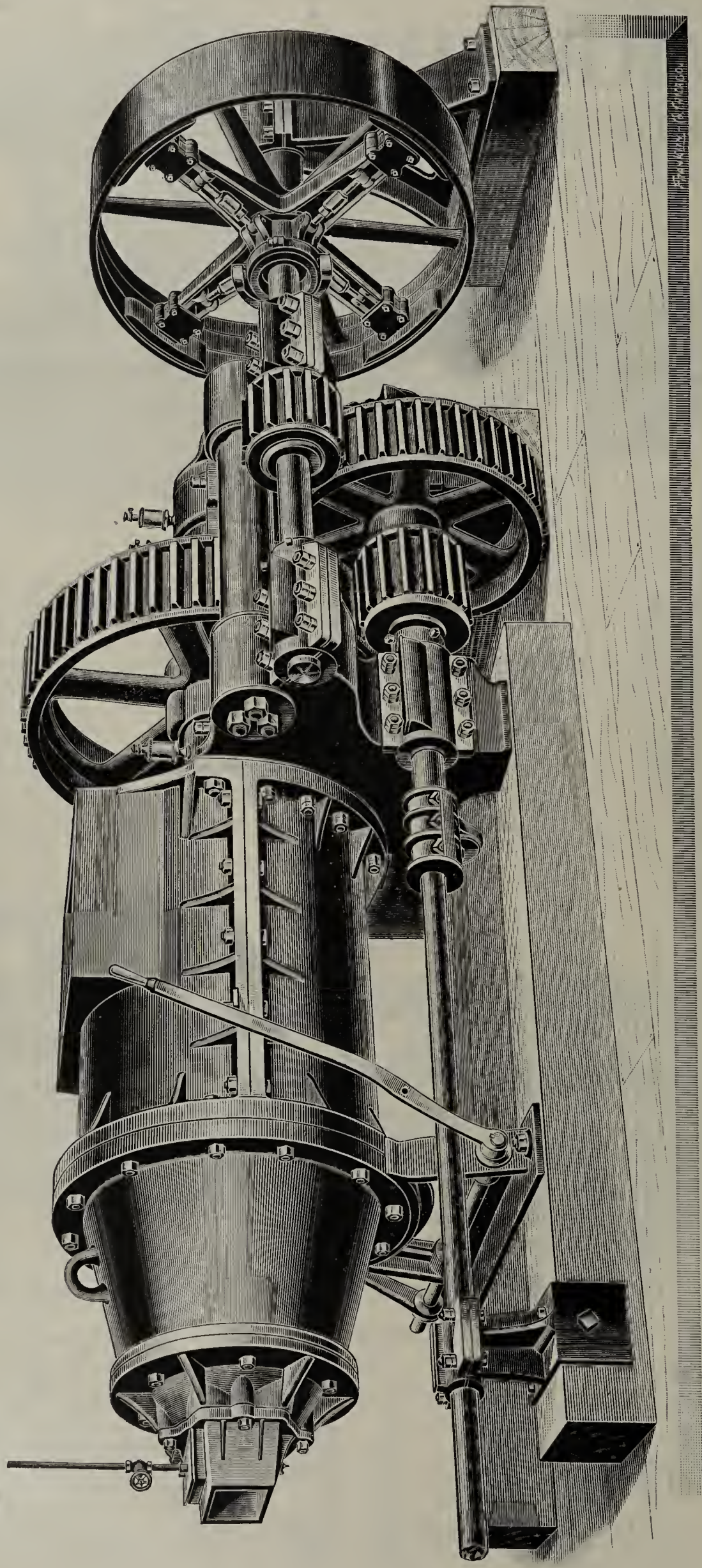
Gentlemen:—The automatic cutting table is working nicely. If I could have had it 10 years ago I would have been a richer man to-day. No tile works ought to run without one.

Respectfully,

J. M. STARK.



# THE FREY-SHECKLER COMPANY'S Special Bucyrus Giant Machine.



**T**HE largest, strongest and most efficient Auger Machine on the market. Capacity from 50,000 to 100,000 standard size brick per day of 10 hours. Weight of machine, 20,000 pounds.

For further information address,

**THE FREY-SHECKLER CO.,**

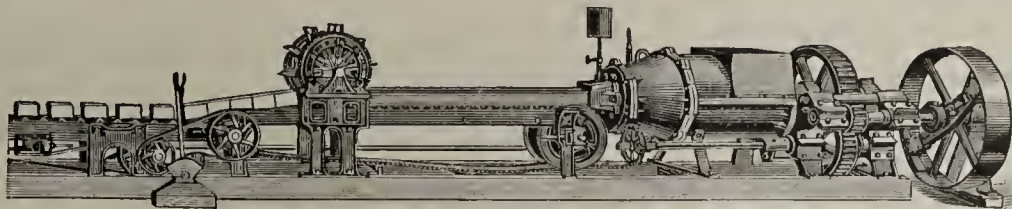
Manufacturers of Clayworking Machinery,

*Bucyrus, Ohio, U. S. A.*



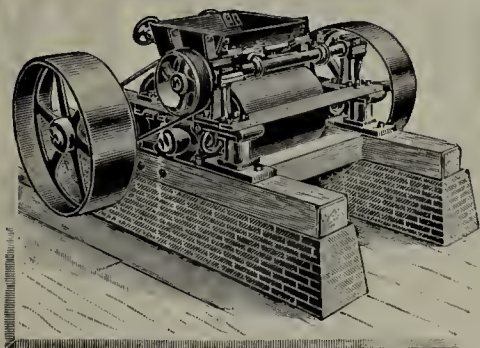
# WE STUDY TO PLEASE.

## A FEW SAMPLES

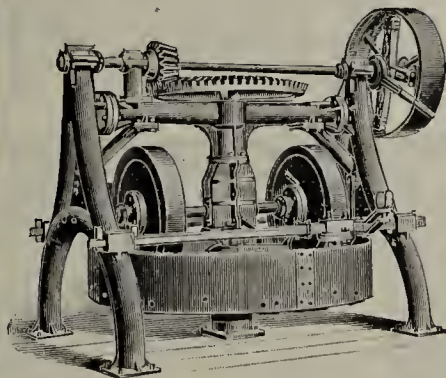


No. 1 Giant Machine and Automatic Table.

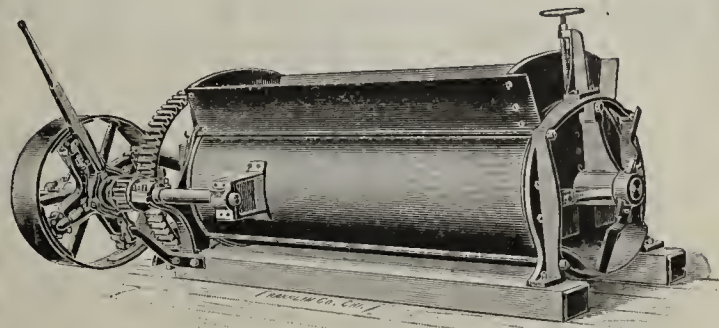
Just to give you  
an idea. That's  
All.



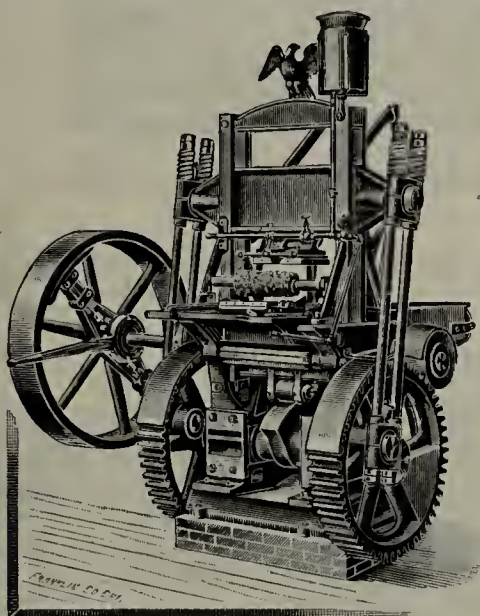
Improved Tailings Crusher.



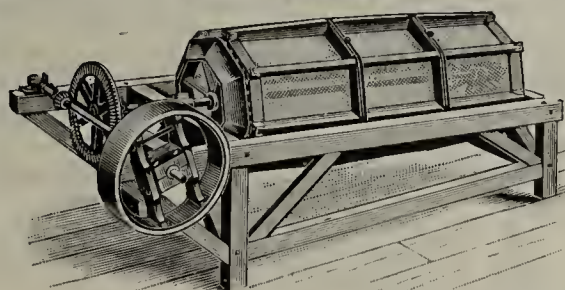
Dry and Wet Pans.



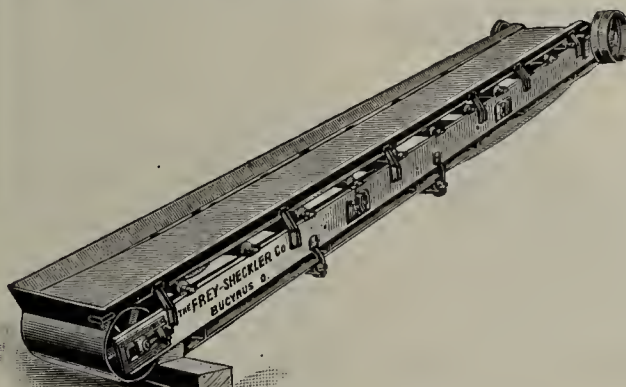
Pug Mills and Granulators.



Eagle Steam Power Re-Press.



Octagon Revolving Clay Screens.



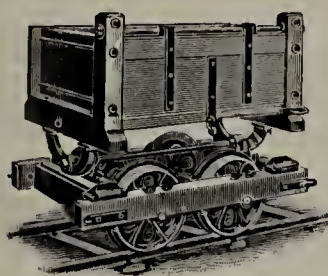
Clay Conveyors.



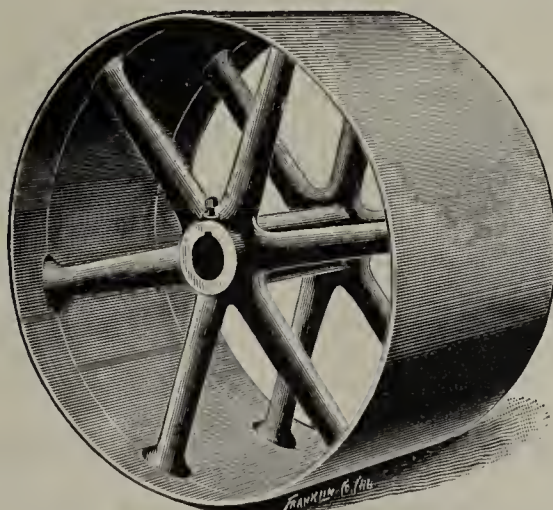
Clay Elevators.



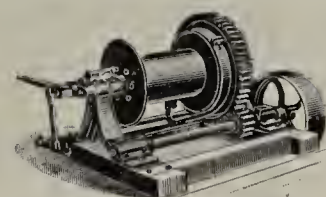
Reduction Mill.



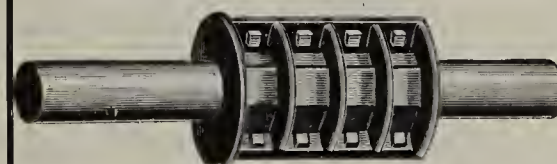
Dump Cars.



Pulleys, Shafting and Belting.



Winding Drums.



Couplings, Hangers, Etc.

**The FREY-SHECKLER CO., - Bucyrus, Ohio, U. S. A.**

Manufacturers of a Complete Line of Clayworking Machinery. Also builders of the Celebrated Bucyrus Steam Tunnel Dryer.

**Send for Catalogues.**



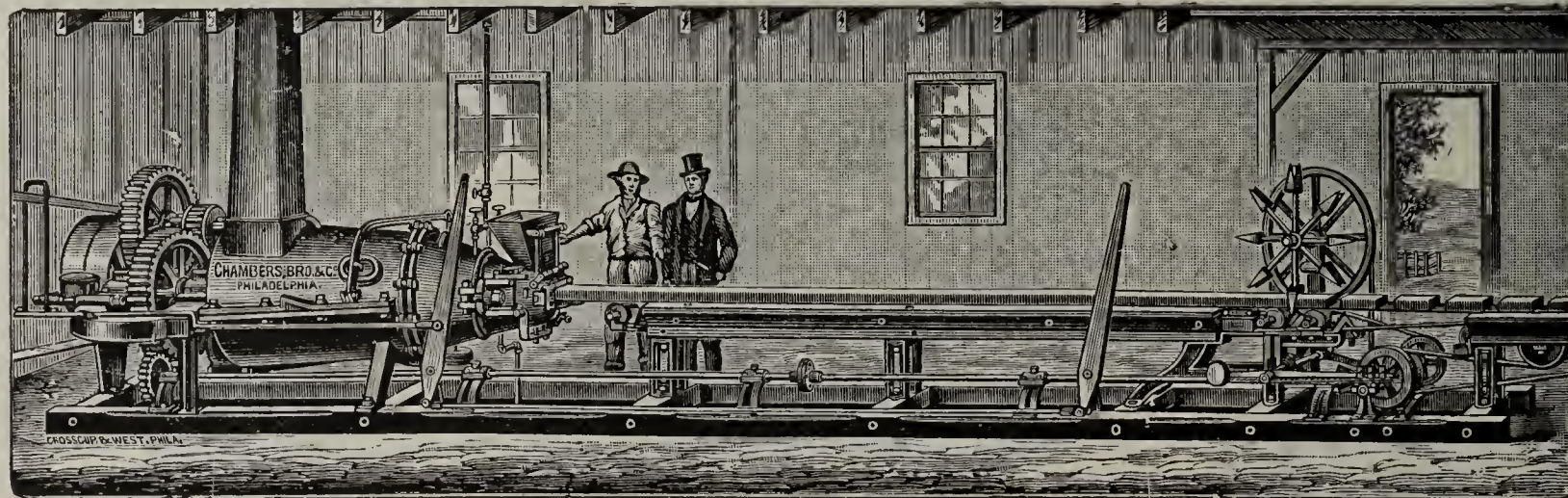
# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

❖❖ PHILADELPHIA, PENN. ❖❖



## IMPROVED BRICKMAKING MACHINERY.



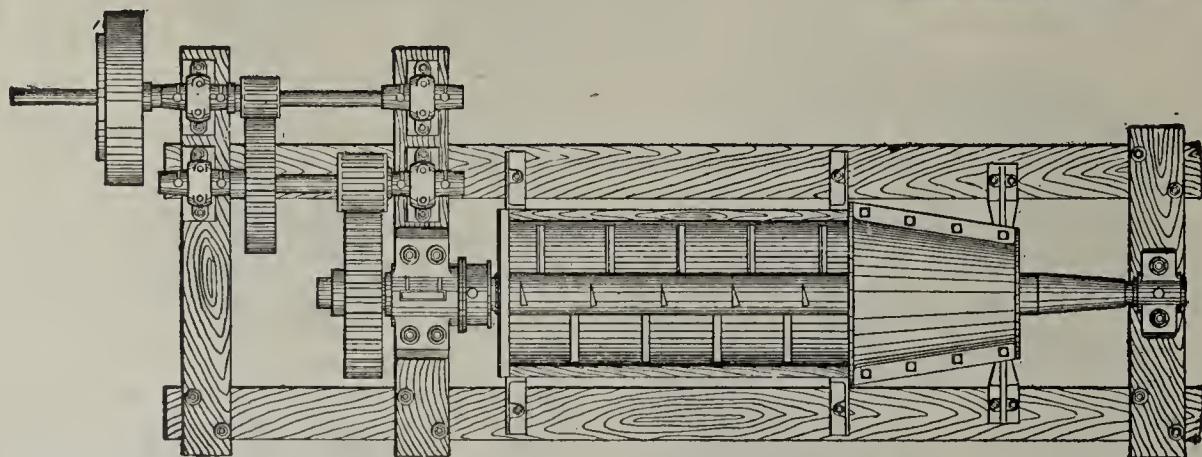
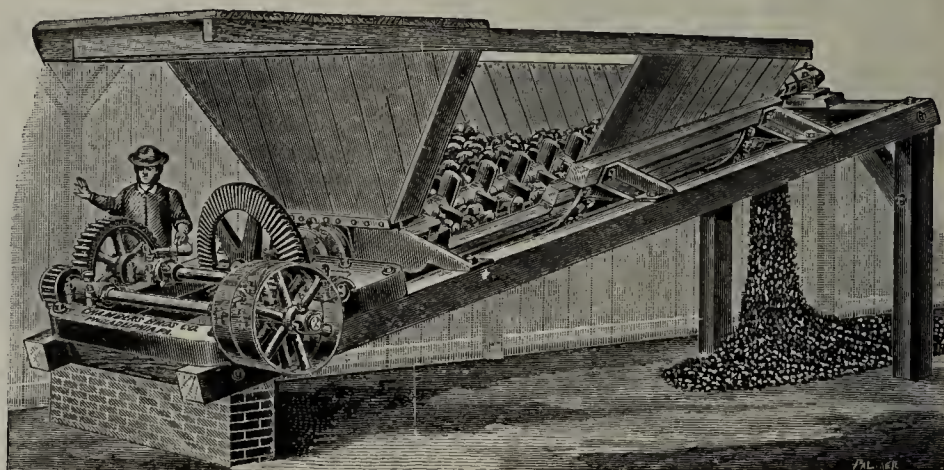
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ❖❖ CRUSHING ROLLERS,  
CLAY ELEVATORS.

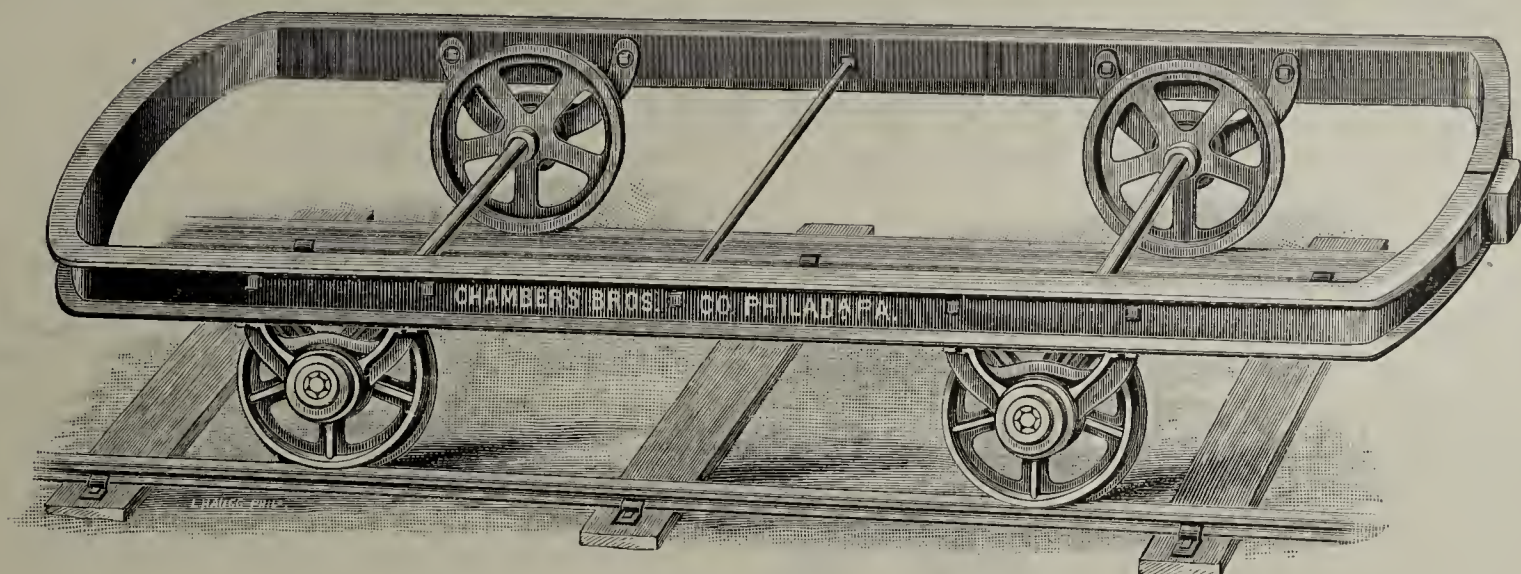
KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



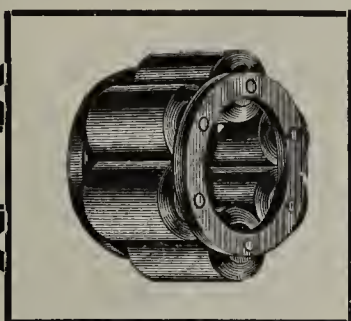
# ❖ DRYER CARS. ❖



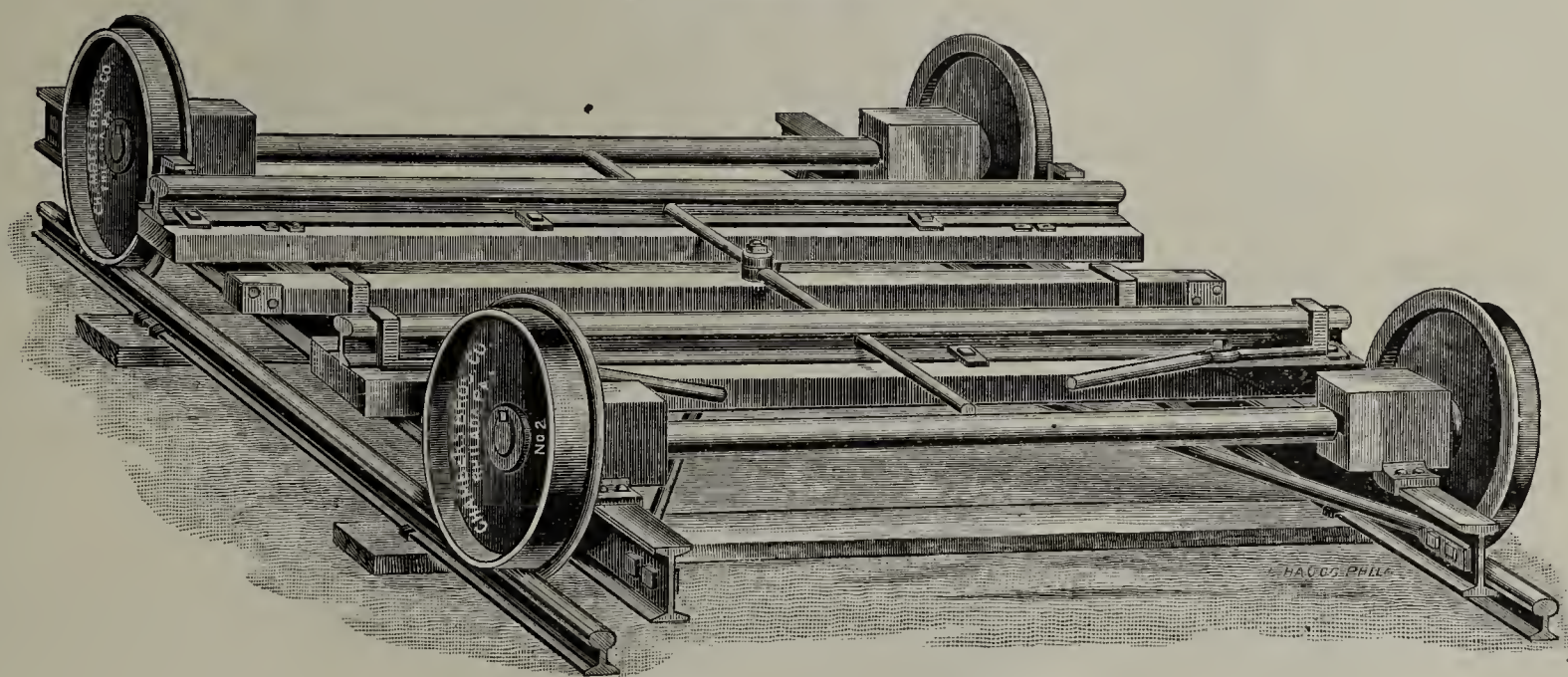
This STEEL CHANNEL FRAME CAR is Without an Equal.

We are prepared to make it of different dimensions, and of gauge to suit customers requirements. The channel section is much stiffer than angle, and being in one piece there are no weakening joints as where cross rails and bumpers are bolted to side frames.

The Anti-friction Cage Roller



Bearing used on our Cars.



WROUGHT IRON BEAM TRANSFER CARS.

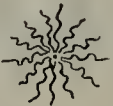
We guarantee these to give satisfaction.

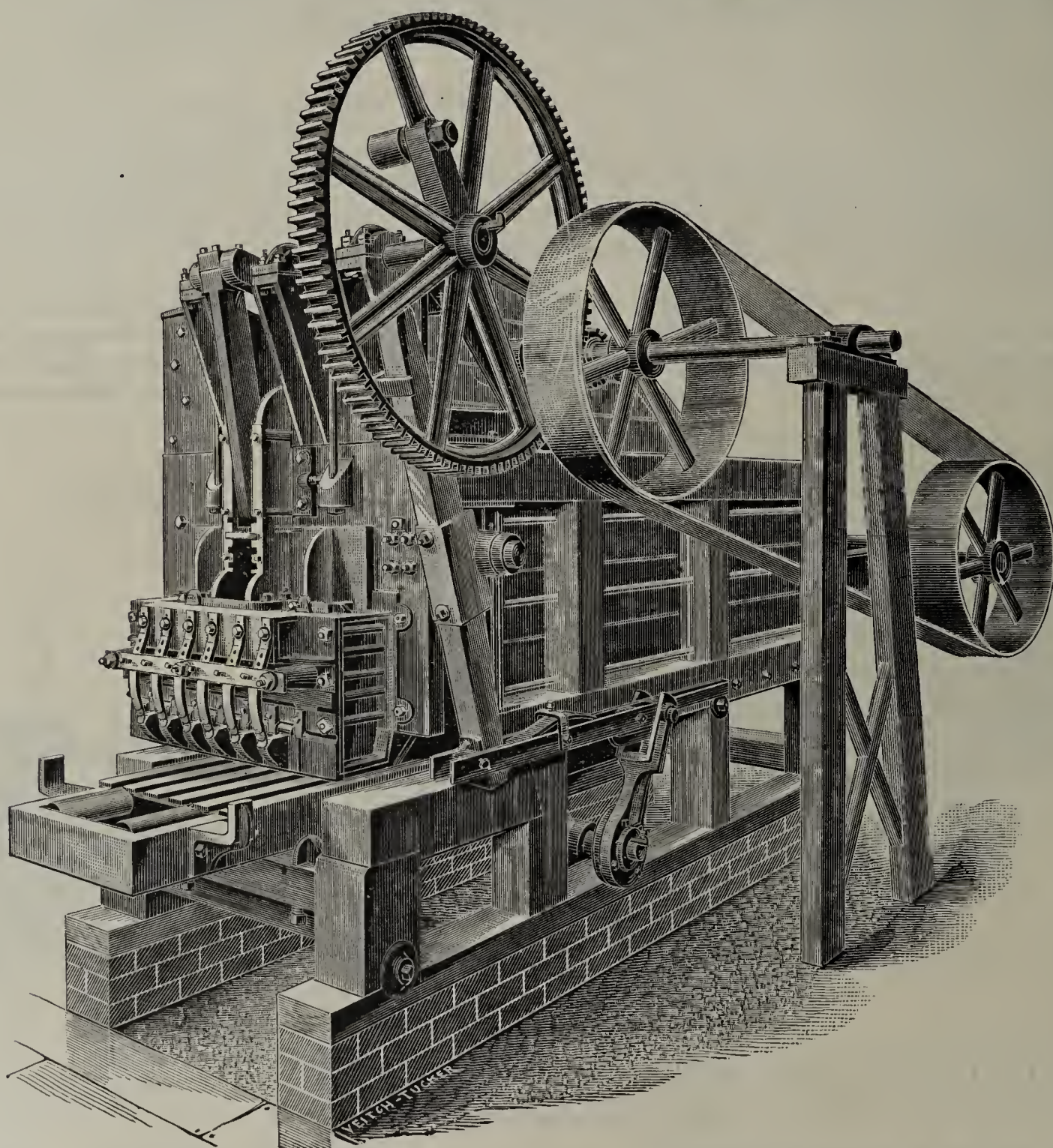
## CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

❖ PHILADELPHIA, PENN. ❖



Simplicity,    
Strength,  
Durability,  
Are Prominent Features. 



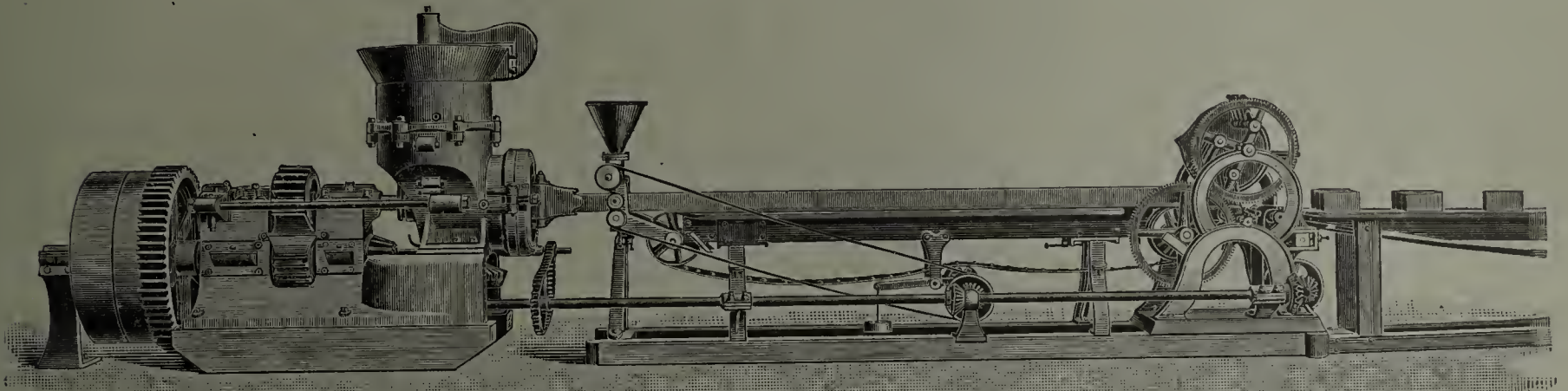
 The UNEQUALED STRENGTH and POWER of our "New Haven" Brick Machine is fully recognized wherever known, and the increasing sales prove its Popularity.

You can obtain information promptly by addressing

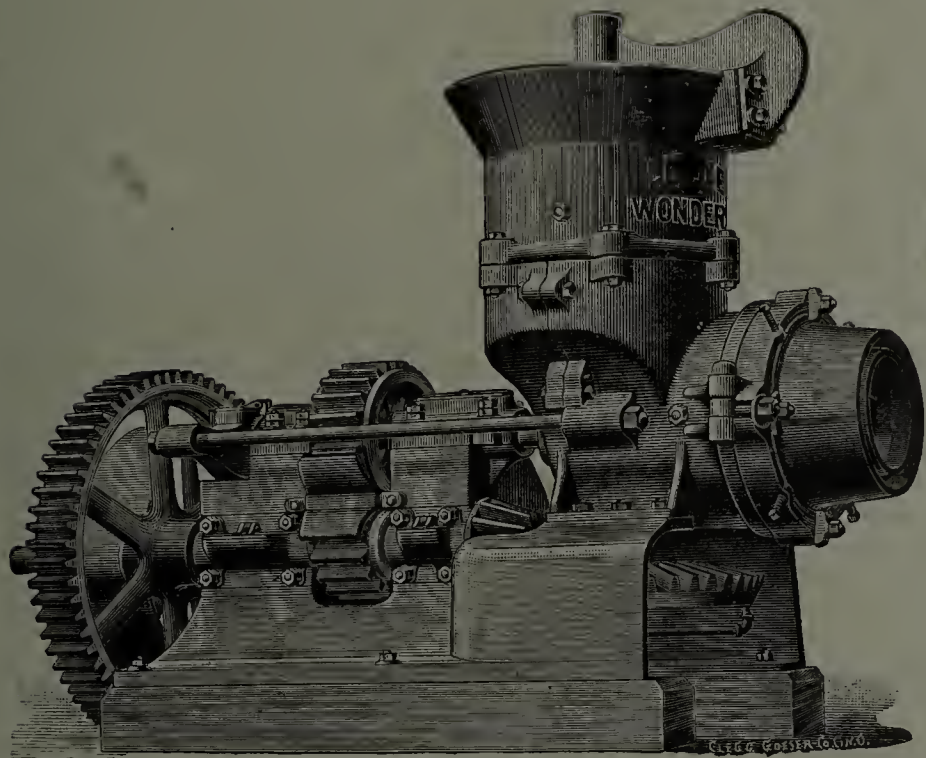
**The McLAGON FOUNDRY CO., New Haven, Conn.**



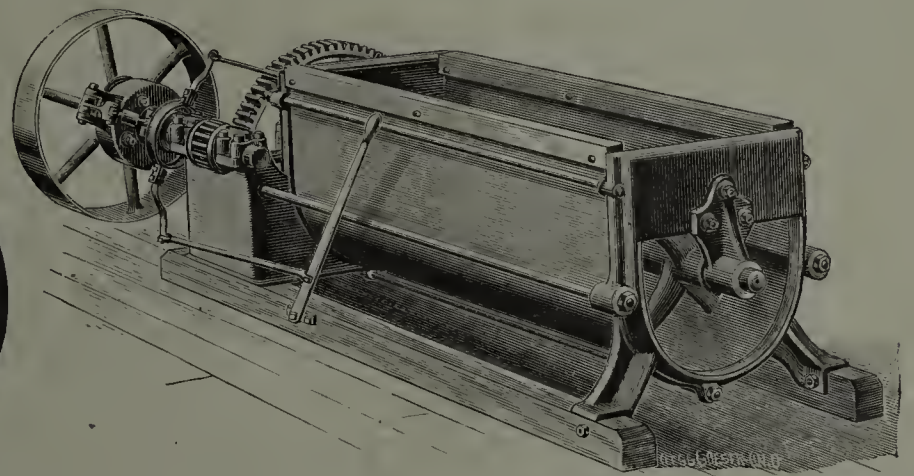
# Wonder Machinery.



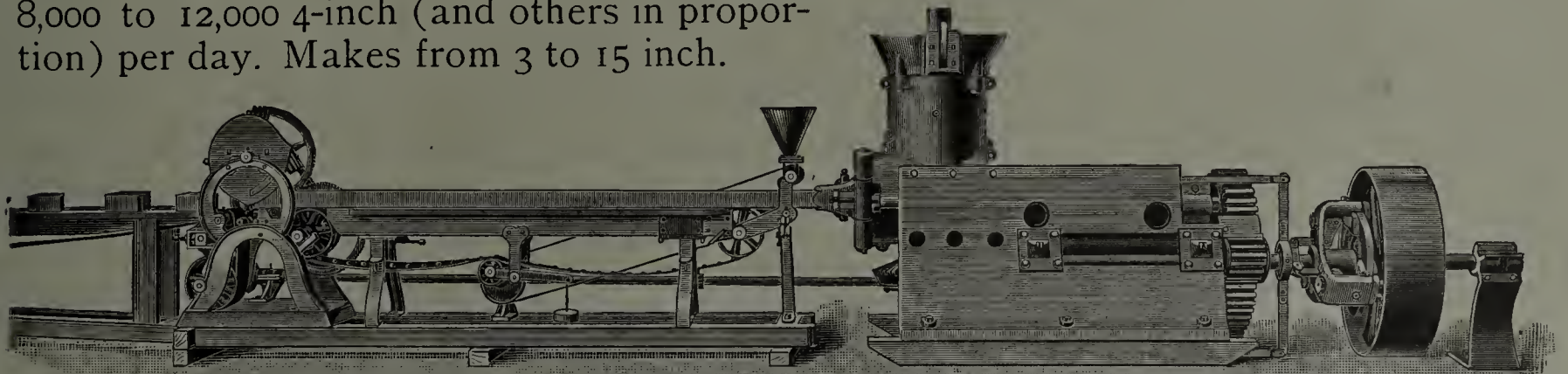
Little Wonder Brick Machine, with Cunningham Automatic Brick Cutter and Sander ; capacity, 25,000 Brick Per Day.



Little Wonder Drain Tile Machine ; capacity 8,000 to 12,000 4-inch (and others in proportion) per day. Makes from 3 to 15 inch.



No. 1 Open Top Pug Mill, Single Geared, 25,000 to 35,000 Brick Daily Capacity.



Big Wonder Brick Machine with Cunningham Automatic Brick Cutter and Sander ; capacity 60,000 to 75,000 Brick Per Day.

AS MANUFACTURED BY ~~~

## The Wallace Manufacturing Co.,

Send for No. 14 Catalogue for further particulars.

FRANKFORT, IND.



THE LATEST IMPROVED



Brick Dryer.

ADMA J. WECKLER,  
TELEPHONE, DIVERSY AND CLYBOURN AVES.  
WECKLER BRICK CO.,  
TELEPHONE, WESTERN AND ADDISON AVES.  
WECKLER-PRUSSING BRICK CO.,  
TELEPHONE, BLUE ISLAND, ILL.

MAIN OFFICE:  
517 OGDEN BUILDING, 34 CLARK ST.  
TELEPHONE 5044.

... SECRETARY'S OFFICE ...

MILWAUKEE BRICK & CEMENT COMPANY,

SUITE 1013 PABST BUILDING.

Telephone 1620.

Chicago, July 18, 1894.

WOLFF DRYER CO., Chicago,

Gentlemen:—We have had one of your twelve track dryers in use for nearly two years and two six track dryers for more than one years. Since you have improved these dryers by means of the receiving tank and pump system, we are drying 175 to 180 M bricks per day, with a saving of 20 to 25 per cent. of steam used under the old system. It is possible to dry up to 200 M brick every 24 hours, without injury to the ware, and we have done this on several occasions when we were compelled to run over time.

Our experience with other dryers formerly used on our plant and the results obtained by other manufacturers in this neighborhood with hot air and fire dryers, compels us to say that in our estimation your dryers are more economical and show better results than any we have seen. We use two boilers 5x18 feet for these dryers and at times have to reduce the quantity of steam used to prevent getting the bricks too dry. Pressure carried 85 pounds.

Yours respectfully,  
WECKLER-PRUSSING BRICK CO.,  
Alexander Prussing, Secretary.

Milwaukee, Wis., July 6, 1894.

WOLFF DRYER CO., Chicago, Ill.,

Gentlemen:—Early in the year 1893 we received propositions from a number of builders of brick dryers to set up on our plant a brick dryer with a capacity of at least 66,000 soft mud brick a day. We first accepted a proposition made for a Hot Blast Dryer and found that the performance of their contract fell far below their promises, and we were compelled to disregard the same entirely. We then called upon you to place your apparatus on our plant and found that it gives very good satisfaction and is apparently well able to perform the guarantee you gave for the same.

Yours respectfully,  
MILWAUKEE BRICK & CEMENT CO.,  
Per F. C. Eschweiler, Sec'y.

TENNESSEE  
PAVING BRICK CO.,

GENERAL OFFICES:—MONTAGUE BLOCK,  
W. M. LASLEY, GENERAL MANAGER. ROOMS 1 & 3.

Chattanooga, Tenn., September 3, 1894.

The WOLFF DRYER COMPANY, Chicago, Ills.,

Gentlemen:—We have thoroughly tested your Iron Clad Dryer put in for us recently, consisting of three (3) tunnels of three (3) tracks each; tunnels being eight-three (83) feet long, and it is giving us entire satisfaction. We are drying forty thousand (40,000) paving blocks per day, in size  $2\frac{1}{4} \times 4\frac{1}{4} \times 8\frac{3}{4}$ . Our brick come from the dryer perfectly dry, without checks, warp or twist.

It is a decided improvement over our old method of direct heat flue dryer and we are drying more and better brick with it than we did with our old system, nine (9) tunnels, three (3) tracks in each tunnel.

We adopted your system after investigating others and can recommend it.

Yours truly,  
TENNESSEE PAVING BRICK COMPANY,  
W. M. Lasley, Gen. Man.

Labahn Brick Company,  
MANUFACTURERS OF  
BUILDING BRICK.

YARD:—LANSING, ILL., PANHANDLE R R TELEPHONE:—MAIN 4132.  
OFFICE:—159 LA SALLE ST., ROOM 97. Box 408, BUILDERS' AND TRADERS' EXCHANGE.

Chicago, Ill., September 7, 1894.

WOLFF DRYER CO., Chicago, Ill.,

Gentlemen—The four tunnel dryer, sixteen tracks, which you built for us to dry 90 M bricks daily, did the work in a very satisfactory manner. Recently we concluded to increase our capacity which we could do with very little expense, providing we could dry the extra quantity.

We are pleased to state that you mastered the situation by adding your late improvements which cost very little extra, and we are now enabled to dry 112 M bricks as easily and with no more expense than the cost of drying 90 M, and we feel confident that if we were to run 10 hours daily, instead of eight as we are now doing, that the drying capacity is ample to thoroughly dry the entire output. We therefore take pleasure in commending your dryer to all brick manufacturer in need of an economical system of drying their clay product.

Yours respectfully LABAHN BRICK CO.,  
John F. Labahn, Pres.

Information, Estimates, Catalogues fully furnished.

WOLFF DRYER CO., 358 Dearborn St. Chicago, Ill.  
Room 304.





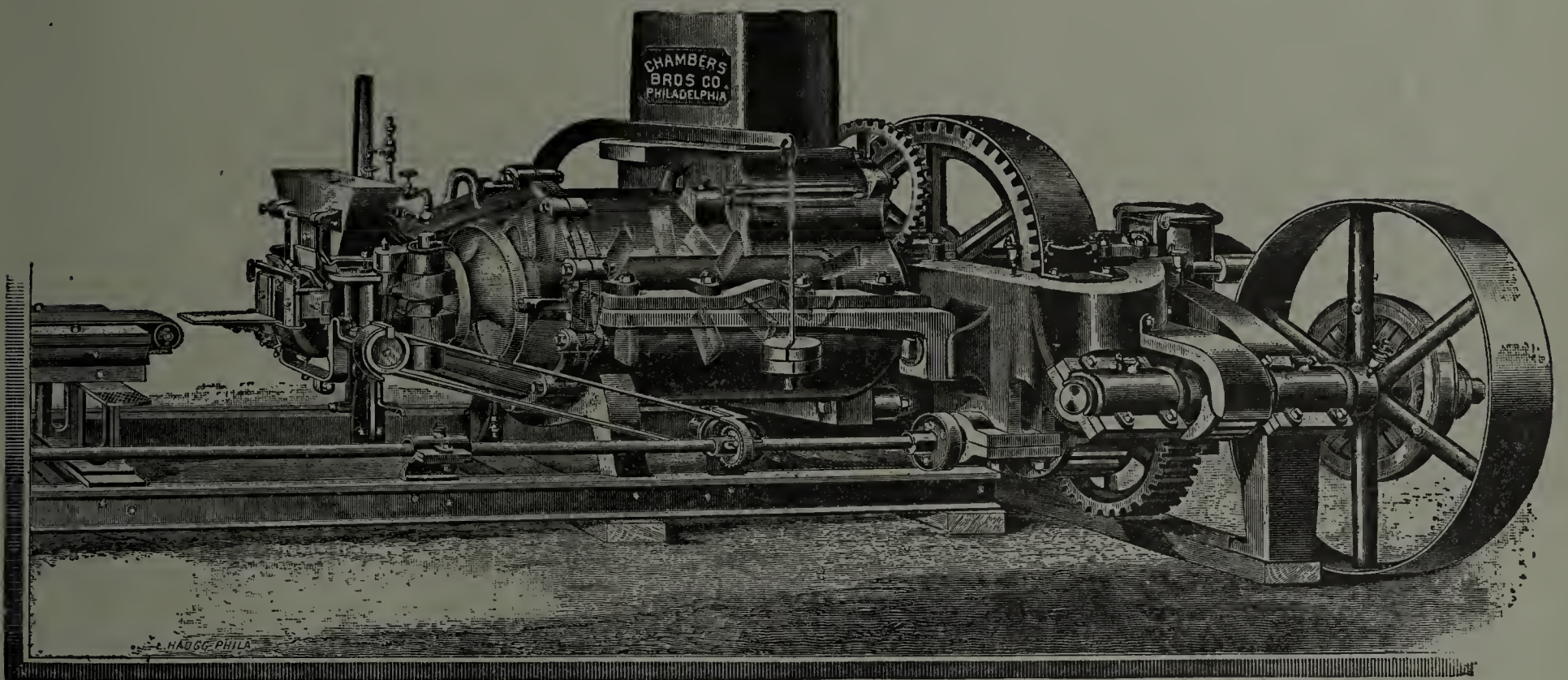
THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXII, No. 4.

INDIANAPOLIS, IND., OCTOBER, 1894.

\$2.00 a Year in Advance.

# Brick Making Machinery,



## Chambers Brothers Company,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,

J. E. EASTES, Chicago Agent,  
203 South Canal Street.

PHILADELPHIA, PA.

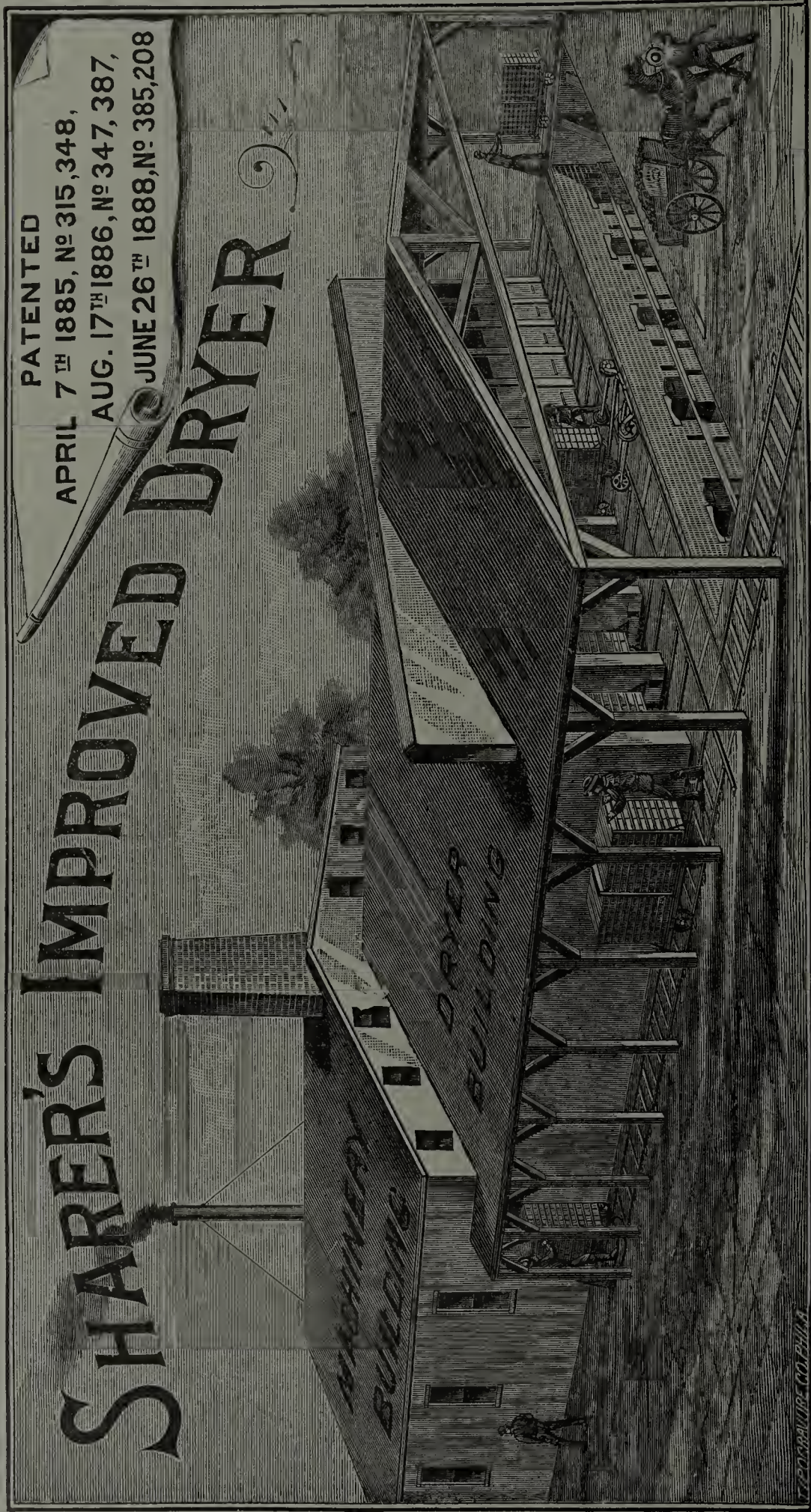
See ads. on pages 404 and 405.



# THE SHARER DRYER AND CONSTRUCTION CO.,

BRICK MANUFACTURING EXPERTS.  
CONSTRUCTING ENGINEERS. • CONTRACTORS AND BUILDERS.  
COMPLETE PLANTS A SPECIALTY.

Builders of All Kinds of Dryers and Kilns for Drying and Burning any and all Kinds of Clay Products.



Owners of SHARER'S IMPROVED DRYER;  
SHARER'S IMPROVED CALORIFIC KILN.

Manufacturers of Cars, Transfer Cars, Turn Tables, Furnace Castings and Complete Dryer and Kilm Equipments.

... ..Dealers in All Kinds of Clayworking Machinery, Engines, Boilers, Shafting, Pulleys, Etc.  
New plants built and equipped complete in every particular. Old plants remodeled and modernized. Clays tested and analyzed. Plans and estimates furnished.  
Information costs you nothing. Send for Catalogue "C."

## SHARER DRYER & CONSTRUCTION CO.,

TORONTO OFFICE: 71 Adelaide, East, Toronto, Ont., Canada,  
HUGH CAMERON, Manager.

Rooms 506 and 507, The Mutual Life Building,  
N. W. Cor. 10th and Chestnut Streets, PHILADELPHIA, PA.



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS

—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

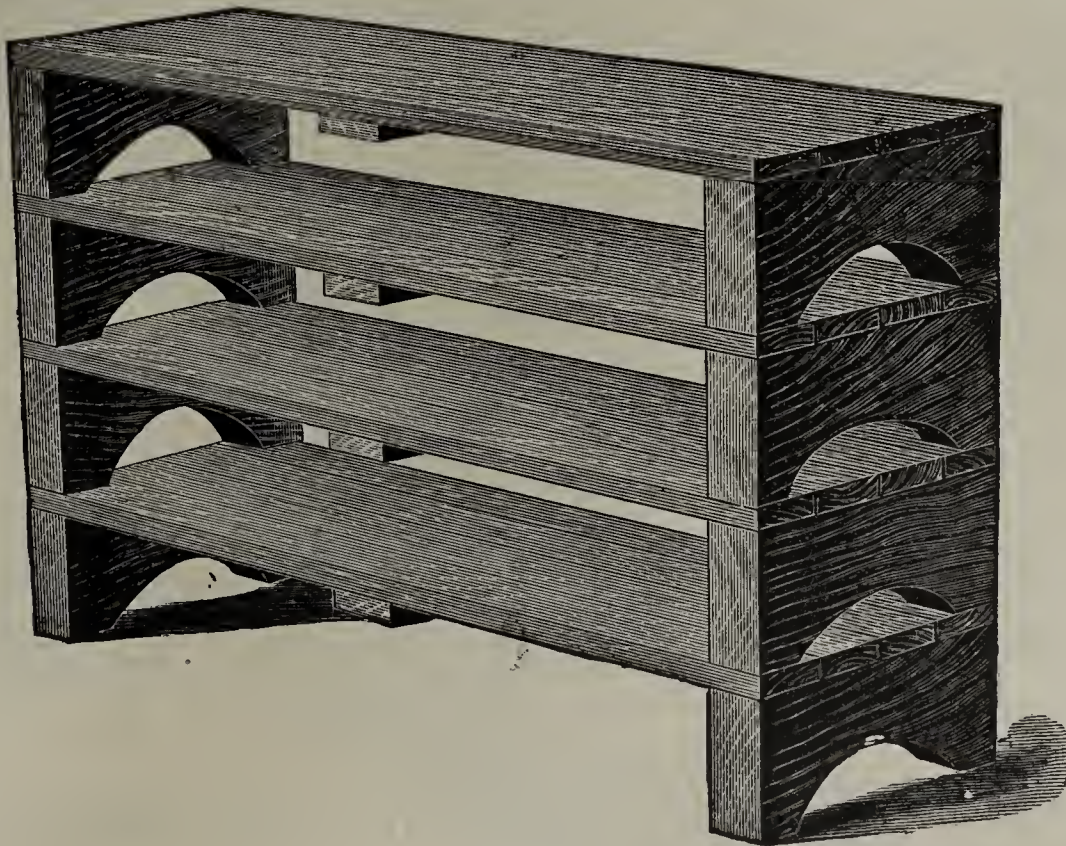
THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

## WOODEN BRICK PALLETS

WOODEN  
BRICK  
PALLETS



STYLE C.

WOODEN  
BRICK  
PALLETS

We manufacture all styles and sizes. Write to us direct for descriptive circulars and prices.

WM. B. MERSHON & CO., - Saginaw, East Side, Mich.



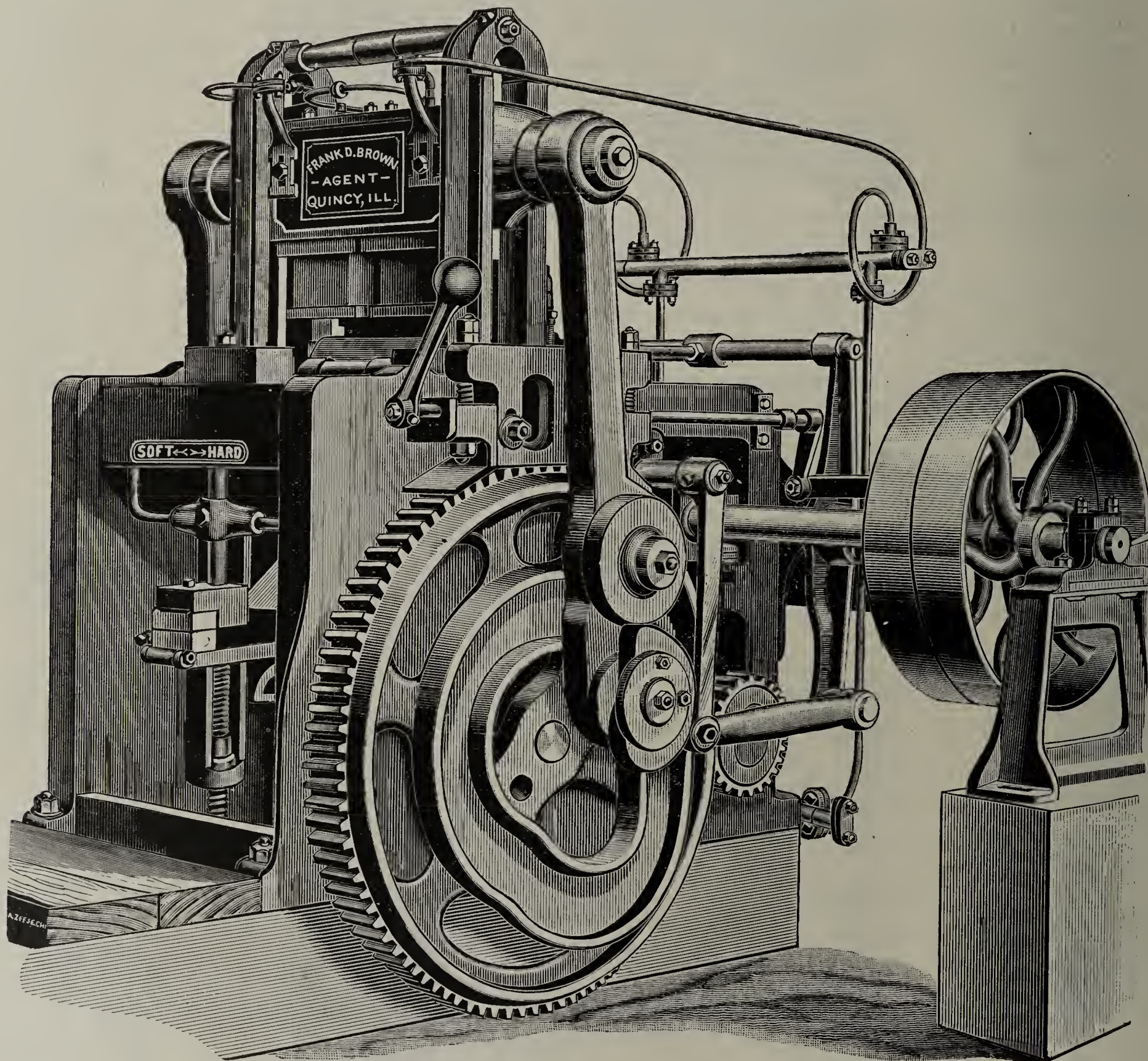
# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

•✦ HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. ✦•

Best, Cheapest and Most Durable Press in the World.

\* ————— One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

**FRANK D. BROWN,** Room 817 Continental Bank Bldg.  
Cor. La Salle & Adams Sts. **Chicago.**



# The Ross-Keller Brick Machine.

## (Triple Pressure)

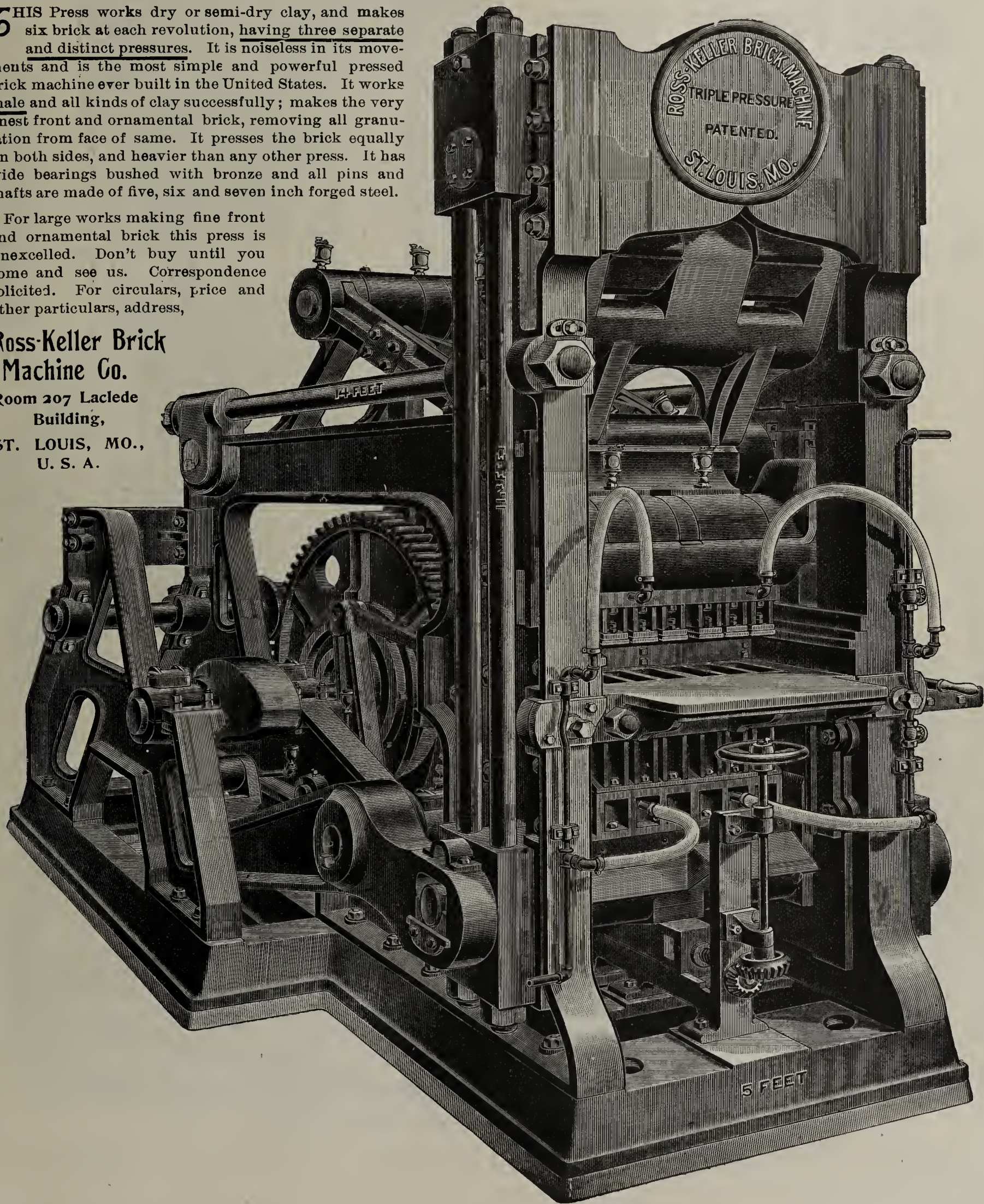
Weight 75,000 Pounds, Capacity 35,000 to 40,000 Brick Per Day.

**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five, six and seven inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address,

**Ross-Keller Brick  
Machine Co.**

Room 207 Laclede  
Building,  
ST. LOUIS, MO.,  
U. S. A.





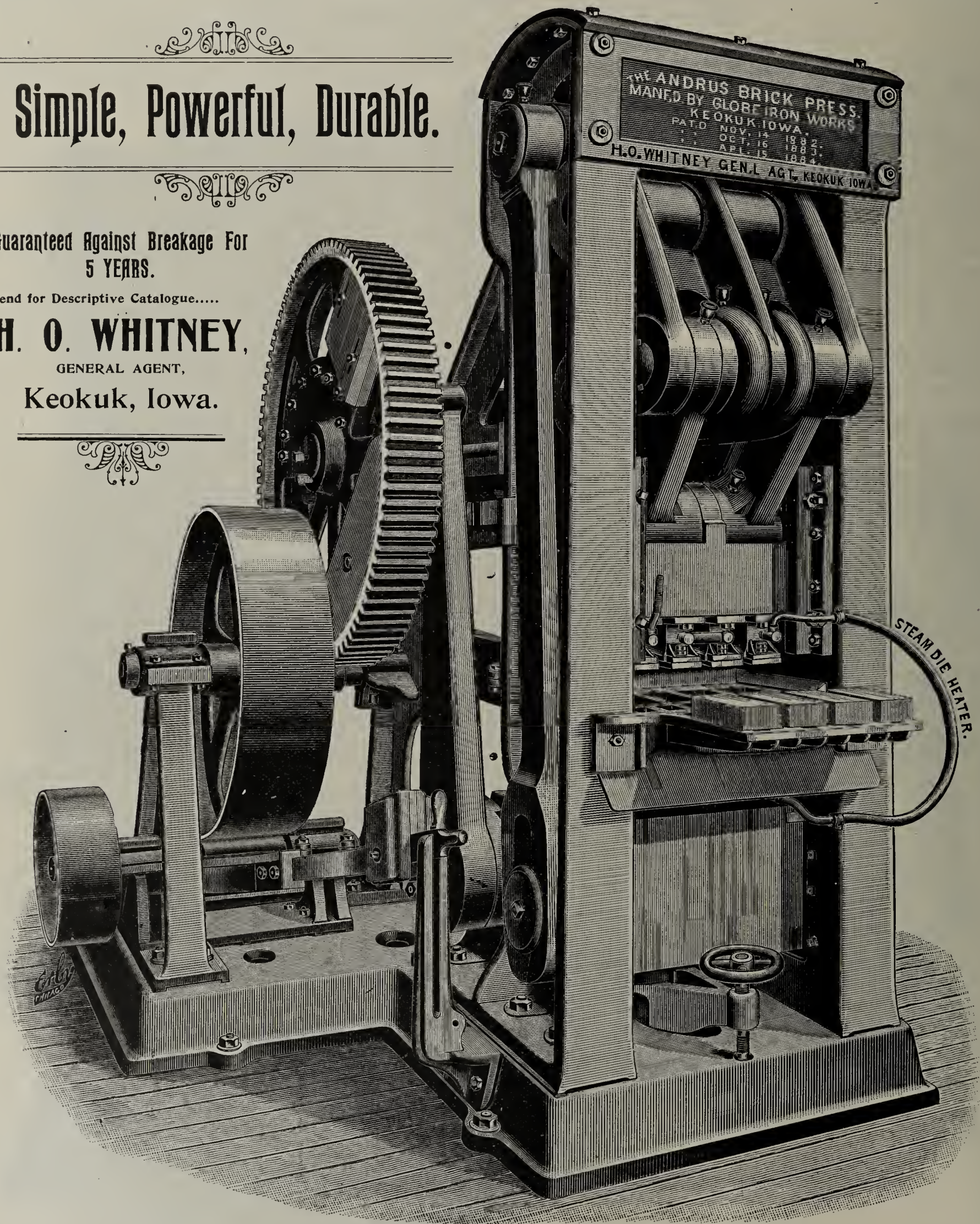
# THE ANDRUS 4-Mold DOUBLE PRESSURE BRICK PRESS.

Simple, Powerful, Durable.

Guaranteed Against Breakage For  
5 YEARS.

Send for Descriptive Catalogue.....

**H. O. WHITNEY,**  
GENERAL AGENT,  
Keokuk, Iowa.



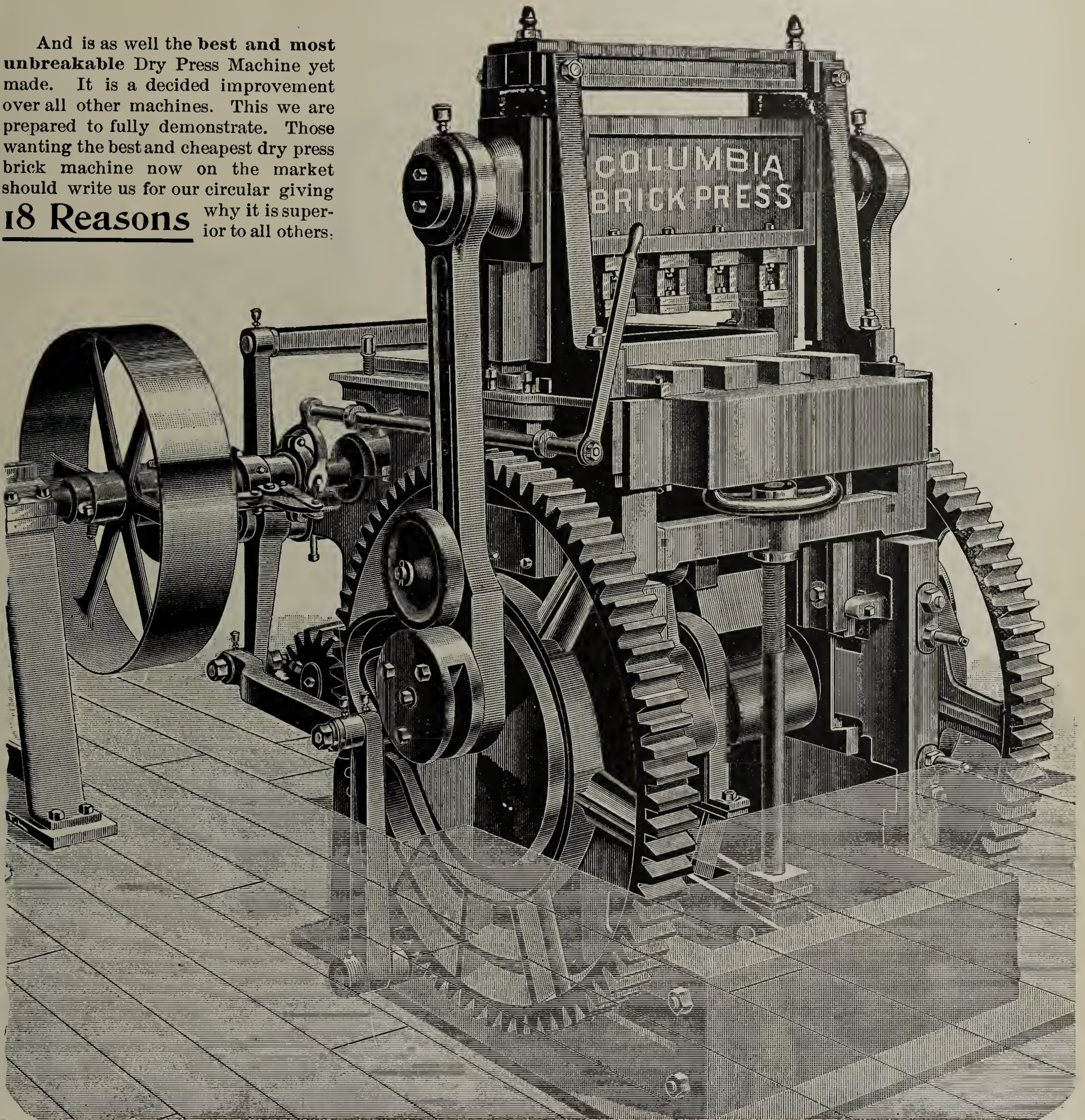


# ❖ THIS ❖ PRESS ❖

IS ESPECIALLY ADAPTED TO THE MANUFACTURE OF

## FINE ORNAMENTAL BRICK

And is as well the best and most unbreakable Dry Press Machine yet made. It is a decided improvement over all other machines. This we are prepared to fully demonstrate. Those wanting the best and cheapest dry press brick machine now on the market should write us for our circular giving **18 Reasons** why it is superior to all others.



OUR TERMS ARE REASONABLE. ADDRESS,

### COLUMBIA MANUFACTURING CO.,

Send your clay and we will test it and send you the results....

2119 N. Ninth St., ST. LOUIS, MO.



NONE CAN COMPETE WITH IT

# The Simpson Brick Press

THE STANDARD MACHINE OF ITS CLASS.

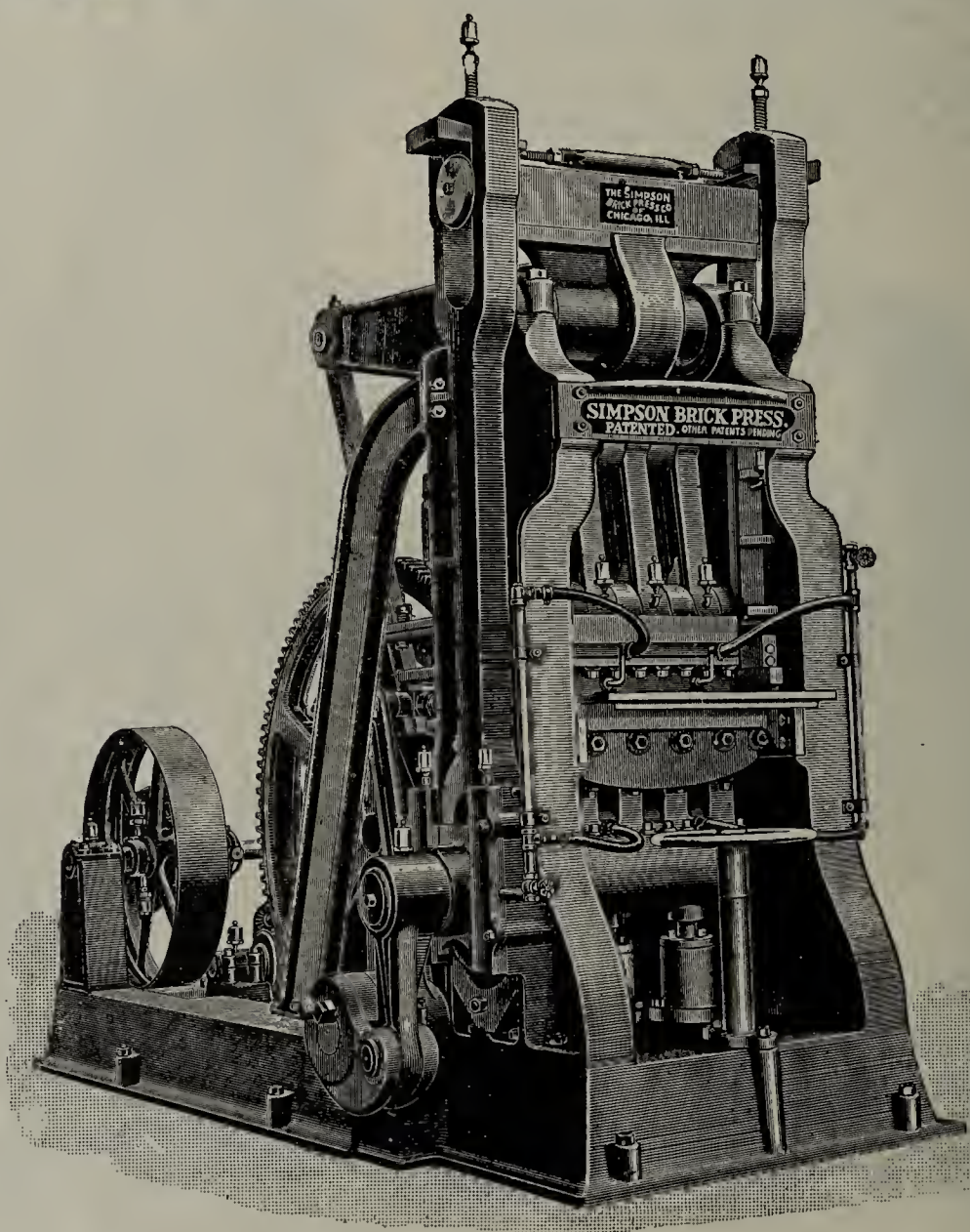
Every purchaser receives the benefit of years of experience in the dry press process.

The **SIMPSON** is beyond the experimental stage as its many successes can prove.

There are more of them running successfully than any other machine in existence.

It was the **only** machine to receive **favorable** mention from the **Official Judge** on Brick Machinery at the

World's   
 **Columbian**  
**Exposition** 



✍ Write us for descriptive matter, prices, terms, estimates, etc.,

## The Simpson Brick Press Co.,

AGENTS FOR CANADA,  
 Waterous Engine Works Co., Brantford, Ontario.

Chamber of Commerce, CHICAGO, ILL.



# U. S. BRICK PRESS

Perfect in Mechanical Construction.

Least Cost For Repairs.

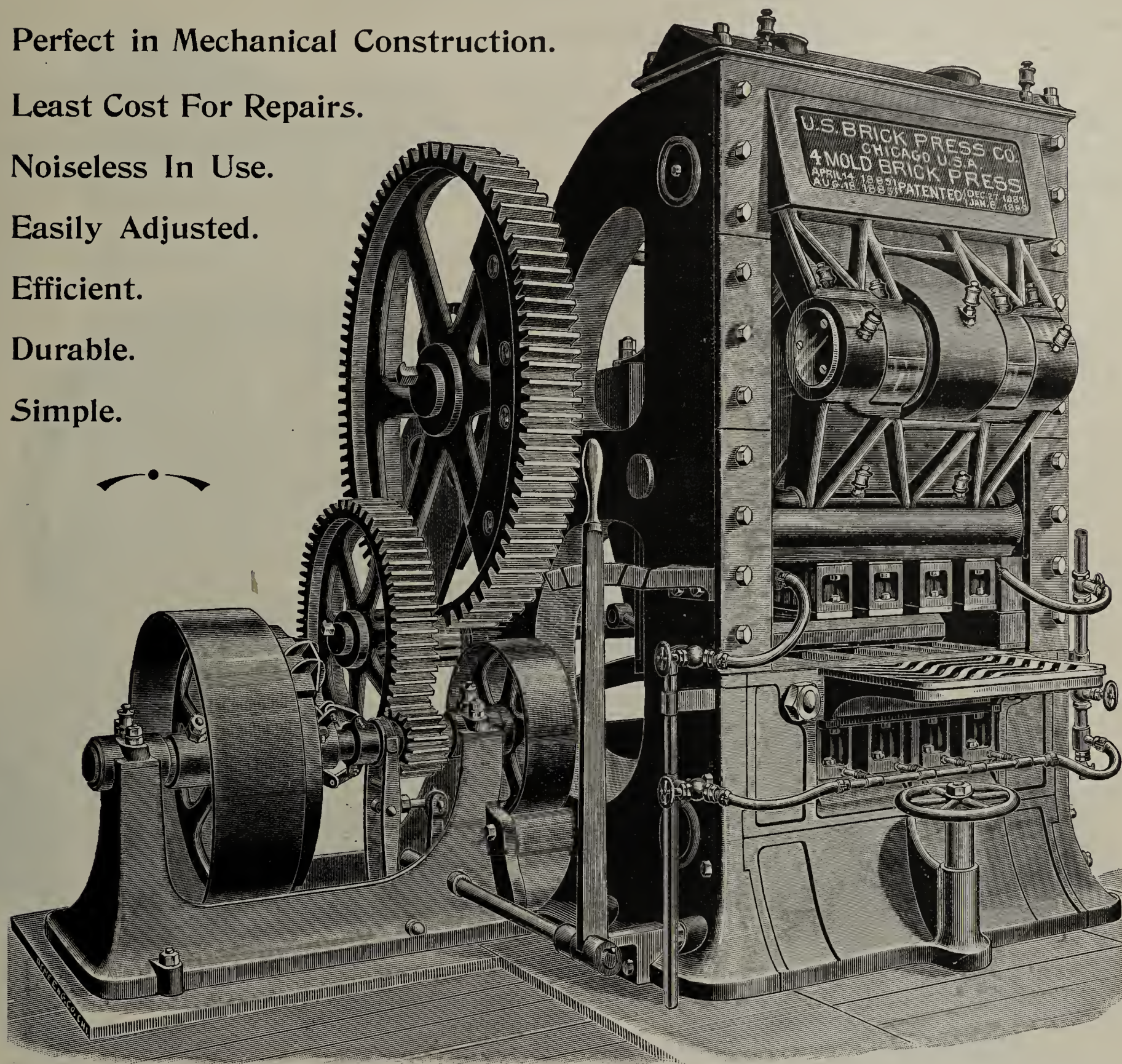
Noiseless In Use.

Easily Adjusted.

Efficient.

Durable.

Simple.



The U. S. Brick Press embodies all the requirements demanded by Pressed Brick Manufacturers, and its record is proof conclusive of its perfection as a Pressed Brick-maker. Write for new descriptive sheets.

UNITED STATES BRICK PRESS WORKS,

OSWALD KUTSCHE, Proprietor,

OFFICE AND TESTING ROOMS:  
72 West Washington Street.

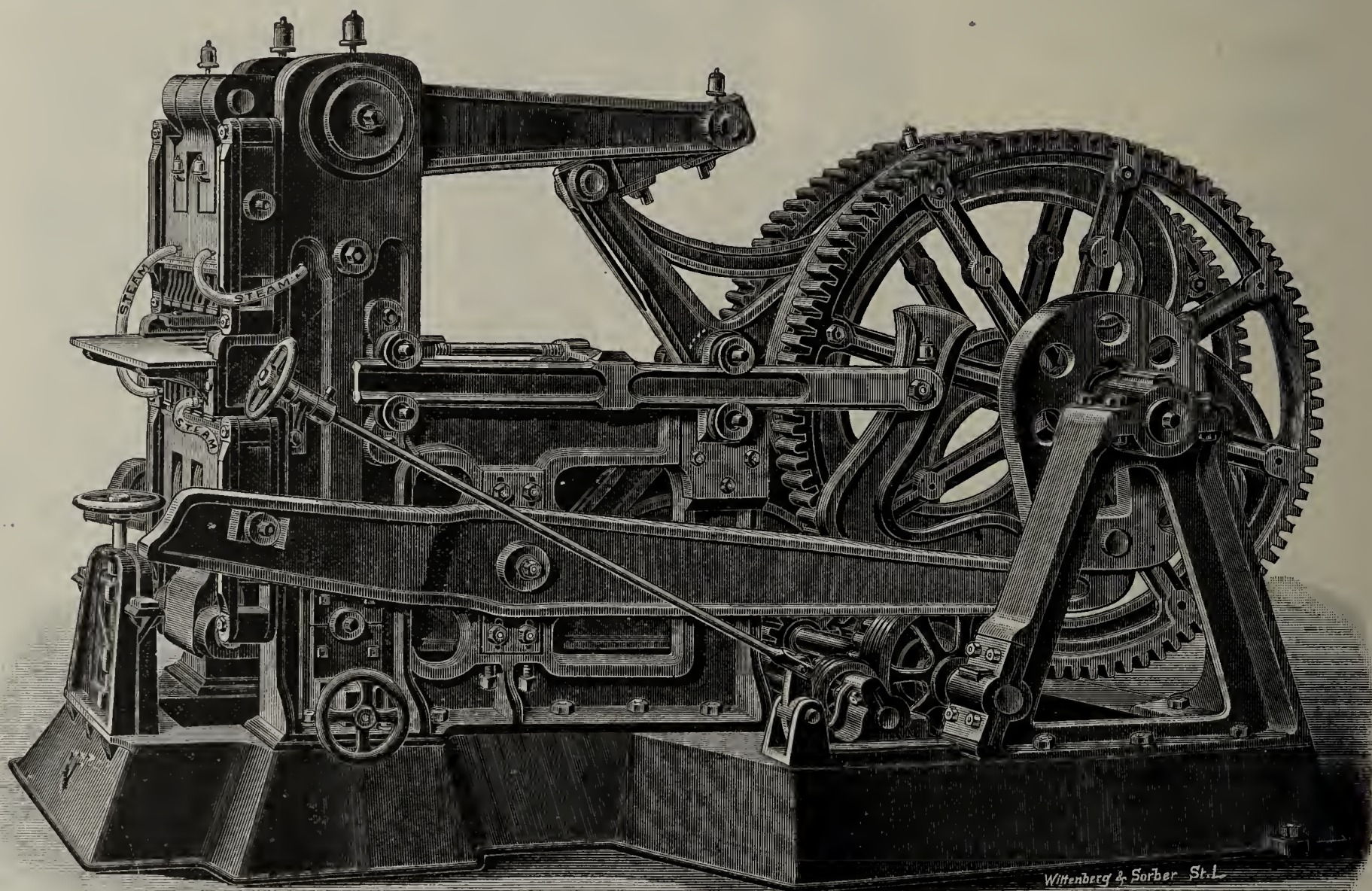
CHICAGO, ILL.



# The Progress Brick Press,

✧ *DRY and SEMI-DRY.* ✧

This machine is the result of years of practical experience in Dry Pressed Brick-making, a model combining **Simplicity, Durability and Economy**, as **Brickmakers and Press Builders**, we have entailed every advantage in producing the machine for a Brickmaker.



Can be seen in daily operation on plain, stock and ornamental bricks at any time at our yards. **Inspection solicited.**

Equal in strength to 50 tons of iron; this press is built of **Bassic steel** and best quality iron.

Bearings of split boxes, and wear taken up with kib and key, hence no lost motion.

All adjustments arranged with wedges operated by hand wheels, no troublesome liners and all parts easily accessible.

Only Six Horse Power required to operate our largest 6-Mold Press.

No liners to our mould, no table to fit mould into, and no change in size of bricks by regrinding moulds.

Of the time of each revolution 40 per cent. is spent in high pressure on bricks, permitting all air to escape, hence, no seam or granulation, in the brick, 28 per cent. in charger forwarding bricks, perfect filling of molds and undamaged product secured by this easy movement. Only 32 per cent. in moving of the Plunger.

This machine is adapted to making all sizes and shapes of bricks up to 12 inches square. Bricks pressed on edge, etc., etc. We manufacture 2, 3, 4, 5 and 6 mould presses and sell them with a perfect guarantee.

Descriptive catalogue, prices and terms on application.

**Tower Grove Brick and Machine Works,**  
King's Highway and Oak Hill R. R. **ST. LOUIS, MO.**



# Fifty Thousand Dollars

For the **BOYD**

**BRICK**

**PRESS**

## A TRUE TALE.

The largest brick plant in the world is  
*The Jarden Brick Co.,*

—OF—

*Philadelphia.*

Not long ago they decided to put in a Dry Clay Plant. They traveled all over the country and inspected the various dry press machines at work. Then they put in a six-mold Boyd Press. They worked it for over seven months, and were so pleased with it

that they bought *five more* six-mold and *one* two-mold, Boyd Presses. They paid for all these presses. They knew what the Boyd Brick Press could do. They knew that no other press could compete with it. So in order to get the sole right to use the Boyd Brick Press in Philadelphia and for 50 miles around, besides the price of the seven presses, they paid us *Fifty Thousand Dollars* (\$50,000).

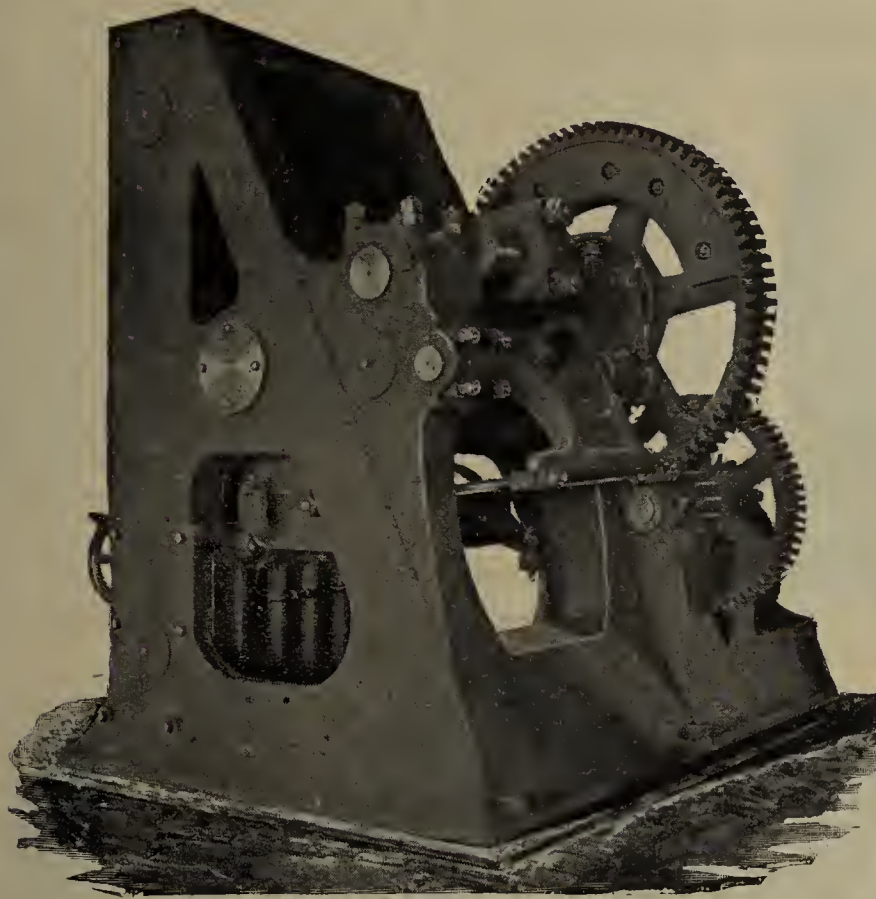
Their brick is acknowledged by builders to be "without competition" in their part of the country.

Need we say more?

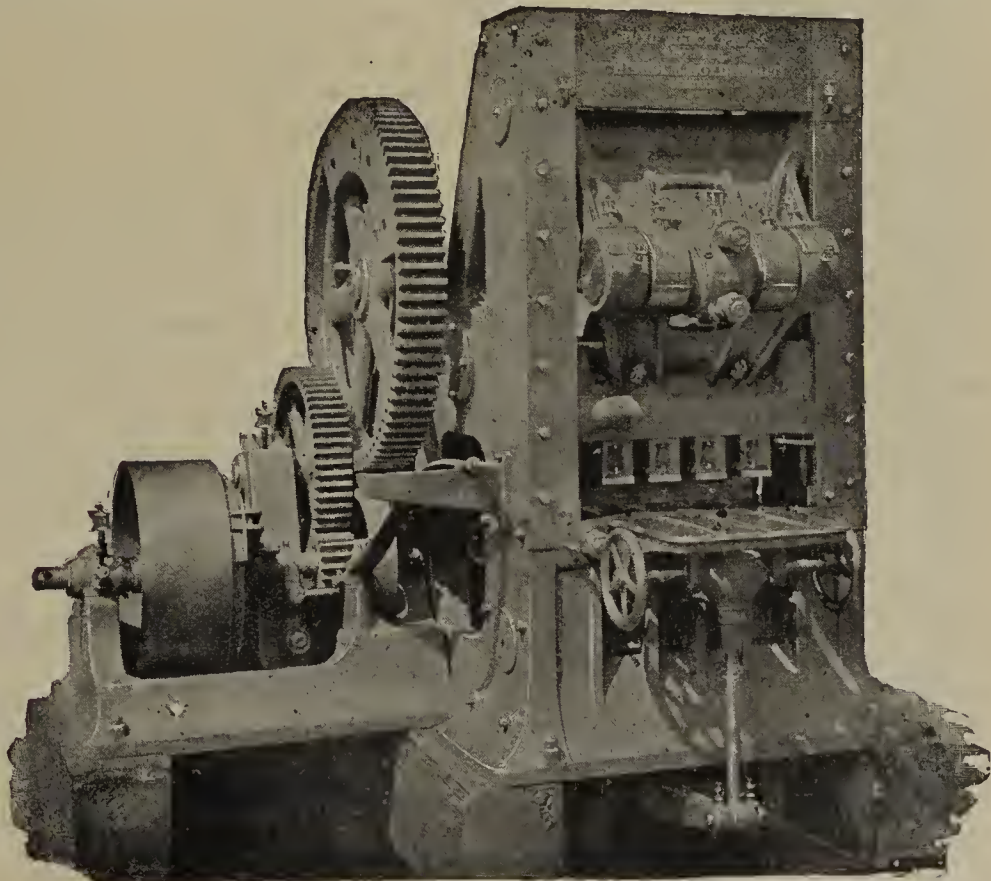
Catalogue on application. Circular giving *fac simile* of medal awarded at the World's Fair to the Boyd Brick Press, free.

*The  
Chisholm,  
Boyd  
and  
White  
Co.,*

324 Dearborn Street,  
CHICAGO.



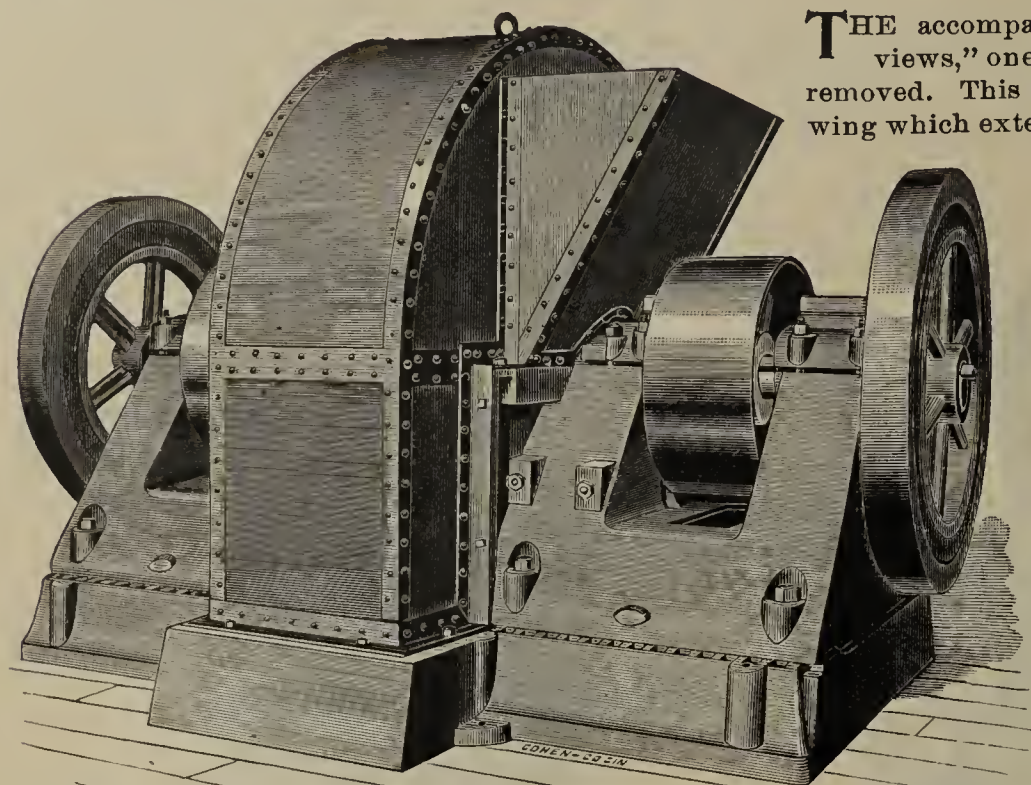
FOUR-MOLD MACHINE.  
(REAR VIEW.)



FOUR-MOLD MACHINE.  
(FRONT VIEW.)

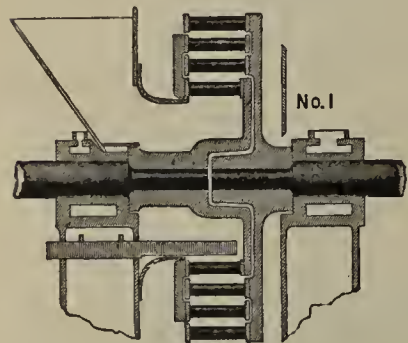


# Stedman's Improved Clay Disintegrators



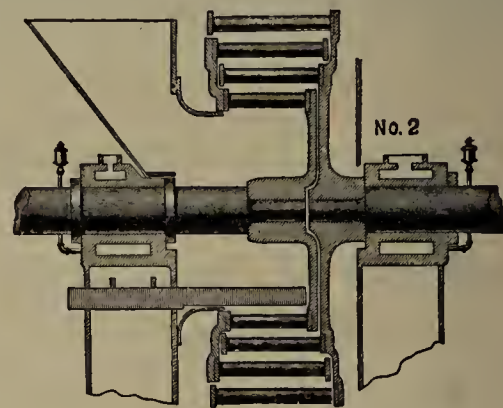
PATENTED APRIL 10, 1894. Nos. 518,010, 518,011.

Figure 1. This is the old plan of cage construction. While these cages do good work, there are certain mechanical faults in their construction that require excessive power to operate them, and the capacity is diminished. The four rings of cage pins are the same length, and this construction necessitates a recess in the castings to receive the ring of the opposite cage. The friction of the ground product between this ring and cage casting requires surplus power. The pins, or bars, all being the same length, there is no chance for the material to spread and clear itself, as it works



outwardly in the cages, and if the feeding is irregular, it constantly chokes the cages and checks the speed, so that as good grinding is not accomplished.

Figure 2. The construction of these cages is such that the best possible grinding can be accomplished, with little power and little wear and tear. We have what is called an increased clearance of the cages. (That is, they approach a conical construction from the center of the shaft to the circumference of the outside cage.) The inside row of pins is shorter than the second row, and the third and fourth rows increase in length over the second. By this construction there is no recess between the ring of one cage and the casting of the other, any material that works behind the rings being immediately thrown outwardly into the cage beyond, for it has a free discharge, and the centrifugal force it receives will not permit it to lodge between the ring and casting. This increased clearance allows the material, as it is fed to the cages, to spread and free itself, for it gives an increased grinding surface as the material works outwardly. You can feed the material as irregular or fast as you desire and it will not choke or clog the mill.



Parties who are familiar with the mechanical construction of Cage Disintegrators will understand and appreciate the merits of this valuable improvement. This cut also shows the construction of our journal bearings. The arrangement for oiling is the best and the journals are constructed dust tight, so that there will never be any danger of heated bearings.

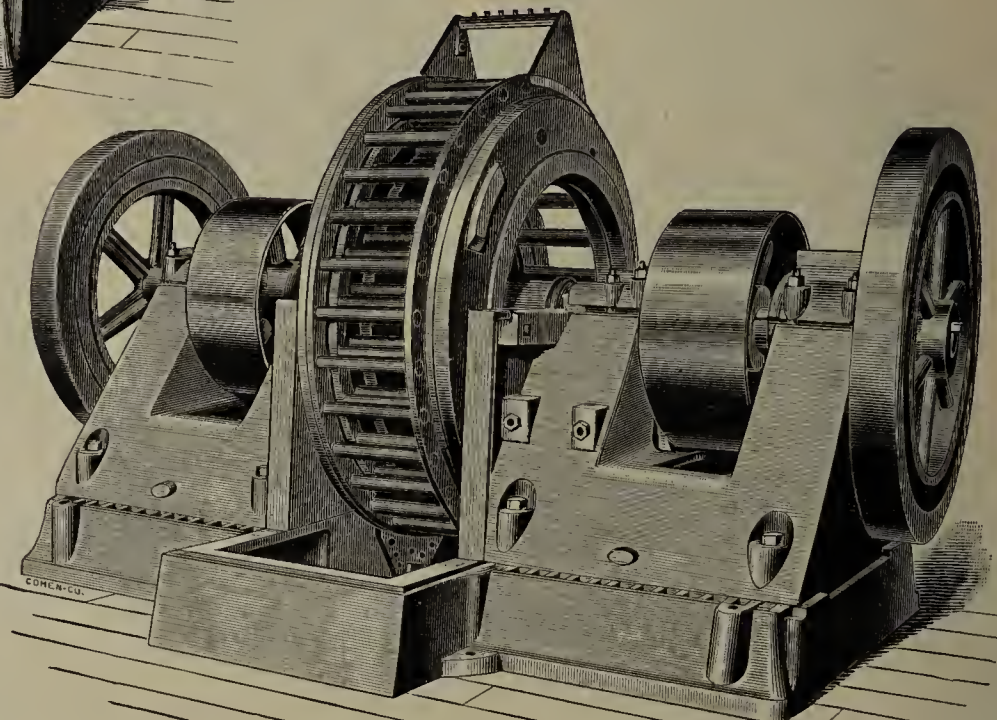
We can design these Improved Clearance Cages to fit the framework of any other make of Disintegrators, and will be pleased to correspond with any one who appreciates the value of this improvement, with a view of placing it on his Disintegrators.

Remember, with our Improved Clearance Cages you can do much more work with much less power, and greatly reduce the wear and tear.

For preparing clay to make fine brick, we believe we can furnish you the best machinery, and desire that you communicate with us before placing your order.

THE accompanying cuts show our Improved Disintegrator, "two views," one with the casing over the cages, the other with the casing removed. This casing, which fits around the cages, has an extension wing which extends clear down to the base plate, so when you remove it from over the cages, they are presented in full view, and it is an easy matter, when slid apart, to reach the interior parts. Fastened to the outside revolving cage are two scrapers; the cross-bars of these scrapers extend some six or eight inches beyond the revolving cages, and revolve close to the iron casing that fits around the cages. This always insures a space of 6" to 8" between the cages and casing for a free discharge, and the action of these scrapers makes it impossible to clog in grinding damp clay. This is the most simple and practical method to overcome clogging in grinding damp clay, and brickmakers who have had experience with this class of Cage Clay Disintegrators will appreciate the value of this patented improvement. See cut below.

Improved Scraper.



PATENT APPLIED FOR.

**STEDMAN'S MACHINE WORKS, - - 110 Third Street, AURORA, IND.**



HOLDS FIRST PLACE EIGHT YEARS.

# Morrison's Improved Kiln,

WITH LATE IMPROVEMENTS, .

The Best Up=draft Kiln in Use.

Who says so?

Let us see what W. H. Perot, the largest manufacturer of fine pressed and ornamental bricks and terra cotta in the City of Baltimore, Md., who has used them eight years, says about our kiln. In a letter received from him under date September 15, 1894, asking for plans with which to put up a new kiln, he closes as follows:

“Your plan of kiln is the only one I use, as I like it better than any I know of.”

Will you not write us and learn more about a kiln that wears so well.

 No stamp required.

Address

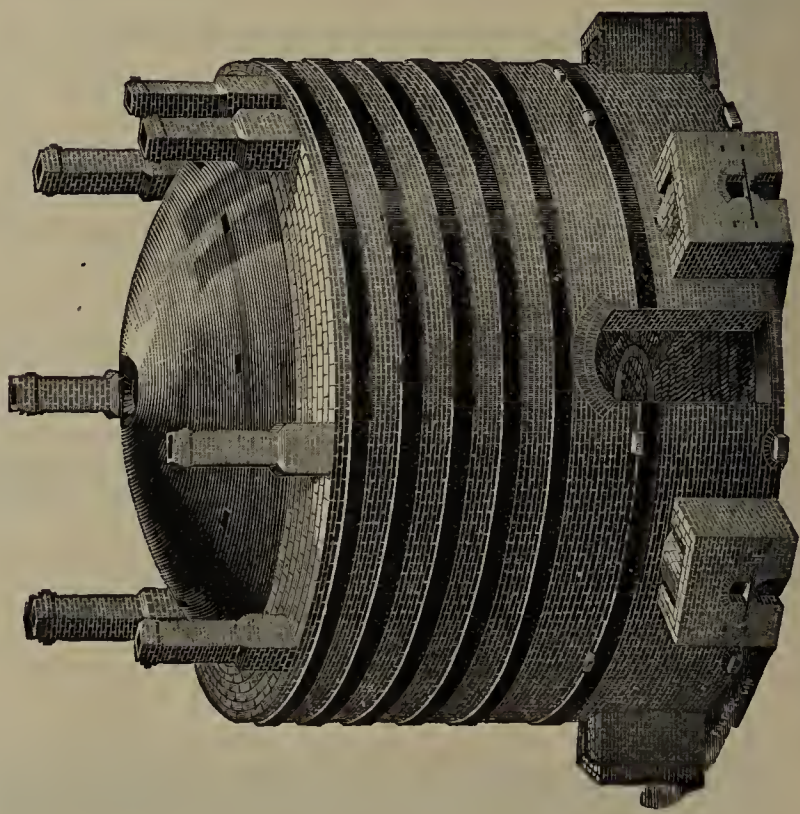
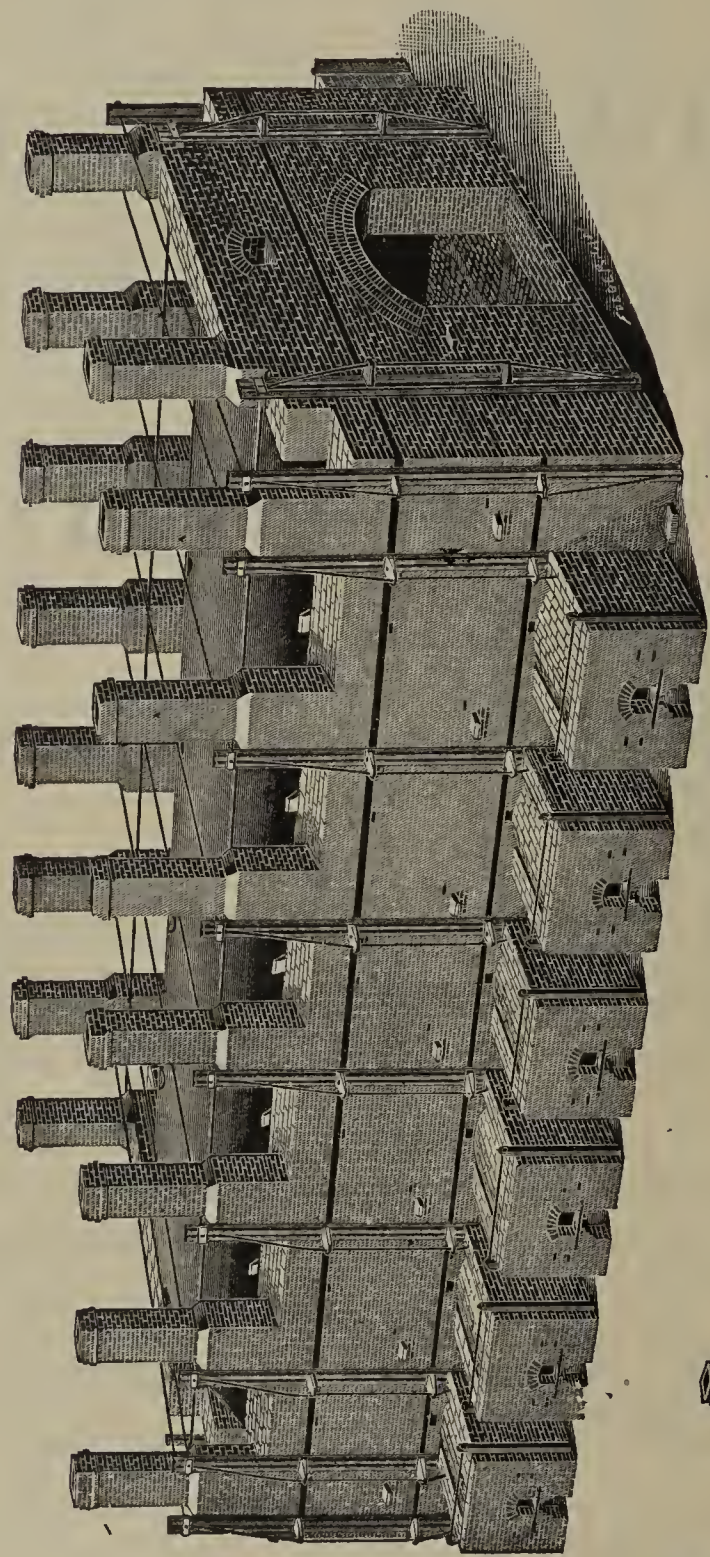
R. B. MORRISON & CO.,

P. O. Box 335.

ROME, GA., U. S. A.



# The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
64 Johnston Buildings, Cincinnati, Ohio.



# THE KILN OF THE PERIOD.

## THE "PERFECT KILN."

*Sercombe's Patent.*

Designed on Economic and "Common Sense" Lines, for Burning Brick, &c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Hoffman's are being converted and new ones erected in Austria (the home of Hoffman's); also a number in America.

### NOTE WHAT THE USERS SAY.

100 per cent. Hard Brick, out of which are 70 per cent. Vitrified, Annealed Tough Pavers.

John A. Wiley, *Pres.*  
Geo. Allen, *Sec.*

W. S. Bleakly, *Treas.*  
W. Cramer, *Gen'l. Man.*

FRANKLIN PAVING BRICK CO.,

March 19, 1894.

To L. HANCOCK, Esq., Metuchen, N. J.

Dear Sir:—In answer to yours of the 13th wanting to know how we are getting along with our kiln, would say that we are improving steadily as our men get to understand our material. You know that our clay is one of the most difficult kind to work that your kiln ever had to contend with, for the reason that there is so small margin between vitrifying and melting. We are now getting 70 per cent. vitrified brick and balance all hard. We expect to do better than this soon. I feel confident we will. A kiln that will burn our clay properly, will burn anything in the shape of brick material.

Yours truly,  
GEO. ALLEN, Secretary.

From the Russian Agricultural Agency, St. Petersburg.

Herewith we beg to inform you that the erection of the Kiln is finished, and we are very glad to tell you that our customer (Prince Kourakine) is very much satisfied with the kiln after same was duly tried.

We enclose cheque for balance of license fee, etc.

From Mr. H. Burrridge, Bedford.

No doubt you will be pleased to hear that I am getting on all right with the Kiln. I have no hesitation in saying that I am pleased with it. It is going well.

From Mr. J. D. Dunlop, Woodstock Works, Belfast.

I am very pleased to be able to inform you that the "Perfect Kiln" is doing well, burning the brick all hard, at a cost of between 7d. and 8d. per 1,000 for coal.

From Messrs. Hawkes & Joberns, Kenilworth.

We shall be happy to let the gentlemen you name see the Kiln. We are quite satisfied with it, and its work.

From the St. Julian's Brick and Tile Co., Ltd., Newport, Mon.

In reply to your letter, my Directors instruct me to say that they are very pleased with your kiln, and will be willing for any intending clients of yours to inspect same.

..... Secretary.

From the Longton Hall Co., Ltd., Stoke.

Our Kiln seems to be working satisfactorily, and we shall not at present require the assistance of one of your men.

From the Exmouth Brick and Tile Co., Ltd.

In reply to your inquiry, my Directors instruct me to say that they are extremely well pleased with the way the Kiln is working. The splendid lot of brick in the yard is a credit to anyone, and no one could reasonably expect better.

..... Secretary.

From the Stramberg Lime Co., Stramberg, Moravia.

After speaking highly of the economy in erection, and the system of flues, they say, "After we have been used to working two Hoffmanns, beside the "Perfect" furnace, then can we truly assure you that we save 20 per cent. burning material in the "Perfect," and attain a more equal heat. We can therefore highly recommend this system, and shall be pleased to answer further enquiries."

From the Rothneusiedler Brick Co., Vienna.

The altered Hoffmann is very easy to work, and we save 15 per cent. of fuel and get the brick more evenly burnt by the "Perfect" system.

References can be given to over Forty first-class firms already.

Agents for Canada, R. H. PYNE & CO., Yonge Street, Toronto.

## SERCOMBE, OSMAN & WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER



W. H. KELSO, Pres.

F. HASPER, Sec'y

PAUL BOEHNCKE, Treas.

M. C. KELSO, Ass't Sec'y.

MAX A. TH. BOEHNCKE, Gen'l Mgr

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

BOEHNCKE'S

Several other U. S. Pat-  
ents applied for.

UP AND DOWN DRAFT

## Continuous Brick Kiln.

Canada Patent, No. 44,615.

DON'T LOSE TIME TO INVESTIGATE.

18 Kilns in Operation in  
.....the United States.

Several Kilns in course of  
construction  
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

Beware  
of  
Infringe-  
ments.

### ADVANTAGES OF THE KILN.

1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of

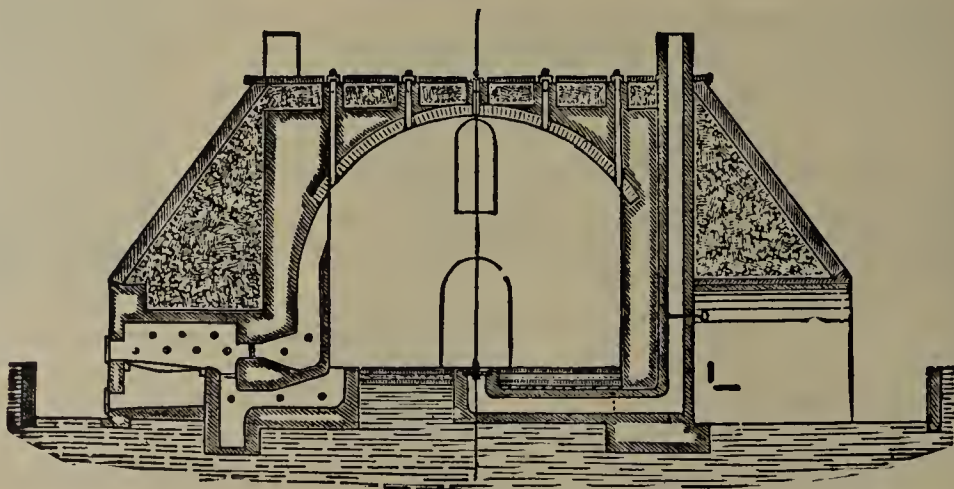
Soft and Stiff Mud Brick,  
Dry Press Brick,  
Shape and Face Brick,  
Sewer and Paving Brick,  
Fire Brick, Cement and Lime.

Write for Circulars to

**Centinela Brick  
Kiln & Drier Co.,**

Box 35,  
Centinela, Cal.

COMMON SENSE KILN.



Patent No. 475,433.

FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "**COMMON SENSE**" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

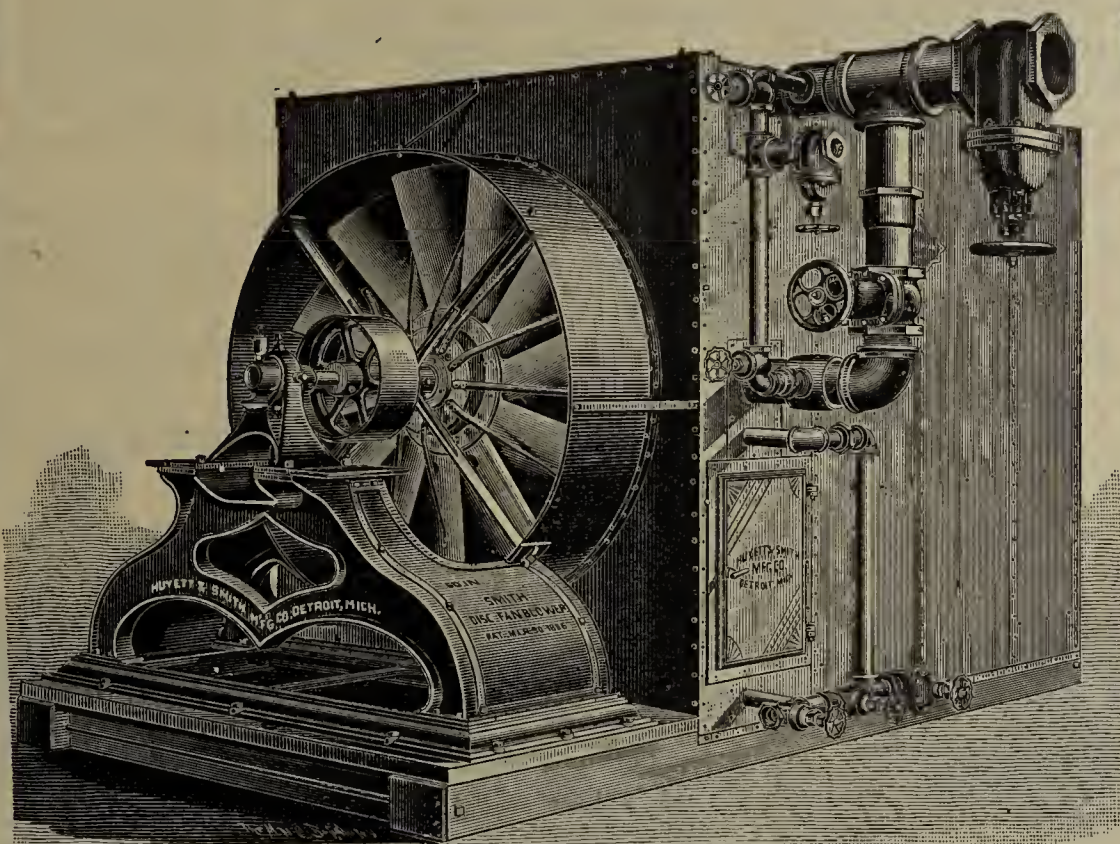
## A NEW BRICK DRYER.

We have also Boehncke's Brick  
Drier, which is very economical

Agents for Eastern States: DeHaven and Charles Lance,  
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115, 75, 76, 161 La Salle Street, Chicago, Ill.





## Four Inch Tile

Dried in  
Six Hours  
Without Crack-  
ing  
in the



Smith Hot Blast Brick  
Dryer.

BOTH

BRICK and TILE

Dried as fast as they  
can be taken care of—

So Say the Users in  
Their Letter Below.

MORENCI, MICH., August 25th, 1894.

MESSRS. HUYETT & SMITH MFG. Co., Detroit, Mich.

GENTLEMEN:—Replying to your inquiry asking us how we like the Dryer purchased of you about nine months ago, will say the said Dryer has been in constant operation since the day we first started it, and It is giving us the very best of satisfaction. It dries both brick and tile as fast as we can take care of them, and in fact we can dry 4-inch tile in six hours without cracking them.

We consider the Dryer a **PERFECT SUCCESS** in every particular and would recommend it to any one in want of the same.

E. CLARK & SON.

The above is a sample of the letters we are constantly receiving from our patrons. Write us for plans, catalogues, and estimates.

## The Huyett & Smith M'f'g Co.,

Main Office and Works,  
1400 Russell St.

DETROIT, MICH.

BRANCHES

CHICAGO, 31 South Canal Street.  
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BOSTON, 48-54 Union Street.  
SAN FRANCISCO, 21 Fremont St.  
PHILADELPHIA, 118 Custom House Place.



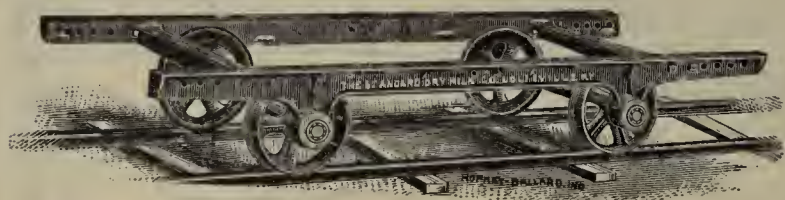
# Brick Cars

And other Drier equipment is our specialty. We are headquarters for everything in this line. Our improved Car has many points to recommend it; it is well proportioned and substantially made; its construction is such that 50 per cent. less bolts are required than in any other make, reducing in this proportion its liability to get loose. It is provided with "chilled" Cage Roller Bearings, which insure greatest ease in running and a minimum amount of wear.

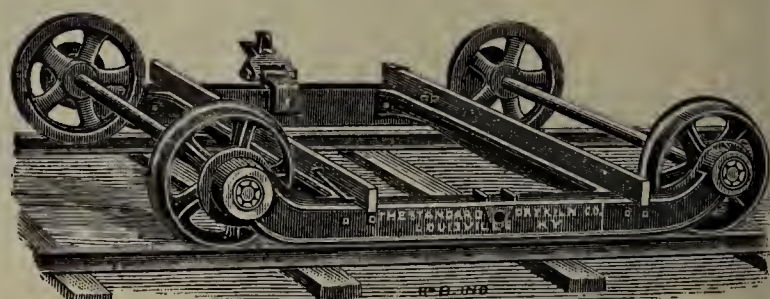
Our **Double Deck Car** is deserving of special mention; the standards and upper and lower cross pieces are in one piece, which obviates all liability to racking, and does away with numerous bolts and objectionable angle braces.

**THINK OF IT!** A 6 post Double Deck Car put together with only 12 bolts.

If you are overhauling your Drying Plant and require equipment of any kind—Cars—Turn Tables—Transfers—Rail—Pump or Tank—write us for Catalogue and figures. We have reduced our prices to "hard time" basis.

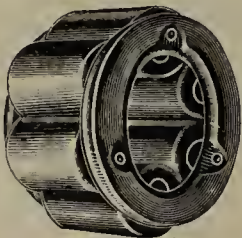


SINGLE DECK CAR.

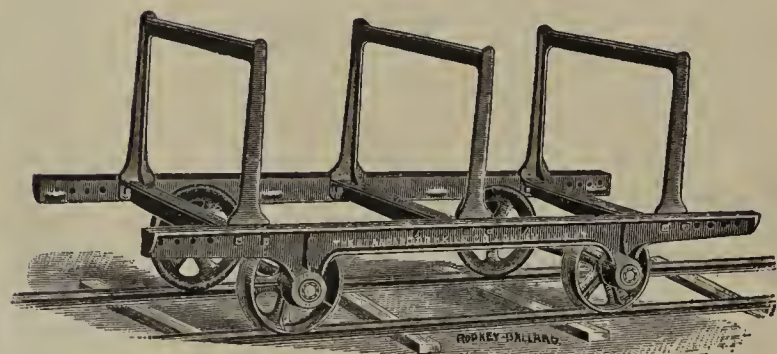


TRANSFER CAR.

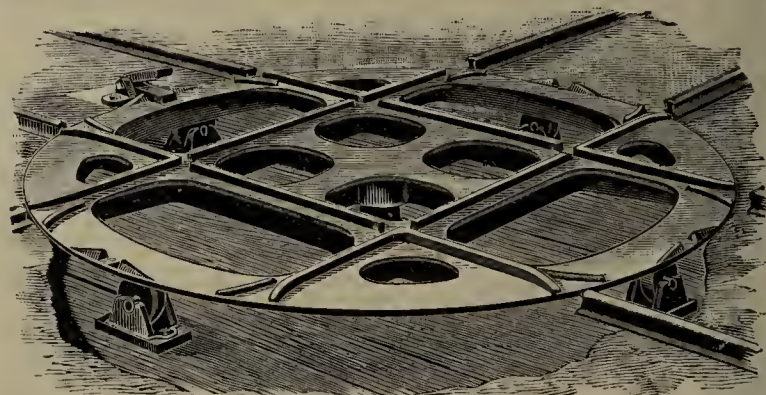
Chilled Cage



Roller Bearing



DOUBLE DECK CAR.



TURN TABLE.

## You'll Make No Mistake

In your choice if you select our Equipment for either an old or new Drying Plant; and if in need of the latter, don't fail to investigate the merits of

### The Standard Improved Brick Drier

It has stood the test of time and has been found to wear well. It's no experiment, but a recorded success, as our patrons cheerfully testify.

Send for Catalogue, endorsements and "hard time" prices.

**The Standard Dry Kiln Co.,** = **INDIANAPOLIS, IND.  
LOUISVILLE, KY.**



# THE CLAY-WORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXIII.

INDIANAPOLIS, IND., OCTOBER, 1894.

No. 4.

Written for the CLAY-WORKER.

## AMERICAN ARCHITECTURE IN CLAY

### Number 1.

“**A** RCHITECTURE is the art which so disposes and adorns the edifices raised by men for whatsoever uses, that the sight of them contributes to his mental health, power and pleasure.”

While it is very important, in fact

positively necessary, that in building, the best construction in all its various phases should be used, and that no slight should be given to any part of the work from the foundation to the highest pinnacle of the roof, it seems to us equally important that there should be a proper outline and ornamentation used that should be pleasing to the eye of the beholder, regardless of its position in the structure, and while ornamentation does not necessarily add

anything to the strength or durability of the structure, it is perhaps fully as important and necessary a part of the building.

The accompanying sketch is of the entrance to the Stock Exchange Building corner LaSalle and Washington streets, Chicago. It gives us an object lesson showing how beautiful and attractive those parts of business houses which meet the eye as one walks the street, may be made, and amid all the turmoil





and rush of business for which Chicago is noted, we believe that such attractive design and beauty of execution can but give rest and comfort to the passer-by. A description of the detail is unnecessary as the design and workmanship are so well brought out in our sketch.

This building is thirteen stories in height. The facade throughout is of terra cotta of a dark gray color up to and including the third story, above which it is finished out to the cornice with variegated shades of lighter colors of a buff tint in the form of ashlar. The cornice develops much beauty in design, and when it can be seen through the smoke from a proper distance is very effective. Mr. John Ruskin says, "All lovely architecture was designed for cities in cloudless air; in which piazzas and gardens opened in bright populousness and peace; cities built that men might live happily in them, and take delight daily in each other's presence and powers. But our cities, built in black air, which, by its accumulated foulness, first renders all ornament invisible in distance, and then chokes its interstices with soot; cities which are mere crowded masses of store, and ware-house, and counter, and are therefore to the rest of the world what the larder and cellar are to a private house; cities in which the object of men is not life, but labour; and in which all chief magnitude of edifice is to enclose machinery; cities in which the streets are not the avenues for the passing and procession of a happy people, but the drains for the discharge of a tormented mob, in which the only object in reaching any spot is to be transferred to another; in which existence becomes mere transition, and every creature is only one atom in a drift of human dust, and current of interchanging particles, circulating here by tunnels under ground, and there by tubes in the air; for a city, or cities, such as this, no architecture is possible—nay, no desire of it is possible to their inhabitants." Does not this description of Ruskin's apply very well to the city of Chicago, and every other city where bituminous coal is used? It is a fact that all designs of architecture in the upper stories of our sky-scrapers are lost to view at times through the smoke. We look forward with hope to the time when it will be different, when the smoke nuisance will have become a thing of the past.

Messrs Adler & Sullivan, of Chicago, are the architects of this building, and

it is one of the latest permanent and fine improvements, adding to the architectural beauty of the City-by-the-Lake. The terra cotta was manufactured by the North Western Terra Cotta Co., of Chicago. The successful builders, Messrs. Victor Falkenau & Bro., being general contractors for the same.

This building is erected on the site of the first brick house built in Chicago in 1837. A design of the same is shown in outline in the spandril at the left of the entrance in our sketch.

We might mention here, as a matter of interest to clayworkers, that there were used in the courts and hall-ways of this building 410,000 glazed brick.

Such structures as this express stronger than words can the great advance that has been made during the last few years in the building art, especially in that part devoted to workers in clay. Unless the material had been imported, such a structure, we think, would have been an impossibility ten years ago, and we doubt even then if it could have been carried out in any such excellent quality and detail as has been attained through the efforts of our architects and manufacturers in America. While terra cotta is a product known to the world for centuries, it is only within the last few years that it has taken so prominent a part in the construction of buildings, and year by year the demand for materials made of clay is increasing rapidly, and we believe that the day is not far distant when it will replace stone in all mercantile and business house construction. It is certainly a material more lasting, it is impervious to water and can be kept clean in even so smoky a city as Chicago; while the porous nature of most stone makes cleanliness impossible. Besides, the fire qualities of clay are far superior to those of any stone, which makes it more desirable.

If we were to make any criticism or suggestions in regard to this and other buildings in Chicago where terra cotta has been so used, it would be that we think where the plain surface is exposed in the terra cotta blocks very much resembling stone laid in ashlar, a good first quality re-pressed brick, made perfectly impervious to water as the terra cotta is, would give a better effect, as the terra cotta ashlar look as though they were intended to have the effect of sawed stone, and we believe in strict adherence to truth and do not believe in putting a stone appearance

to any clay product. Such brick as we mention can be had in this country in almost any shade of color that is desired, and at a cost, if not less, certainly not exceeding that of terra cotta.

The vast strides for the better made by the American architects during the last decade in the matter of construction as well as in their insistence upon the use of better materials should stimulate the clayworker to renewed effort. We do not intend to lay any shortcomings at the door of the workers in clay; on the contrary we think the architect may now ask for about what he will in their lines and find his needs supplied, but if the clayworker can make what is already good, *better*, it is his privilege and duty to do so, and be ready to meet every demand that the art and science of the time can possibly call for; and not only that, but to invent material for which a demand shall be made, once it is made known to the architects and builders. FAX.

Written for the CLAY-WORKER.

#### IN THE WORLD OF KERAMICS.

American Gold Used in Decorating European Clay—American Designers in Clay, and European Opinion Thereon.

BY RICHARD G. FRACKELTON.



THE greatest of the moderns of the Semitic race, he of whom it is recorded that the Queen herself was by birth Queen of England, but Empress of India—"by the grace of Disraeli"—once crushed a titled Lordling, who twitted him about his origin, with the courteous retort: "You count respectability by generations, we by centuries." In the World of Ceramics, time counts about the same.

From the Ganges, the Nile and the Mississippi, come the pottery of the unknown and forgotten peoples, but the form is sometimes singularly alike; enough at least to almost claim in some instances a family resemblance, as strongly marked, as the wooden images brought from the modern Indian villages, from the Northern Pacific coast, and set up in the Southern end of the World's Fair, bore to graven monumental stones found in the deep forests of Guatemala. These Indians dating heraldic descent from their mothers—not



their father's tribe—which is a European "notion."

The great complaint made by intelligent foreign critics on American products, in all branches at the late World's Fair, was the lack of originality and individualism. They forgetting that the entire white population must at best count their "native" claims, as Disraeli told the Lordling to.

They must be helplessly more or less imbued with the remains of European blood and ideas. In both color and form this must in the nature of things to some extent hold true, more than in speech even, for many generations to come, even supposing there were to be no emigration to either Atlantic, or Pacific coast—Mongolian and European.

A writer says in a late magazine: "There are few who give even language a second thought. I wonder how many know that the Roman is the only race that without land, government, or religion, without history, or writing of any sort whatever, preserves a language of its own, while speaking, for hundreds of years, another with equal fluency? No other race unless a conquering race, was ever able to preserve its language in a foreign land, and no

other race in the history of the world, has been an habitual speaker of two languages, learning as it does, to speak with ease and grace, without the aid of books or teachers, any language that is much spoken in its hearing. But rich as the old tongue is said to be; embalming in each word a thousand thoughts, a thousand associations that thrill in the soul of these children of the tents as an echo of far-off times; for the Ganges, the Nile, the Danube,

the rivers of America and Australia, have heard and will hear, this old language, and some of the starlight and moonlight, and the flow of those old tides and the deeds of those old days haunt the words on Roman lips to this day.

"The Luck Jug," medalled in the World's Fair, with its quaint inscriptions pleased, but to date who has found the incised drinking horn, with the "Erl-son Troll-son, for the outcast, made She Me,"

petty surroundings of life, will crop out through it all. The exceptions are not the rule.

I send you herewith two articles, both by the same designer, and both exhibited at the World's Fair. A painter, who dabbles somewhat in wet clay also; the president of the National League of American Mineral Painters. The one piece, might have been a European production, in thought, object, and form; although the designer has never been

out of the country, and the article being in no sense a reproduction, combining as it does, the most difficult thing offered to a designer. Namely, a blending of metals and clay in one article, without rendering either subservient to the other.

The bowl proper being in China clay, the standard, in that much decried metal, American silver, another band of decorated ware connects the story of the bowl above it with its annunciation lilies and the symbols of the life of Jesus Hominem Salvator; the six feet and supporting band are again in silver enclosing China medallions, depicting the principal scenes in the life of the Atone-ment. These are set in American precious jewels, not found elsewhere, namely the fresh



BAPTISMAL BOWL, IN AMERICAN CHINA AND SILVER, JEWELLED WITH WISCONSIN FRESH-WATER PEARLS—Designed and Decorated by Mrs. S. S. Frackelton, President of the National League of Mineral Painters.

inscribed on it, among the pottery of the Mound Builders?

Not from the mighty North, but the cradle of all the races, did the Mound Builders come.

Masters of dual speech clayworkers may be—leaders of dual thought and lives, perhaps? And these are rare, as good actors are disproportionate to good audiences. But producers of dual thought in form, are rarer than writers of good plays. The individualism, and the

water pearls of the artist's native state—Wisconsin. Blue and silver, being the color scheme, the money value, \$2,000.

Now compare this with the strong piece of native coarse salt glaze clay, and the branches of olives in relief, which the directors of the Pennsylvania Museum purchased for their collection in Memorial Hall, Philadelphia. The first sale made in the Woman's Building, and which no less an authority



than Mrs. Candace Wheeler, of New York City, in a recent lecture upon "Decorative and Applied Art," said, "that in all the Ceramic Art in America, brought together at the World's Fair, the only original thing, came from Milwaukee," which is not bad for our "German-Athens." *Sogenannte Bierburg.*

Written for the CLAY-WORKER.

### THE VILLAGE BRICKYARD.



LAST month a number of suggestions were made in regard to brickmakers building houses; 1st, Selection of lot; 2nd, Suitable material; 3rd, Master builder; and 4th, Purchase of supplies.

When we for instance, come to buy mill work, we shall need to go carefully over the whole operation, select our doors, sash, finish, outside and inside shutters, hand rail and balusters, quantity and quality, not forgetting time and place of delivery and with this information the time the goods are to be paid for.

Then from among those persons with whom we are in the habit of dealing—say three mills of undoubted reliability; mills that have always fulfilled their contract to the letter in quality, quantity and time of delivery, to these send our specifications. From them if our reputation is first-class, we shall receive a fair quotation. That is a simple operation but it is only a sample of the work we must do with every tradesman, stonemason, bricklayer, carpenter, plumber, painter, plasterer, hardware and various minor workmen.

Make it a point if any one of these parties fails to fulfill his contract to the letter that you have no further trade for him under any pretext, don't sue him or have any words about the matter, pay your bill and be rid of such an undesirable friend, it pays you always, that people should respect you and value your custom, so much that they will gladly come up to the mark.

A few years ago an order was sent for a lot of mill work amounting to \$380, and after fully specifying the goods in detail at the bottom were the words, "inside shutters for all the above named windows;" the clerk who made the bid copied that line, in his bid, but forgot to count in the price of the shutters amounting to about \$80; but when the

goods were furnished, the firm that shipped them, never for a moment disputed that they were bound by their agreement, consequently that firm bids on every job I have to let, and it has paid them well for fulfilling to the letter their contract.

It will be found profitable to make these sub-contracts in considerable detail—let the plasterer furnish only labor you buy the sand, lime, hair and plaster for his use.

Treat the stone mason the same way and likewise the painter and bricklayer; by such a course you are sure of getting just what you pay for and know just who would have the right to enter liens



MRS. S. S. FRACKELTON'S JAR.

on your building, at the same time you relieve all these sub-contractors from the temptation to work on to your operation odds and ends that they have accumulated from old buildings.

Remember that good old adage: "Everybody is honest until tempted" consequently be so honest with yourself as to not tempt other people to cheat you.

In a recent sewer contract in my town it was specified that the mortar should be half Portland cement and half Creek sand; would require \$600 worth of Portland to be furnished by the contractor and \$100 worth of sand.

It is a sin of omission to send out such specifications, the cement and sand should have been furnished by

separate contract, then the town would have received what they paid for and honest contractors would not suffer at the hands of sharks, who would put in half the cement and use bank sand in place of sharp creek sand, as is often done in such cases.

The same feature crops out in the brick business, bricklayers often bid for brick and bricklaying and to make an additional penny, push a lot of weak part burned brick into places where they have agreed to furnish the best of hard brick.

It is of the first importance that the builder count every part of the building himself, figure the earth to move, stone in wall, brick, bricklaying, days work for carpenter, plasterer, painter, quantities of lumber and other material in every detail; these are needed for comparison with the sub-contractors figures, that we may have full assurance that these people are not cheating themselves or us but will be able to complete their portions, or failing therein that we may complete the work ourselves within our original estimate.

Building is like all other work, buy at bottom prices but sure that you are honest enough to pay for what you get; it never pays anyone to build a \$30,000 school for \$25,000 hoping to make money by the skinning process.

A man's reputation that can be sold for \$5,000 dollars worth of underhand dealing may be a candidate for Jay Gould's shoes but the Village Brickmaker won't need him as Executor to properly apportion a few brick bats.

THE VILLAGE BRICKMAKER.

[To be Continued.]

Written for the CLAY-WORKER.

### MOVING A BRICK RESIDENCE.

BY J. A. REEP.

A VERY interesting and successful job of brick work has been under way and is about completed at this writing, in the city of Knoxville, Tenn., and is well worthy the attention of brickmakers and builders, as well as the owners of brick buildings.

The job under consideration has not been the building of any new structure nor the reconstruction or remodeling of an old one. It is simply the saving from destruction of one already built.

The march of improvement and the demands of the hour call for more space, more room, and residence property has to give way for business houses. The



matter is significant, because of the fact that there were two buildings involved, on adjoining lots; one a frame, the other brick; both dwelling houses, of about the same cost and capacity. The property fronts on Wall Street, north side, corner of Market Square, one of the busiest and most thronged thoroughfares in the city.

The owners decided to erect business houses on this ground, and the removal of the buildings became necessary. It was found to be impracticable to remove the frame structure or dispose of it to any advantage, and it was torn down and hauled away as old material. The building was a two-story twelve room house, which had cost perhaps twenty-five hundred or three thousand dollars and was looked upon with envious eyes, by many a poor home seeker, as he saw it torn apart and carted away.

The owner of the brick residence, Mr. John McCoy, one of our city Alderman, occupied the brick residence. He was satisfied with the house and its situation; it was close to his place of business; he was within one hundred feet of fire and police call, day and night, and because of these conveniences decided he would save his dwelling, and incorporate it along with the new business structure. He contracted with a gentleman who makes a specialty of raising and moving heavy brick structures, to place the building on the rear end of the lot, and raise it up so as to allow an additional story beneath it.

The house, as shown in the engraving, is two stories and an attic, with a square observatory or tower in the angle, containing in all twelve rooms. It is a modern built house with bath rooms on both floor, pantries, closets, halls, etc., covered with a slate roof. There are also two large brick chimneys in the middle portion of the building with fire places, mantles, and grates. The house is 32x50 feet in its dimensions with veranda in the angle. Part

of the veranda across the front was removed to facilitate the work and it would be dispensed with when put in place finally by being built up to and made part of the new structure.

The estimated weight of the house and contents is one hundred and seventy-six tons, and required sixty-eight thousand feet of timbers as shores and foundation sills to carry the structure into place. The building originally stood about five feet above the sidewalk. The gentleman in charge of the work, Mr. Abrames, raised the house from its foundations with jack screws and placed it upon a solid foundation of heavy timbers, with rollers under it. He then



shoved it back by another system of jack screws; all worked simultaneously, the whole moving by whistle signals.

The building was moved back in this way a distance of sixty feet. It was reloaded on another set of timbers, and carried sidewise six feet, then it was raised up until it required a sixteen foot wall of brick foundation beneath the chimneys and side walls to make the permanent foundation of the house.

To the credit of the mechanic, who has had large experience in this class of work, it is but due him to state that the whole task has been performed without serious inconvenience to the family, who have all along occupied the

house; not a piece of furniture has been displaced, nor a crack of any kind made in the walls or plastering above the lower floor line.

The successful completion of the job has been a cause of wonderment to a set of men whose faith in others was proportioned, by their own abilities. When the contract was let by Mr. McCoy for the removal of the house, they at once gave vent to their opinions by remarking that, "The fools are not all dead, and McCoy and the house mover both ought to be arrested, and not allowed to begin any such fool-hardy experiment."

They are both to be congratulated, one for the successful completion of the work, the other for the fact that his critics are not his business managers and advisers.

The expense was necessarily large, but it is far below the original cost of the building, which will remain a source of satisfaction to both the gentleman who owns the house and the one who did the work. This we believe is the first job of this character that has been done south of the Ohio river.

We see here a strong argument in favor of brick buildings. The two houses were built at about the same period; neither of them old buildings. But the frame, which was not one-third the weight of the brick structure, would not pay to remove to some vacant lot within two or three blocks, and was consigned to the junk pile, while the brick house, because of its superiority, was saved, and remains a house in the city with tall business houses all around it.

Written for the CLAY-WORKER.

#### A COLLECTION OF BRICKS.

Queer Display in a New York Museum.



STUDENTS in the art of brickmaking, when in New York City, will find opportunity for observation and study in the collection of

bricks from historical and other buildings which Andrew Saul, superintendent of the New York Merchant Police and a member of the Maritime Exchange Museum committee has just presented to the latter Museum.

The only fault that can possibly be found in connection with the collection is that they are in a wooden cabinet, behind plate glass, and thus out of reach from those who could perhaps learn



much from handling and closer observation.

Aside from a collection of Babylonian bricks with cuneiform inscriptions, Mr. Saul's gift is the most unique gathering of the kind that has ever found place in a museum.

The full collection, as it has been carefully and interestingly catalogued by Mr. Saul himself, is as follows:

No. 1. Brick from Brooklyn Tabernacle, Schermerhorn street, Rev. T. DeWitt Talmage, pastor. Built 1870, destroyed by fire Sunday, December 22, 1872, and rebuilt 1874.

No. 2. Brick from Brooklyn Tabernacle again destroyed by fire Sunday, October 13, 1889. The Brooklyn Warehouse and Storage Co., now on the site.

No. 3. Brick from Brooklyn Tabernacle, on Clinton and Green avenues, again destroyed by fire Sunday, May 13, 1894.

No. 4. Brick from Old Maritime Exchange, 66 to 70 Beaver street, New York. New Coffee Exchange now on site.

No. 5. Brick from Old Produce Exchange, Whitehall street, New York. U. S. Army Building on the site.

No. 6. Brick taken from the chimney of house 82 and 84 Jane street, New York. This house was built over 100 years ago. Here it was that Alexander Hamilton died. At that time the structure faced the river and its lawn extended to its banks, which were about where Washington street is to-day.

No. 7. Brick from Clinton Hall, where in the month of May, 1849, occurred at New York what has been known as the Astor Place Riots. See *Randell's History of the U. S.*, page 129.

No. 8. Brick from Washington Hotel, opposite Bowling Green, the leading hotel of its day. Cyrus W. Field building now on the site. (These bricks were brought from Holland.)

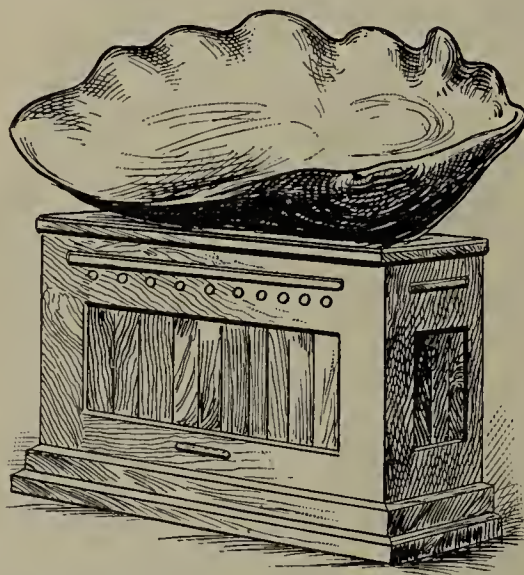
No. 9. Brick from Fraunces Tavern, Broad and Pearl streets, New York. The Old DeLancy Mansion. It was purchased by Samuel Fraunces in 1762 and opened under the sign of "Queen Charlotte." It had various names and keepers. Here occurred the immortal farewell of Washington to his officers in 1783. See *History of New York*, by Mrs. Martha J. Lamb, vol. I, page 759. (Bricks were brought from Holland.)

No. 10. Brick from Walton house, New York, built 1752. It is now known as 326 Pearl street, and is occupied for business purposes. The first bank es-

tablished in New York was incorporated under the title of the Bank of New York and first carried on business in this house. Its history is a history of New York movement. It was the first of a series of efforts made by property owners of the east side of the city to turn the line of fashionable residences in that direction. See *Magazine of American History*, vol. 2, page 40. (Bricks were brought from Holland.)

No. 11. Brick from the Middle Dutch church, built in 1729, on Nassau street, between Cedar and Liberty. It was leased to the Government on August 11, 1844, for the City Post Office. The exterior of the building not being materially altered and the cemetery around it remaining untouched. The Mutual Life Insurance Co., building, now on the site. See *History of the Churches of New York*, page 12.

No. 12. Brick from the Brooklyn Eagle building, 28-38 Fulton street, the site



CABINET CONTAINING OLD BRICK FROM NOTABLE BUILDINGS.

now occupied by the Eagle Warehouse and Storage Co.

No. 13. Brick from Brooklyn Theatre. The theatre is situated on the southeast corner of Johnson and Washington streets, was burned on Tuesday night, December 5, 1876. The fire was discovered shortly after 11 o'clock p. m., one thousand persons were present, of whom 278 were burned to death. The Eagle Building is on the site.

No. 14. Brick from First Methodist Episcopal church, Sands street, Brooklyn. Built 1794, rebuilt 1811, also rebuilt 1843, destroyed by fire and rebuilt 1848. The site of church is now used by New York and Brooklyn Bridge Co. In other words the church stood where the Brooklyn Bridge plaza is now.

No. 15. Brick from Old Delmonico hotel, corner of Beaver and South Wil-

liam streets, New York. The Pillars at the entrance of old hotel have been placed in the new one.

No. 16. Brick from St. Georges church, built 1748, on Chapel Hill, now Beekman street, at the corner of Cliff street, then call Van Cliff street. Jordan L. Mott Iron Works now on the site. See *History of the Churches of New York*.

While all the above historical facts are of decided interest to the New Yorker and Brooklyn, the student of brick lore would find his greatest delight in examining the bricks Nos. 8, 9 and 10, which, as will be seen from the description, were brought from Holland. These three bricks are yellow, while the other thirteen are the ordinary red brick, and they differ not alone in this from the American, or possibly English brick, but they are narrower by fully an inch to an inch and a half. In other respects there is little difference, save that the yellow brick are in worse condition than the red, their surface and edges having been chipped so much that they are quite irregular.

While this may be taken as an argument that the Holland brick is not as durable as the American, such a contention would not hold unless a comparison were given of the vicissitudes through which both kinds of brick had passed, something which it is absolutely impossible to provide at this late day.

There is food for thought in the fact that all of the bricks are of the same length. Have bricks been made of one size during the last two hundred years, both in this country and in Europe?

The brick that shows the worst usage is No. 7, that taken from Clinton Hall a large piece having been chipped from one of the corners.

"How did I come to collect these bricks?" said Mr. Saul to the reporter, "Well, I always had a hobby for it. That collection could be easily duplicated or triplicated if I wanted to take the trouble, for I have bricks from almost every old house with a history that has been pulled down in this city and Brooklyn during the past 36 years. As soon as I hear that an old landmark is being destroyed, I start in to watch it and when the time comes I get possession of a few of its bricks. I'm watching several buildings now."

One of the most curious bricks that Mr. Saul has, was discovered while workmen were digging for the foundations of the new Produce Exchange. It had evidently formed part of an old Dutch



well, was shaped like a key-stone, and was double the size of any ordinary brick. From all appearances it was made expressly to serve a special purpose and cannot be classed as part of the regular of some old time brickyard.

It is needless to remark, perhaps, that Mr. Saul has not confined his attention solely to bricks. His office which is on South street, a few blocks from the Maritime Exchange, is a variable curiosity shop, filled as it is with all manner of the queerest odds and ends, planks of ships sunk years ago, old daggers, razors, pistols and garrots.

The cabinet of bricks has been placed at the entrance to the Museum. It is of mahogany, and serves as a pedestal for an immense deep-sea oyster shell, eight feet in circumference. Ten bricks are to be seen from the front, and three on either side. BRIC-A-BRAC.

Written for the CLAY-WORKER.

#### HINTS ON CHINA PAINTING.

##### First Paper.

BY EDWIN ATLEE BARBER.

**T**HE craze for China decorating has of late years increased to such an extent that the average young woman does not consider her education complete until she has taken at least a few lessons in this branch of art. The Centennial Exposition marked the commencement of this pursuit among women, and the World's Columbian Fair gave it an impetus which is destined to increase in the near future. Many have taken it up as a pastime, while others have adopted it as a profession and a means of livelihood, and there certainly is no pleasanter occupation, nor more profitable, for those who possess the talent necessary to insure success. In many of the State buildings at the Chicago Exhibition were most creditable exhibits of works contributed by individuals and associations of women, much of which was fully equal, from an artistic point, to the best painting by professional decorators employed at the foremost potteries.

The manufacture of portable furnaces for China painters has become an extensive business and scores of kilns of varying merit have been placed upon the market to enable decorators to fire their work at home. It is possible,

therefore, to procure at small cost a furnace of almost any desired capacity for firing the smaller and medium sized pieces, which are usually selected to beautify, which will soon more than pay for itself in the saving of "firing" bills. The larger and more elaborate vases, which exceed the capacity of the average portable furnace, if attempted may



Worcester Vase. King Vase. Peach Blow.  
JERSEY CITY POTTERY.

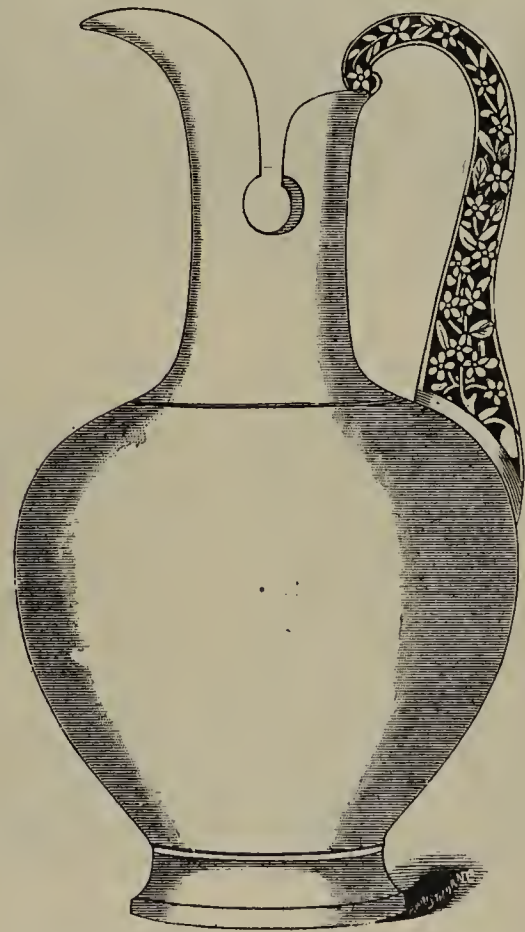
be sent to a reliable pottery or a professional china firer for the final burning.

Within a comparatively few years many of our American potters have turned their attention to the production of white china for amateur decorators, and certain factories are now making a specialty of this line of work. But although they have succeeded in producing bodies and shapes fully equal to, and, indeed, surpassing imported china in the white, our amateurs have, most unaccountably, continued to use extensively the foreign wares. This practice is not only un-American, but depreciates the value of the finished work; it is, doubtless, largely due to ignorance of the wealth of forms which are prepared at our very doors. The white porcelain shapes of Dresden and Limoges have acquired a well-merited celebrity among our china painters, but a sentiment has been lately forming to the effect that American work applied to foreign bodies must produce a hybrid result impossible of classification, and therefore lacks the value which would otherwise attach to purely American products on the one hand, or distinctively foreign on the other. Imagine Trenton China sent to England and decorated there! How would it be distinguished in a museum of art? An English body ornamented in this country might be called Anglo-American, but how would it compare in value or interest to an American ware decorated here?

Mr. John Bennett, when he came to the United States from the Lambeth Potteries, first used imported shapes for decorating, but he soon substituted

Trenton wares and finally manufactured in New York, his own faience bodies. And so too, Mr. Edward Lycett, one of the foremost professional decorators in this country, confined his work, for some years after he came from England, to imported wares, but long since abandoned them for American bodies, principally those of his own compounding. Since, therefore, it is now possible to procure equally artistic forms, for decorating, at home, and at as low prices as have heretofore been charged for those brought from abroad, the use of the former would greatly enhance the value of the work placed upon them by our American decorators. This being an incontrovertible fact, let us see what our potters have to offer.

Suppose we first take up the opaque wares—faience and cream colored pottery, such as are produced extensively at Jersey City, Trenton, Baltimore, East Liverpool, Wheeling, Steubenville and other places. We have, in these, bodies which are especially adapted to receive decorative treatment. At the old Jersey City Pottery, recently torn down, a large line of fancy shapes was produced



CANTON CHINA VASE—STEUBENVILLE  
POTTERY COMPANY.

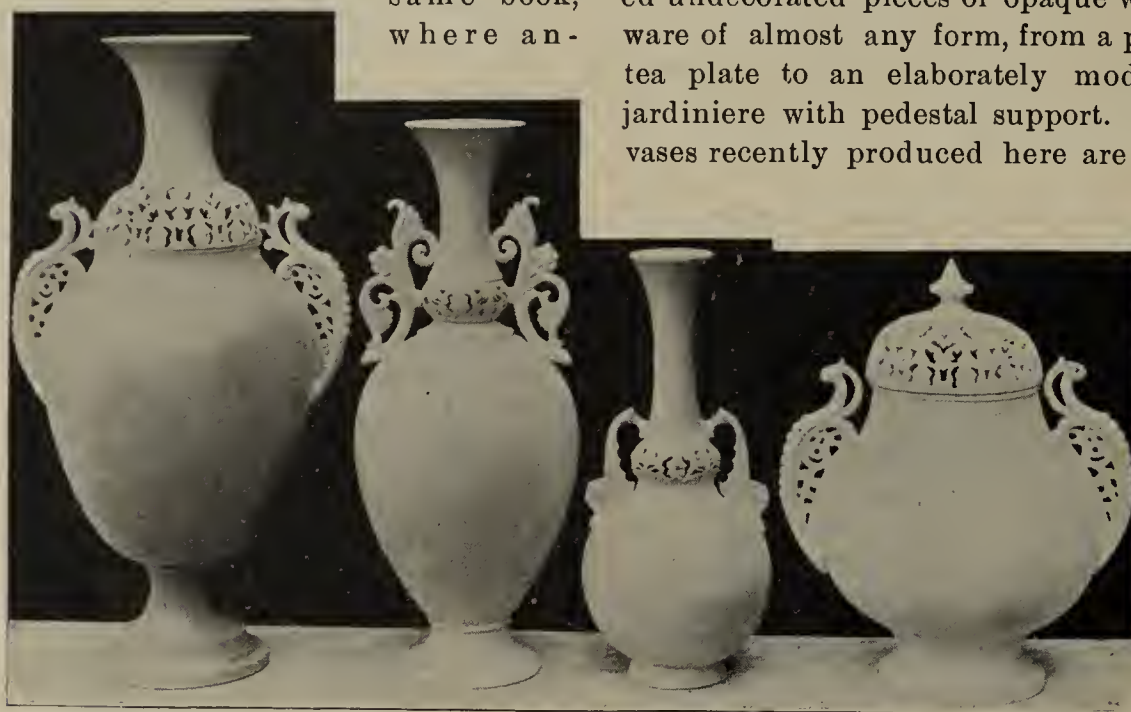
for amateur painters and these are still being made by Mr. John O. Rouse, who continues the business in Jersey City. Among the best known forms are the "Worcester," "King" and "Peach Blow" vases, with many others of quaint and pleasing designs. These are of an ivory



white tint and possess a plain surface, particularly suitable for free-hand painting. The latter is intended to be an exact reproduction in shape of the famous "Peach Blow" vase which some-time ago brought such a fabulous price, and may be procured with or without feet.

The "Worcester" shape is a copy of the vase which was presented to General Washington by Mr. Samuel Vaughan, of London, which is figured and described by Jennie J. Young, in "The Ceramic Art," page 108. This, while called by her "Indian Porcelain," was in reality made at the Royal Worcester Works. It may be interesting, as well as instructive, to the reader, to refer to page

488 of the same book, where an-



FOUR PIERCED VASES—BURROUGHS & MOUNTFORD COMPANY.

other piece of the same form, from the Jersey City Pottery, is illustrated, and if it is desired to pursue the subject further, in order to gain a more extended idea of the possibilities of the decorative treatment of this shape, another example may be found figured in "The Pottery and Porcelain of the United States," page 122. On the opposite page may be seen an engraving of a decorated "King" vase, the subject being "The Tired Dancing Girl."

Some good designs for decorating are made by the Steubenville Pottery Company, of which a graceful ewer vase is a special favorite. The body, which is known as "Canton China," is opaque and exceedingly light in weight. The mouth of the vessel is deeply cut at each side and the handle is formed of an openwork pattern of forget-me-nots. The plain spherical body presents an excellent

surface for ornamentation, and is susceptible of great diversity of decorative treatment. A young lady of Allegheny has painted one of these pieces in a most artistic and effective manner. The handle is finished in blue and gold, while the body is colored a deep, royal blue, on which a central group is painted, consisting of a shepherd, shepherdess and lamb, while sprigs of forget-me-nots are scattered over the surface, and the whole is reheightened with gold.

The advanced decorator who desires to attempt a more pretentious style of work will find all that could be desired in the productions of the Burroughs and Mountford Company, of Trenton, N. J. From this pottery can be procured undecorated pieces of opaque white ware of almost any form, from a plain tea plate to an elaborately modeled jardiniere with pedestal support. The vases recently produced here are par-

ticularly ornate and graceful, with their pierced handles, covers and collars, and occasionally relief ornamentation. From no European factory have we seen a greater variety of chaste and elegant forms, which have been designed with especial reference to artistic embellishment. The very modeling of the pieces is suggestive of new ideas to the artist, who recognizes at once the vast possibilities of floral and figure painting and the harmonious application of raised gold work which are presented. In the above illustration are shown four of the Burroughs & Mountford vases, whose plain body surfaces and openwork attachments are susceptible of the highest perfection of decorative treatment. As a hint to the amateur, it may be said that one of the taller pieces has been finished, in the decorating rooms of the Trenton factory, with a ground of deep,

mazarine blue, on which a pea-cock has been painted, in raised gold, after the Royal Worcester style, the handles and collar being entirely covered with dull gold.

A group of thirty-four vases and jardiniere, of various forms and sizes, from the same works, will convey some idea of the great diversity of designs made there at the present time. Of these, one of the most effective pieces, when suitably decorated, is the heavy, circular vase with lion's head handles shown in the lower row. One of this form, which may be seen in the museum of the Drexel Institute, Philadelphia, is ornamented with an elaborate design in delicate colors and finished in mat gold, and is one of the greatest triumphs of American modeling and painting.

At the World's Columbian Exposition the English faience of Mr. William Ault received much attention, of which a tall pedestal surmounted by a large jardiniere, elaborately decorated with relief designs, excited much admiration. Meritorious as was this work of the potter's art, Messrs. Burroughs & Mountford have surpassed it in a similar design, in fact, one which might have been made by the same modeler, but the raised ornamentation is simpler and consequently more elegant. This latter is here figured. The raised ornaments have been left uncolored, but in the plain panels have been painted vines and bunches of flowers in natural colors. This piece can be procured in the white, and the relief designs form a basis for artistic treatment in coloring for those inclined to undertake a work of this magnitude. Between the embossed bands the decorator may, with fine effect, paint arabesque patterns, Cupids, groups of Dresden figures or any other designs which fancy suggests. This large piece will satisfy all the requirements of the most ambitious amateur.

[TO BE CONTINUED.]

#### ADVERTISING POINTERS.

When an advertiser has learned what not to do, he has mastered half the business.

People will talk. If you advertise your good points they will talk well of you. If you do not, look out.

Nature has her immutable laws. If a man does not exercise, his blood becomes sluggish. Neglect to advertise has the same effect on trade.—*Printers' Ink.*



Written for the CLAY-WORKER.

## MANUFACTURE AND USE OF PAVING BRICK IN IOWA.

BY E. H. LONSDALE.



IN the consideration of materials intended for use in the construction of city streets or country thoroughfares the points to be looked into are numerous and complex. Each article or method must stand on its own merit and now after a series of tests and years of experimenting the value of the respective substances should be well understood. It seems, therefore, not expedient to elaborate upon the results of the investigations nor to insert information pertaining to the relative excellence of one or all of the many materials.

The utilization of wooden blocks, also squares of granite and of softer rocks with associated experiments and investigations in order to ascertain if possible the proper patterns and combinations has long ago been undertaken; the value of asphaltum for driveways has been appreciated; the adaptation of macadam and coarser roughly broken rock substances, with or without intermixtures, has already been looked into; and besides these principal materials the tests with others variously compounded and oftentimes patented have been by no means few.

Burnt clay for street paving has come into use in this country only within very recent years; but a few seasons ago American cities had never thought of the possibility of preparing streets of hard burned bricks and the readiness with which almost numberless cities have adopted this article as a paver can but speak for the article and its adaptabilities.

Originally the material nearest at hand was the one adopted, since ordinarily this could be laid down at a less expense. To-day, however, having the results of this long series of experimenting as a guard, the endeavor is reversed and the object now is to learn first what materials are most serviceable, then inquire into the comparative cost, the general and particular effect; also properties which would include the amount of noise produced by the motion of vehicles, the ease with which the street is cleaned and the rapidity and expense

with which repairing can be accomplished.

Until not longer ago than six years paved cities in Iowa were very few, perhaps less than six. In one or two of these, tarred cedar blocks were laid on boards treated in a similar manner; in the others, quarries being located near, crushed limestone or macadam was prepared.

Success at making a good paving brick seemed to be but the gateway towards the improvement of city streets and most of the places which had here-

county seats. Nor is this work limited to cities of the first class, but in some instances carried on in locations where the business portion is confined to the ordinary city square.

During the present season alone a number of points have seen fit to have their principal streets paved using for the purpose hard burned brick; and others have extensively persevered in the work well begun.

As a rule this material is furnished by Iowa plants, there being more than a dozen distributed over various sections



GROUP OF BURROUGH & MOUNTFORD'S VASES.

tofore been paved soon tore up the old bed and put down brick; other cities realizing the importance of good thoroughfares and at the same time value of the new article immediately began paving until now more than twenty of the cities in Iowa alone have their streets of vitrified brick. This list of cities would include not less than one-fifth of the

which are putting out a superior product. Some of these are making the manufacture of pavers a secondary issue while the majority confine their work to the construction of brick suitable for streets purposes and even then are unable to supply the rapidly and steadily increasing demand.

With one or two exceptions the total



number of factories issuing street pavers are being very successfully operated and the product almost invariably is one that commands a ready market.

The true paving brick factories vary somewhat in size. The greater number are running but a single machine and burning in from two to five kilns. Others have a capacity of from 60,000 to 80,000 brick daily and burn in as many as eleven large kilns.

Stiff-mud machines are universally used, but in two instances the attempts to produce a paver by the dry press process has been fairly successful but thus far the brick made by this method have not been utilized.

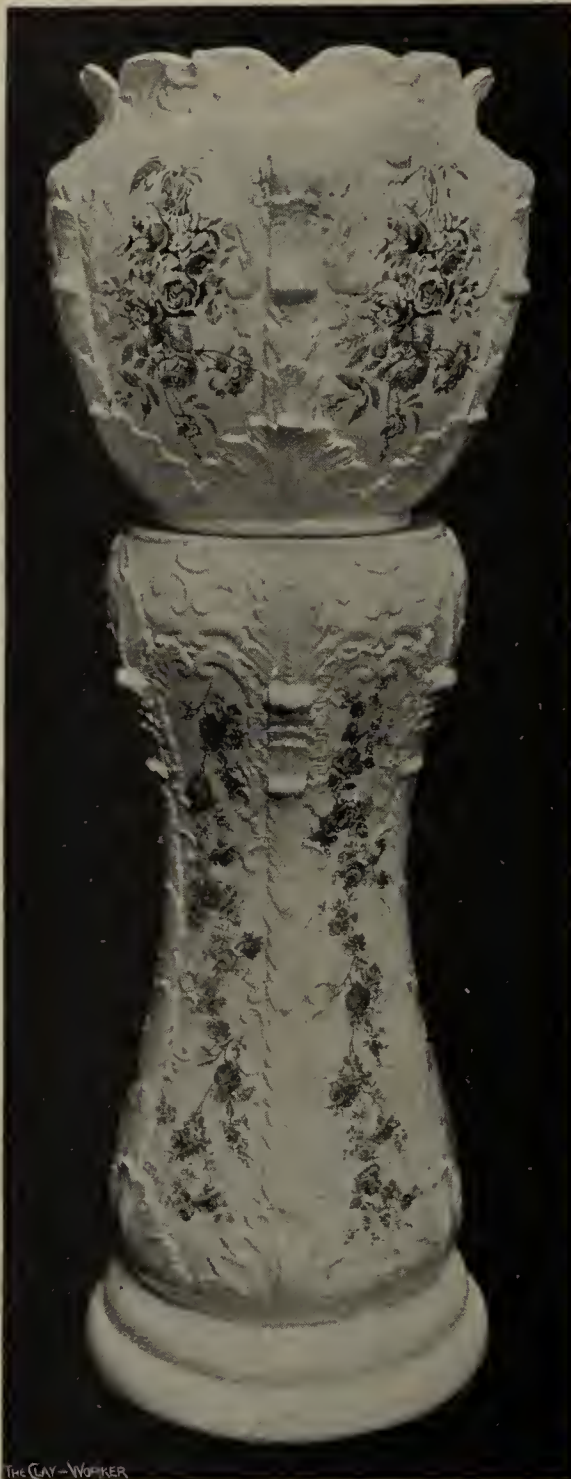
This growing desire will eventually bring about the erection of additional plants and in turn the cost of the product will be reduced as the distance for transportation is lessened and competition grows stronger.

In the manner of constructing the street crossings there has been great diversity. The kinds of combinations are almost as numerous as the number of localities possessing brick paved highways. Perhaps the more common is the laying of a course of brick side-wise on a cushion of sand, a covering of sand then an upper tier of usually harder burned brick upon edge. Other methods consist of rubble or crushed rock, maybe a concrete prepared, used as a base over which is the layer of sand and upper course of brick. At Des Moines hot tar is poured over the brick laid on sand over a six inch concrete foundation and allowed to fill all cracks, thus preventing almost if not quite entirely, the entrance of moisture.

The utility or durability of a paved street depends primarily upon the material occupying the superior position then upon the character of the under mass and the general construction of the bed. The upper course of brick may be in no way inferior, yet at the same time if the base upon which this course is put down, is not firm enough to withstand any load no matter how heavy without irregular depressions resulting, the value of the top brick is lost and the durability of the pavement lessened. The imperfect conditions rather than the poor quality of the material is not infrequently the cause of rapid wearing away of the regular surface, and in consequence, brick as a suitable paver is denounced unjustly without knowledge of the true cause.

There can be found in this state just

such effects as here mentioned; whereas on the other hand if a solid foundation had been previously secured smoothness would yet prevail and the length of duration increased many fold. This again but illustrates the loss of much time and the creation of great expense by the prior saving of a comparatively small amount through the allowance of frail or imperfect construction work.



DECORATED JARDINIÈRE AND PEDESTAL—BURROUGHS & MOUNTFORD CO.

Experience in more than one branch of the clay industry is indeed a dear teacher.

A fire proof building as it is understood to-day is practically a steel cage, every particle of which is encased in the most thorough manner with the best quality of burned clay wares, the floors being filled in between the beams with the same material, and in the finish of which combustible material is reduced to the limit of absolute necessity.—*Ex.*

Written for the CLAY-WORKER.

## HINTS ON BRICKMAKING.

No. 92.

BY R. BRICK.

### RED BRICK FOR FRONTS.

AN item has been going the rounds of the clay journals, in reference to bricks of different colors for fronts. It was rather the field against red brick. The following extract gives the substance of each: "The red brick has had its day for architectural use and in its place has come to stay the brick of lighter hue—pink, buff, yellow and, in fact, of nearly every shade." The *Brick-Builder* in quoting the item took exceptions to the opinion expressed in reference to red brick, the others seemed to endorse the statement.

The writer wishes to mildly protest against such a sweeping statement concerning such a far reaching question. "Red brick has had its day for architectural use," and must give way to the infant upstarts, pink, buff, yellow, mottled, etc. Red brick have been the standard color, for architectural use in our country, at least, for three centuries; great cities have been built with them, they have demonstrated their fitness by their durable qualities and the permanency of their color. And now they are ruthlessly set aside by these critics who have just discovered the superiority of any other color but red. Why object to this color, it is among all the colors the most beautiful. Red is the emblem of warmth and life. It harmonizes perfectly with stone or marble trimmings. It is bright, cheerful and pleasing to the eye.

This article is written, not that the writer "loves other brick less, but that he loves red brick more." It is true a buff brick building standing among a score of red brick buildings, does look well; so does a pink or mottled one. Just as does buff brick trimming in a red brick wall. The true test would be to build a city or a street full of yellow buildings, and compare this Chinese city with the bright clean, red brick city of Philadelphia. It is in either case not the color, but the sameness to which objection is made. Buff, pink, or mottled would invite the same criticism, here is where the prophets are misled, they think, because a buff building, (perhaps the only one in the city,) is admired, that red brick are inferior



and will be used no more in fine buildings for fronts:

Just at this season the golden rod covers the fields with a golden halo; every lover of the beautiful, admires and praises, but where in all this glorious, heaven blessed land could we find a man or woman, with "American hearts in their bosoms," who would dare to say the rose shall bloom no more. The great Architect of the universe when creating our earth, in his distribution of clay, seemed to say, there shall be enough red clay for the buildings of earth, and a little buff to trim them with. But some of our modern architects say, Oh, the Creator was mistaken, *we* will reverse this divine order of things, we will build the great structures of earth with buff brick and back them up with red brick.

I venture to assert that if there was no clay in this country that would make red brick, the people of this country would import them from Europe or Asia, or the islands of the sea, without regard to cost, to face their buildings with.

Now as to the question of fact about red brick being supplanted by other colors. I have every reason to believe that of all the brick used for fronts in the large buildings constructed in this country in the past two years 80 per cent. are of red brick against the field. St. Louis the great press brick manufacturing city, turns out almost exclusively red brick, the same is true of Philadelphia and Baltimore and of the great Hudson river plants, also the many large Ohio plants, and the same will hold good in all the southern, and nearly all the western states. It seems unnecessary to offer further proof as to the fact that red brick are still, as they have always and probably always will be, the standard for fine brick buildings.

One of the handsomest dwellings the writer has ever seen was built of dark red press brick laid in marble dust and trimmed with gray sandstone and terra cotta of different shade from the brick. It was a gem, and for beauty and harmony of color, hard indeed to equal. For a business building, red mortar is preferable, with stone of marble trimmings, the solid red walls giving it a more massive and solid appearance.

It has been truly said, however, that a variety of pleasing objects charm the eye, this applies to the buildings of a city as well as lesser things. Hence, buildings of different hues as well as different designs present to the eye a variety of color and shape that is, not only pleasing, but restful to the eye. Therefore, it would be folly to object to brick of other hues for building purposes. That is not the object of the writer I would rather encourage variety, but do seriously object to those gentlemen who with their little brooms, would sweep red brick walls from the earth like cobwebs from a ceiling. We



JOHN GREUSEL, JR., DETROIT'S VETERAN BRICKMAKER.

are perfectly willing to give them plenty of room but cannot give them the earth, without a struggle or even a protest.

There are many millions of dollars invested in plants for the manufacture of fine red brick, and should these extinguishers succeed with their little brooms it would prove a calamity to the owners of these plants, as well as the men they employ. A few years ago when the tile drain makers of Ohio, Indiana and Illinois were manufacturing red drain tile by the millions, and selling them to the farmers, a few manufacturers who had clay that would burn white or some light shade, undertook to pass resolutions in the Tilemakers Convention

declaring that red tiling were not durable, and that only tile made from fire clay and burned to a light color were fit to put in a drain. The makers of red tile rallied and offered such overwhelming proof that red tile were more durable and superior for field drains that the enemy was silenced, and red tile are to-day used almost exclusively for field draining.

The use of lighter shades for facing walls, will increase the demand for bricks, cause more to be used, they will be used instead of stone or marble, but we predict that it will not lessen in the least degree the demand for red brick fronts. The item mentioned at the beginning of this article appeared in several clay journals, and went unchallenged except in the one journal mentioned, in some of the journals it appeared in a manner that seemed to give it editorial sanction.

As the red brick interests are so largely in the majority it would seem that a statement so detrimental to their interests, would not have gone the rounds unchallenged.

Let us make buff brick, pink brick, mottled brick and red brick. There is room for all. It is not necessary to extinguish red brick manufacturers, they have been here many centuries, and hope still to be in existence after the lapse of many to come.

#### FORTY YEARS A BRICKMAKER

THE subject of this sketch, Mr. John Greusel, is one of the veteran brick manufacturers of Detroit and senior member of the firm of Greusel Brothers. He

was born in Glasgow, Ulster county, New York, 1839, and came to Detroit with his father in 1848, settling on what is now a portion of Fort Wayne, on the banks of the Detroit river, where the elder Greusel began the manufacture of brick. Later he became connected with his father in the brick business when they removed to a large tract of land, now in the sixteenth ward of Detroit. The firm name being then John Greusel & Son. It was this firm that first introduced brickmaking machines in the State of Michigan.

In 1880 the firm was dissolved owing to the father being elected to the Senate, and the firm of Greusel Brothers was established. They have two plants in



operation, with a yearly capacity of ten million brick, in Springwells.

Written for the CLAY-WORKER.

# CHEMISTRY FOR CLAYWORKERS.

No. 27.

BY WM. WAPLINGTON.



As a metal we do not find much use for the potassium, but its compounds and uses are very numerous and interesting. We must, however, confine ourselves to those best known and largely used, viz.,—the carbonates, the nitrate, the sulphates and chlorates, and even these the clayworker has little use for in ordinary unglazed clay goods, but when he commences glazing or enameling he then needs some knowledge of fluxing materials, etc., which he will generally find amongst the *alkalies*, potash being one of the principal ones. I may here remark that the maker of ordinary red building brick will not suffer materially by some acquaintance with the *alkalies*, etc.

*Sodium.* This is also a metal somewhat similar to potassium and like that metal, never found in nature. It is prepared in a similar manner, but is much easier of preparation and a great deal safer, for mind you, potassium is a rather dangerous metal to reduce, inasmuch as the metal itself is very inflammable and because of an explosive compound being formed during distillation.

The ease, or rather the comparative ease and safety in the reduction of sodium, makes it much cheaper than potassium, and twenty years ago it was manufactured in large quantities for the reduction of aluminum and magnesium. Both these are now, however, manufactured by the electric reduction process, rendering sodium unnecessary, for just now I cannot think of any other manufacturing use for sodium. The symbol, you will recollect, is Na; its atomic weight is 23 and its density, or specific gravity is 0.972, or a little higher than water; it is a white metal tinged with red; it is soft and easily molded at about 66° F.; it melts at 250° F. and rises in vapor at a red heat. If a piece be thrown on the surface of cold water—no matter what shape—it will rapidly turn into the globular form and roll quickly about from place to place and

decompose the water same as potassium does, but does not catch fire; hydrogen is therefore set free; if, however, the same, or a similar piece, be thrown on hot water, it takes fire and burns with a rich deep yellow color, and there is formed a hydrate of soda (sodic hydrate) ( $\text{Na HO}$ ).

The solid residue of this is obtained by boiling the solution in carbonate of soda and lime dissolved in water, then evaporating this mixed liquid to dryness, the residue is much like potassic hydrate in all its properties but not so strong.

Both a monoxide ( $\text{Na}_2\text{O}$ ) and a dioxide ( $\text{Na}_2\text{O}_2$ ) may be obtained as white powder, but we must pass them as of little consequence, and examine those compounds that are in daily use in common life and in the arts and manufactures.

*Chloride of Sodium, (Sodic Chloride)* or "common salt" ( $\text{Na Cl}$ ). Very few think when using common table salt that they are flavoring their food, etc., with a combination of 23 grains of metallic sodium and 35.5 grains of that suffocating gas chlorine.

This useful, nay indispensable, compound is found nearly everywhere on the face of the earth, and in many places away down beneath the surface of our globe. Nature prepared this for us long ago; to prepare it artificially, we must first prepare some of the metal sodium, and then prepare some chlorium in which to burn it. Everything now ready we place a piece of sodium in a deflagrating ladle made of copper, set fire to the sodium and plunge it into a jar of chlorine, combustion goes on, but in a kind of spasmodic way, on account of the sodium becoming coated with salt as combustion proceeds. The coating you see is common salt, or the chloride of sodium ( $\text{Na Cl}$ ). What an expensive luxury common table salt would be if we had to make it ourselves!

Although nearly as common and as plentiful as ordinary clay, and as little thought of, it contains within itself—as every other substance does—numberless wonders which reveal themselves to the enquiring mind. Not least of these is that quiet but wonderful power or energy developed by affinity in reducing the mass of both sodium and chlorine. We are told by Prof. Faraday "that 24 parts by measure of common salt contain no less than 25.8 parts by measure of sodium, (more than its own bulk), no less than 30 parts by measure of

liquid chlorine, 55.8 parts by bulk, compressed into 24. No known mechanical force could have accomplished this, yet it results from agency of chemical affinity!"—*Faraday's Lectures*.

Rock-salt occurs in large deposits both in this and other countries, notably in Cheshire, England, and in Spain and Poland, where it used to be mined same as other minerals, but now an improved method prevails. Fresh water is run into the mine which dissolves the salt and then salt-brine is pumped out and evaporated to dryness. Much of the common salt of commerce is obtained by evaporating sea water. In some parts of Michigan a salt or brine spring, and a lumber mill are run in conjunction, the refuse lumber being used as fuel under the evaporating pans, etc.

All natural waters contain sodium, in combination of course, generally the chloride, small quantities of it (sodium) occur in most land plants, but largely in kelp and marine plants, this is also in combination, and is one of the sources of carbonate of soda, which we will describe presently.

Salt enables the clayworker to glaze his ware very cheaply and very effectively—the sewer pipe manufacturer, for instance, and I remember the time when stoneware of the common kind, ink-bottles, blacking pots, etc., made by J. Bourne & Sons at the Denby Potteries, England, were all salt-glazed, similar ware in this country so far as I have seen is slip glazed.

The clayworker has not yet realized what a friend he has in salt, or in some other compound of sodium.

I have heard and read of clays and shales that when made into bricks could not be vitrified by any heat available in the kiln. I have also read of sewer pipe resisting all attempts at salt glazing with all the heat that could be produced in the kiln. May be such clays and shales would make a saleable fire brick. *Refractoriness* points that way. If the fire brick hint is out of the question, let us consider the question of rendering such clays and shales less refractory, for high refractoriness—so far as I can at present see—is not an essential in either sewer pipe nor vitrified paving brick. I am aware this can be and is accomplished by mixing with other clays, but in case other clays are not available, why not seek assistance in salt? It is cheap, and easily applied; dissolve salt in the water used to moisten the clay and this



will diffuse the salt as thoroughly as any way that I know. The amount of salt to be used must be found by experiment, it may require but a small quantity, or a weak solution, or it may require a strong brine, may be, a saturated solution, to be effective.

This, I wish to be understood, as only a suggestion, and may not be worth the

Written for the CLAY-WORKER.

### BRICKMAKING IN THE GREAT NORTHWEST.

**T**HAT brick plants of large capacity may sometimes be located in out-of-the-way places, that of the Cook & Brown Co., of Oshkosh, Wis., proves true. By taking a trip on

the less a pleasure. The foreman Mr. Hy Newton very kindly showed us all the points of interest, and very clearly explained the methods of manufacture. They operate a 4-mould Andrus dry clay machine, an I X L soft mud machine with Potts Sander and a Brewer brick and tile machine.

The mud brick are dried by that dryer that never gets out of whack, or goes back on a man—old Sol, but the tile are dried in open sheds. One Eudaly down-draft and four large up-draft kilns, are used for burning the ware. And the clay! The people here call it stone clay. Stone without the clay would certainly seem more appropriate, but nevertheless the brick and tile made from it are of excellent quality and of a fine buff color. The company own an almost inexhaustible supply. It is mined chiefly with picks, shoveled into dump carts and hauled to a Frost dry pan crusher, elevated to a long inclined screen from which it passes, one part into a mixer and feeder of Mr. Carson's construction, and the balance with the tailings to the soft mud brick and tile machine.

The manufacture of dry pressed bricks from this material being a new departure, Mr. J. W. Carson, of Keokuk, Ia., has been engaged as expert to develop the process. We found him hard



THE COOK & BROWN CO'S BRICK WORKS, OSHKOSH, WIS.—AS THEY APPEARED IN 1890.

paper it is written on, but it is based on practical knowledge, viz., that Dinas silica bricks are utterly ruined for refractoriness, after a good soaking in seawater.

All the compounds of sodium, and for that matter, all the other alkaline compounds, are considered detrimental to fire clays, but the cheaper of these compounds may be of service to the clayworker whose productions have no claim on heat standing capacity; they must, however, be used judiciously with clear ideas as to cause and effect, avoiding all alluring chance flings to drop on something good.

Rock-salt is generally too impure for domestic use, and too coarse. The impurities are easily removed on account of difference in solubility, the chloride being least soluble crystallizes out before the impurities. In Germany and Poland they used to pump the brine to a considerable height, and allow it to trickle down ropes or faggots of wood on which it would crystallize; the drippings at the bottom containing most of the impurities, chloride of magnesia, etc., these drippings would be evaporated to dryness in pans.

Salt crystals are well defined cubes. Slow and quiet crystallization gives large cubes, (bay salt), while quick evaporation with constant stirring gives us our finest table salt in small cubes.

a steamboat (which by the way would very likely belong to the above company) over the waters of the Lake Winnebago, or fishing along its beautiful



PRESENT WORKS OF THE COOK & BROWN CO., OSHKOSH, WIS.

banks, the discovery might be made, but we doubt otherwise, as it is "far from the busy haunts of men." It was our pleasure to thus stumble on to it, and although unexpected it was none

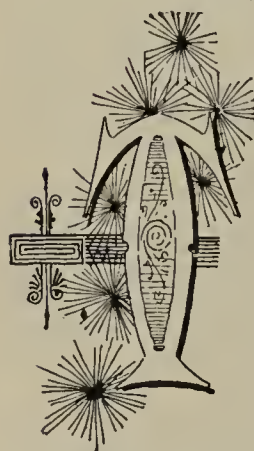
at work, and judging from the truck loads of bricks going into the Eudaly kiln, we feel assured of his success. As a fellow clayworker he certainly has our best wishes. The shipping is done



principally by the company's own steamboats, but occasionally others are engaged to accommodate the demand. One very pleasing feature we noticed was that although they make about five millions of brick and tile a year, there was no stock on hand except those in the kilns and very often these do not get time to cool. The company operates a boarding house, a handsome brick building for the accommodation of men under the personal supervision of Mrs. Newton and is a model one. We were favored with an invitation to dinner which we at once accepted, and needless to say—enjoyed. In closing this brief description of so progressive a concern (see photos) we cannot forbear thanking Mr. and Mrs. Newton for their courtesy to clayworking

PILGRIMS.

#### A GERMAN CRITICISM OF "DRY PRESS HINTS."



HOSE who have had the privilege of reading, during the past year, the reports upon the ceramic exhibits at the World's Columbian Exposition and the extended and accurate descriptions of the processes and products of the principal clayworking establishments of the United States, by Mr. Max Gary, in the *Thonindustrie-Zeitung* and by Mr. K. Duemmler in the *Töpfer-und-Ziegler-Zeitung*, have not only been entertained by the interesting views and criticisms of these foreign experts, but must also have added to their knowledge of what is being "done in clay" in this broad land of ours. These men were evidently not only specially qualified for this work, but had exceptional opportunities for obtaining the information desired. A residence, one may say, of several weeks in "The White City," enabled them to see many things of interest to clayworkers that probably few of the craftsmen in this country were informed of. Moreover, on account of their having come from the other side of the Atlantic, they were allowed to observe processes and to obtain information that for obvious reasons is generally withheld from clayworkers nearer by.

Mr. Duemmler was sent over by Friedrich Hoffman, whose kiln has given him

a world-wide reputation, and who is the editor of the *Töpfer und-Ziegler-Zeitung*. The following acknowledgment of this is made by Hermann Von Mitzlaff in one of his papers upon the "Dry Press Process in the Clay Industries:"

"It was a great service of Mr. Baurath, (Building Inspector) Hoffman, that in the year 1893 he sent Mr. Duemmler of Berlin, to the United States for the purpose of giving to the brickmakers of Germany a clear and accurate picture of the development of this industry on the other side of the Ocean. Unfortunately one cannot say that this picture has contributed to confirm the hitherto almost axiomatic opinion of the high degree of development of the mechanical contrivances in the German brick industry; rather does it tend to fill us with a certain shame to have so plainly demonstrated to us the high superiority of the Americans in this commanding industry as in so many others—not considering the process of burning the products, wherein the Germans, with the Hoffman kilns, far excel the Americans."

The object of this article, however, is not to review these reports as a whole, but to bring out one important matter bearing upon the dry press process, wherein Mr. Duemmler's description is at variance with that of "Press," a writer for this journal.

The following letter will serve as an introduction of the subject:

Editor Clay-Worker:

I have read the "Dry Press Hints," No. 11, in the *CLAY-WORKER* Vol. XXII, No. 1, and I am astonished that the writer of this paper has not given the right description of the movement of the "feed box."

Mr. Anthony Ittner, of St. Louis, Mo., a great authority of the dry press process, and other dry press brickmakers and brick press manufacturers have said to me that it would be a good brick if the bottom plunger does not fall before the feed box has reached its position accurately over the bottom plunger.

I have sketched the different positions of the both plungers and the feed box in my report of the American Dry Press Process in No. 37, Vol. XXIV of the *Deutsche Töpfer-und-Ziegler-Zeitung*, (German Potters and Brickmakers Journal.)

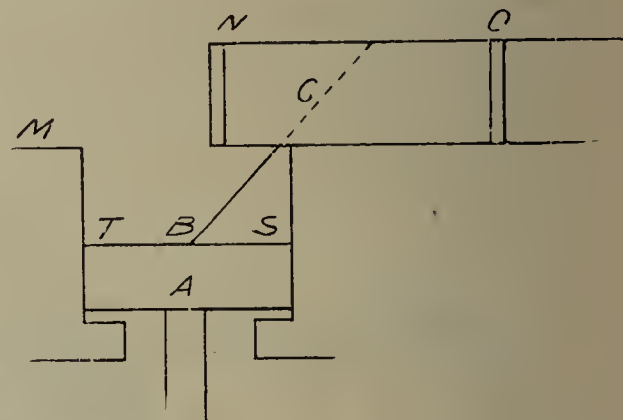
Yours Very Truly,

K. DUEMMLER.

The following extract from Mr. Duemmler's report explains clearly his view of the point in question:

"The charging of the molds with clay should not be done, as sketched in the following figure, so that the material drops freely into the mold B upon the lower plunger A, as in this case the finest particles cannot be prevented from flying up and lying on the surface

while the coarser granules fall upon the bottom in the corner S; only when the forward part of the charger C has reached the other edge M of the mold B, is the flying up of the dust less noticeable. The material, however, will always roll down obliquely, whereby the coarser particles fall to the bottom more quickly. It will also be required in this case in order to fill the front part



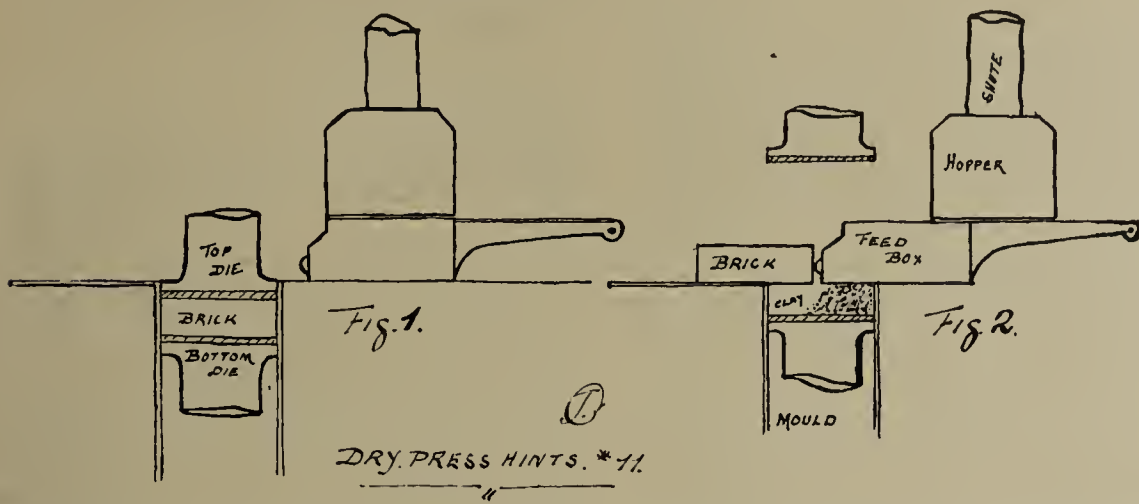
of the mold up to the edge M, above the corner T, that the back part of the charger C should move up to this edge. If the charging is effected as indicated above, the material must be laid into the molds very unevenly, and hence the brick produced are not homogeneous in texture and are apt to check in the burning.

The impracticability of charging in this manner has been learned in this country (U.S.) and is now done in a manner that insures a most uniform deposit of the material in the mold. This is accomplished simply by keeping the upper surface of the lower plunger level with the surface of the table until the charger has reached a position exactly above the plunger. In the accompanying five sketches the most important positions of the charger and plunger are illustrated. The descending lower plunger draws the material contained in the charger downwards into the mold in nearly the same condition as it was contained in the charger."

By comparing the foregoing description of these movements with that given by "Press" in the July *CLAY-WORKER*, any intelligent man cannot fail to see that the German has indicated the true principle of the operation—the one that every manufacturer of a dry press should strive to attain. The only question now is, whether there are such mechanical difficulties in the way of accomplishing this as to render it impracticable.

It is plain that if the lower plunger remains even with the surface of the table until the charger has passed com-





pletely over it, the lower plunger must then be forced down rapidly, before the charger begins to move back. And as press manufacturers are now striving to

lution in pressing than any other press) the charger must also be moved back very rapidly.

The question at issue, however, between the author of "Dry Press Hints" and Mr. Duemmler is not what these movements should be, but what they actually are in the American dry presses. Mr. Duemmler has shown himself to be a careful investigator of such matters. On the other hand "Press" declares in his article referred to, "My experience in the dry press process has been considerable and varied, bringing me into intimate contact with all of the leading machines."

Not to prolong this discussion further allow me to suggest that "Press" act upon some of the advice he has been giving to Brother Crary, and go himself to see the leading modern dry presses and make a study of their movements. If he had done this before writing "No. 11" he would not have attempted "to help my brethren in the craft" by describing a movement and illustrating a form of charger abandoned by progressive manufacturers years ago.

W. D. RICHARDSON.

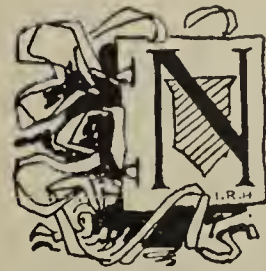
#### DON'T TAKE CHANCES.

THE frequency of boiler explosions, the cause of which can be traced to incompetency, pure and simple, naturally leads to the inquiry as to whether their owners are willing to take the risk of putting them in charge of men ignorant of their real duties for the sake of saving a few dollars in the way of wages. In many instances it looks that way. Men are gifted by nature with the love of taking chances, and there are men who would look with horror upon betting on horse races, or in Wall street, but who will cheerfully gamble on a boiler explosion, the stake being a few dollars in the way of wages between Competency and Incompetency on one side, and the killing of a few people

and the destruction of more or less property on the other. Hence it is that so many boiler owners will not pay for inspection, or a good engineer, and will spend their money in seeing that licence laws are not passed.—*American Machinist.*

Written for the CLAY-WORKER.

#### TECHNICAL EDUCATION.



NO DOUBT, it would be a mild way of expressing the general sentiment of all the people, who are interested in the welfare and ad-

vancement of the clayworking industries, to say they were highly pleased to observe the official announcement of the Department of Ceramics and Clayworking recently established at the Ohio University.

As it gradually assumes its identity among other courses of study of the college curriculum and becomes known more generally throughout the country, many eyes and ears will wait anxiously to learn what the future has in store for it.

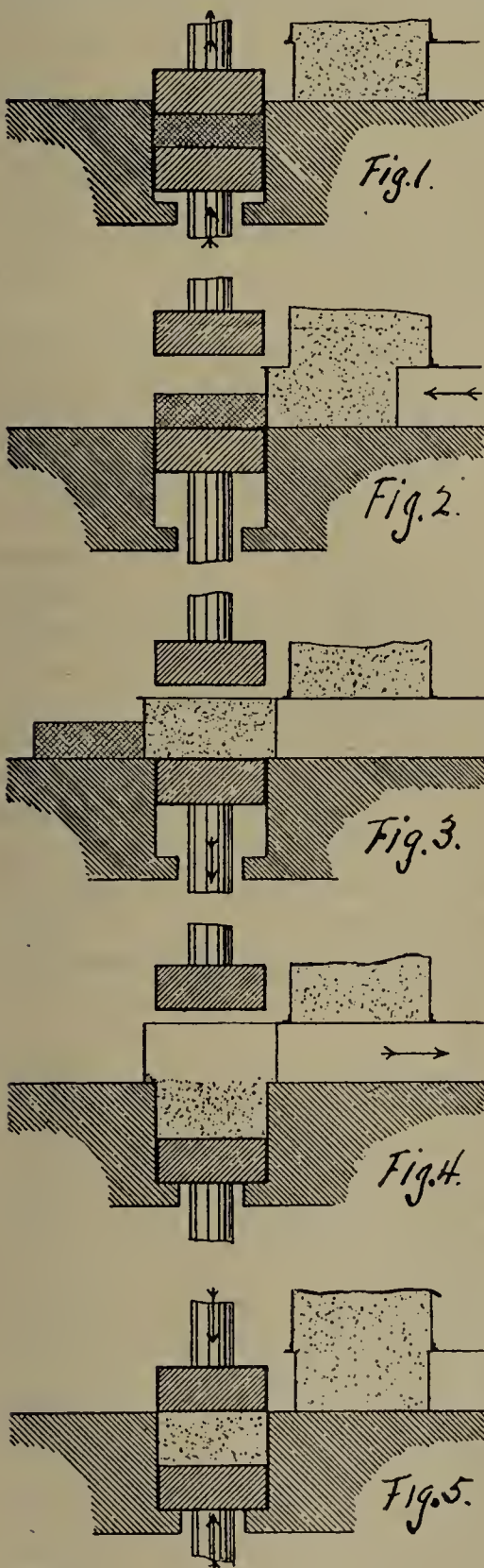
Now that the schemes of the past have been transformed into settled plans and have finally assumed a definite and feasible aspect, we can soon begin to look for results.

When the fruition of this movement begins to be realized, it will fully compensate for the ardent and persistent endeavors afforded by the N. B. M. A. in pushing the project through.

The advent of such a department in the Ohio University should arouse the deepest interest among a vast number of students who are leaving schools, preparatory for college, and are now busily engaged in choosing a higher course of study.

Young men, who have determined to take up a pursuit in life, for which this department will fit them, should consider it very much in their favor to have reached the point of going to college at such an opportune hour. Many men, who are hopelessly beyond their school days, have already wished themselves back at their twentieth year again, in order that they might derive the benefits of such training.

These men are practical and have had a long experience in their respective lines of business, but they do not forget the difficulties which they have encountered and the peculiar phenomena that have transpired under their



give all the time possible to the pressing, (each press being advertised to spend a larger portion of the time of each revo-



very noses, all mysterious to them at the time, though easily explained and anticipated by theory.

It is not necessary that I should say more in commendation of this step, taken by the N. B. M. A., and upon which resolutions were passed last May, for my readers appreciate as well as I do how long a need of this kind has been felt.

People are safe and fully justified in prophesying that this school will not only raise the standard of these industries of ours out of a sluggishness and indifference under which they have struggled, but it will also have the effect of elevating the ideas and intellectual character of men with respect to their business, who conduct the practical workings of our factories.

After all the careful thought which has been expended in laying out a course of study best suited to the requirements of the school, I feel as though anything I might write in the way of criticism should be accompanied with profuse foot notes of apology as an assurance that these suggestions are not presented with any malicious or selfish intent, but have been prompted only by a spirit of intense interest in the progress and success of the school. I beg to say, therefore, that if my statements, which will follow, cannot be accepted as quite applicable to the present need of the department, they may be valuable in so far as they suggest other changes in the direction of improved methods.

As I glanced over the course of study, arranged for two years; I could not help feeling a pang of regret that the schedule had not been made more complete and the duration extended to four years.

This school of Ceramics and Clayworking should have a course so complete and broad that it would compare favorably with those of civil, electrical, chemical and mining engineering in any of the Universities or Schools of Technology, in the sense that it educates a man in all the important sciences, particularly those directly bearing upon his chosen line.

Why is it that this course has been made so limited and abstract?

Is it because of a fear that most applicants would consider the expense of a four years college course as too much for them to bear, or for the reason that as yet, our industries have not felt the need of scientific men, in the true sense of the word, to run their factories? The course as arranged will do very

well for the few students who, unfortunately, are pecuniarily incapacitated for more than two years of college study, but the complete, true and representative course in Ceramics and Clayworking should be arranged for four years. Certainly mechanics, both theoretical and applied, should be taught in this department and, in order to instruct the student successfully in those branches, he must have the principles of trigonometry and calculus, besides algebra and geometry, at his command.

Articles of interest to the clayworker are constantly appearing in different German and French publications, and graduates from this school should be able to translate from these languages into English with enough ease to keep up to the times and familiarize themselves with the points of interest which appear in the foreign journals. Mineralogy should appear in the schedule of studies as an independent, one term course, at least. Blow pipe analysis should be identified with it and instruction on this subject kept quite separate from the work in general qualitative and quantitative analysis.

In Descriptive Mineralogy specimens should be used and examples of the important minerals shown, with instruction in crystallography by the aid of models, diagrams and series of crystals.

In Determinative Mineralogy the student should be taught to recognize minerals from their physical properties, crystalline structure and blow pipe analysis.

Such a course ought to be considered of great importance to the young man who is fitting himself to be an expert on the subjects of Ceramics Clayworking.

Chemistry, as has already been said, is the most important subject in the whole plan of study, and yet, the three essential classes of chemical work which the students must cover, general chemistry, qualitative and quantitative analysis, taken in its most abstract form as applied to this department, would have to be covered in a very hasty manner, if the work is to be accomplished in two years. Courses in English, no doubt, have not been considered for the department, and if they were prescribed, it has become necessary to strike them out to make room for purely technical subjects which appear to be of more importance. Such sacrifice and close discrimination becomes sadly necessary in order to crowd the course into two years.

English syntax, English composition, abstract writing on scientific subjects and thesis work would supply the same need to the students of this school as they do to those of other scientific colleges.

The majority of candidates which will apply for admission to the school of Ceramics and Clayworking will hail from high and preparatory schools.

It is a period in life when a student's knowledge of the English language is in a very crude and unsettled state. He has rules of grammar and rhetoric in his head which are more or less theoretical, with a proficiency in the application of them, in constructing and punctuating sentences correctly, that is still undeveloped. The aim of such a course in English should be to give all the young men who attend this school such drill as will help them to express themselves readily, accurately and adequately, and to aid them in the understanding and the appreciation of good literature.

Is it absolutely necessary that the school should limit itself to a two years curriculum? CHARLES FERRY.

#### THE PASSING OF RED BRICK.

IN no department of human industry has there been greater evolution of late years than in the business of making bricks. Formerly we had nothing but old fashioned red brick that reached its climax of perfection at Philadelphia and was shipped thence at great expense all over the country where a high grade article was in demand. But the red brick has had its day for architectural use, and in its place has come to stay the brick of lighter hue—pink, buff, yellow, and, in fact, of nearly every shade.

A brick can be made that is as mottled as a sea gull's egg or one that will show the varying tints of an autumn leaf. It is done by adding certain metallic ingredients to the clay after the latter has been ground to the finest powder. It is the iron in the clay that gives the ordinary brick its deep red. In future most of our city residences are going to be constructed from brick of these pleasing colors. They give relief to the eye and variety. What can be more monstrous than a row of red brick houses? Washington is taking to the new style, and in this clear atmosphere, unspoiled by the soot from soft coal combustion, a house of this beautiful material will stand fresh for a century and be solid for years after one built of granite had disintegrated.—*Washington Post*.



## A REPRESENTATIVE MACHINE MAN



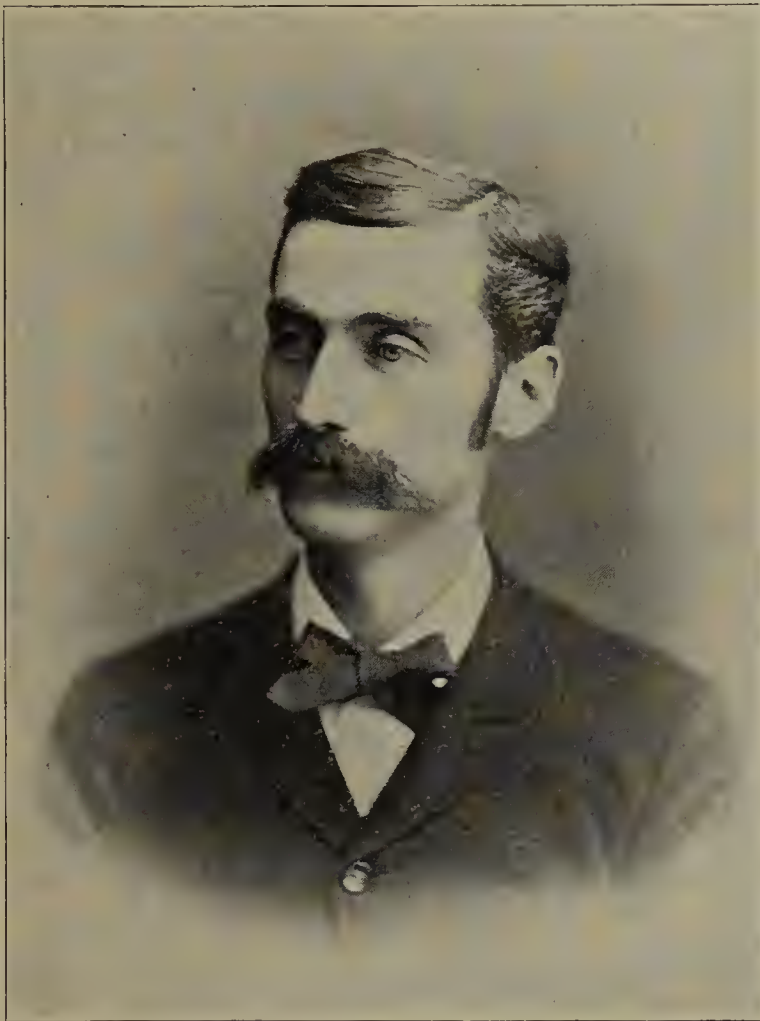
WE ARE pleased to add to the CLAY-WORKER'S picture gallery the portrait of one of our best known patrons, Mr. A. L. Brewer, of H. Brewer & Co., Tecumseh, Mich. His face will be recognized by many of our readers who have the pleasure of his personal acquaintance and a still larger number will, we are sure, be pleased to see the likeness of the head of a firm with which they have had pleasant business relations.

When H. Brewer, the founder of the firm, died several years ago, Mr. A. L. Brewer, his son, assumed the general management of the business and has conducted it so wisely as to make a fast friend of every patron. Few firms in any line have more friends and fewer enemies than have H. Brewer & Co. This is saying a great deal when the extent of their business is considered, for their trade extends throughout the United States. Mr. Brewer attributes his firm's success to the uniform excellence of their machinery. We suspect that it is also due, in no small measure, to his conservative management, which has been characterized by strict business integrity, and a quiet, persistent devotion to his own business. Minding one's own business is nearly always productive of good results, and, especially, when accompanied by good sense and good temper, as in Mr. Brewer's case.

## HOUSES OF UNBURNED CLAY.

ADOBE construction which has always found favor with Spanish Americans has in fact qualities peculiar to itself which recommend it for certain localities. It is not only a comparatively inexpensive construction in localities destitute of native timber, but it affords the coolest and most delightful retreat from the heat of the summer and from the cold and dampness of the winter. For these reasons the old adobe construction is still being adopted in Southern California, although generally the old method is considerably

improved upon. The superior adobe residences are built with masonry foundations extending several feet above the ground level. This prevents the walls from absorbing and retaining moisture and from settling and cracking. The walls are covered with several coats of plaster both within and without and the exterior is then weatherboarded. The roofs are tiled and eaves are provided to carry away the roof water. Under each room an excavation is made opening to the exterior atmosphere to provide for ventilation. But even with all these improvements an adobe is



A. L. BREWER, OF H. BREWER &amp; Co., TECUMSEH, MICH.

comparatively inexpensive. The brick are made in a very simple manner by digging up the earth, adding water plentifully and mixing with cut straw. The mixture is cut into large blocks which are then dried in the sun. Sufficient adobes for the largest residence would cost little more than \$100. This economy is a great object especially to the interior farmer or the suburban resident. The revival, or rather the preservation of this style of construction in the south does not therefore seem so very surprising. It is reported that in the vicinity of Santa Barbara, Cal., alone six large adobe residences are being erected this summer. The adobes appear to be holding their own pretty well as a style in architecture, although

recent improvements of builders have done much to transform their ancient appearance.—*The Pacific Builder*.

Written for the CLAY-WORKER.

## BRICKYARD EXPERIENCES.

## Questions of Interest to Practical Brickmakers Answered.

BY J. W. CRARY, SR.

RECEIVE a great many letters of inquiry from readers of the CLAY-WORKER who want to know various things about making and burning brick. To answer each one personally would take more time than I can give, so, with the permission of the editor, I propose to make answer to such letters as may be of some general interest through these columns and hope thus to gratify the individual seeking information and as well interest many other readers who are trying to make brickmaking a progressive art.

An Illinois brickmaker writes, "Having read your many valuable articles in the CLAY-WORKER, and also your very interesting and valuable book, 'Brickmaking and Burning,' I believe you can give me some good advice, and therefore take the privilege of asking you some questions.

We have a clay bank of a depth of 16 feet. The clay bank consists of 1½ feet black soil, 2 feet of a red joint clay and the rest is white, with iron rust mixture. We make brick of a very fine red color, by mixing all together. Either one of the clays by itself will not make a good article, but all well mixed, make a good brick. The last two kilns we set part of them your way, and with good success, but the question I want to ask, is about the clay. We 'plat' as you say in the book, and the last two kilns we covered with clay, (as you direct) and left it on till cool, and then opened the damper to drive out all the dead heat, and then threw bats and clay off. We had a fine kiln, from top to bottom, and from 'head to head,' and good color, right out to the corners, but the two top courses were very brittle, but hard. Now what was the cause of their being so brittle? When we burnt without covering with clay, the top, heads and corners, were salmon. Your articles in CLAY-WORKER, are good, and we practice them."

J. E. P.

I take it from his letter that Mr. P's. main difficulty in burning, the brittleness of the top courses is caused chiefly by crowding heat too fast in the last stages of watersmoking and by the mixing of the top soil with the clay. It is simply impossible to make a good brick without clay and sand, and these must be pure, you cannot mix a large per cent. of soil with clay, and make strong brick. The soil prevents a proper crystaliza-



tion of the particles of clay, and unless the brick are melted or partly vitrified, the pores left by the burning up of the soil in the brick, destroys their tenacity. HOT, RAPID WATERSMOKING WILL CAUSE BRITTLENESS.

It is a common thing for brick burners, to go slow with watersmoking a kiln, until the water smoke is out of the main body of the kiln, then they become impatient, and push the fire, this super heats the top part of the kiln, and the surface of the brick, gets a dull red heat, while the inside of them are charged with steam, this of course, greatly destroys the cohesiveness of the particles of clay, and the body of the brick, becomes weak and shattered. It is the soil in your brick, and the too hot watersmoking the top courses, that make your brick weak at top of kiln. Throw the black soil off of your clay bed, be careful in watersmoking, slow and regular, until the water smoke is confined to the top course of kiln, then increase the heat in your arches, to a bright red, and keep that up, until it shows on top, then raise heat in the arches to about all the clay will stand, without cutting or bending "over hangers," and keep up such heat, until it shows at top of kiln. Then as the kiln begins to settle, (if the clay shrinks,) cover the places that are settling with clay, as I direct in book, and you will be sure to have a good burn. As to the sulphurous gas you speak of, as offensive while you are putting clay on top of kiln, it is not the damp clay that makes the gas, but it is the salts that are in the clay, that is being heated in the kiln. When you put clay on your kiln, you should go behind the wind, you do not cover your kiln all at once, only cover such spots as are burned. That is a light easy job, if you do it right.

Another writer, the head of a firm that is trying to make buff front brick, writes:

I am new in the brick business. I have had great trouble getting uniform colors. We use the best Jersey clay, and sometimes get a beautiful buff, what we want, but sometimes find a variety of colors. We use muffle kilns and soft coal, could you give me any suggestions? Do you know if a pyrometer could be used with success to test the heat of kilns? J. A. C.

The difficulty in this case is really a serious one. It is that Mr. C. and his company are new in the brick business. They doubtless have good clay, and all other needed facilities, for brickmaking, save and excepting the skill. He says "any suggestion on these points, will be

gratefully received." First, I would say by all means get a first class, reliable expert brickmaker, setter and burner; you, like many others have started at the top side of brickmaking instead of the bottom. It will be better for you to pay an expert \$1000, to show you how to make, set and burn one kiln, than for you to get book learning and common skill for nothing. You can work ten years as you are doing, and then have all your profit in needless experience. I think you could find the man you need, by advertising in the CLAY-WORKER, just say in the "ad" what you want, and that you will pay for skill, when fully proved by practice. If you could see one kiln successfully made and burned, you would then only have to repeat the manipulation, to get the brick you want.

You ask, "If a pyrometer could be used to test the heat of kilns." Pyrometers may be used in testing the heat of small muffled kilns for pottery, etc., but it would not successfully test the heat, in common size brick kilns. In a brick kiln of 100,000 or more, the heat cannot be equally diffused, or made accessible to the touch of pyrometer, there will be various spots of heat, of varying degrees. These spots of heat must show at the top of kiln, before their intensity can be determined, then the skilled, practiced eye, is the only reliable pyrometer. If you will study my writings on this subject, I think you will get all the advice you need, to begin your apprenticeship in brickmaking and burning. If you wish to make a uniform colored brick, you will need a first class up draft open top kiln, get a true expert to make, set and burn, at least one kiln for you, pay him his price. After he sees your clay, he can tell you what he can do with it, and he will not hesitate to guarantee the result of his opinion, if you furnish him with the means he may need and require.

Mr. D. E. S., of N. C., writes:

Some weeks ago, I got one of your books, on "Brickmaking and Burning," and now, my only regret is, I did not have it as my guide, several years ago. I make common brick, but want to make in connection, some fine front brick, and ornamental brick, I work on a small scale and seek light and information, and by reading after you in the CLAY-WORKER for some time, was warranted in getting your book, and since reading it, I am fully persuaded, that you are master of the art, and any information you will give me, shall certainly be appreciated. I know I have as fine clay, as there is in the United States, for my purpose.

1. How shall I prepare the clay?
2. What moulds shall I buy?
3. What repress shall I use?
4. What will castings for kiln, as shown in

your book cost, and where can I buy them cheapest?

Any and all information, will be highly appreciated.

After thanking D. E. S. for his kind expressions, I will try to answer his questions, but as they are very indefinite I can only reply in a general way.

To the first question I would say that it depends on the character and condition of your clay. If you are going to mould by hand, the clay should be dug out of the bank and thrown into a pile, so that it will be thoroughly mixed, from bottom to top, when it can be done. It is best to dig clay during the Autumn, then use it in the ensuing Spring and Summer, if you desire to get the best results in making fine front or ornamental brick.

To the second question, I would say look through the CLAY-WORKER, and you will see every kind of brick mould advertised by different, but reliable parties. D. J. C. Arnold and G. Coldewe & Co., are old in the business.

As to your third question, I would say also that you can make a good and safe choice in represses, by looking at the advertisements in the CLAY-WORKER. Benjamin Craycroft advertises a repress that seems to be simple, good and cheap. I mention this because you say you "are on a small scale."

Your fourth question can be answered by any of the advertisers in the CLAY-WORKER, who furnish brick yard supplies. Write to one or more of them, and tell them just want you want, doors and grates, etc.

I am not in any way interested with advertisers in the CLAY-WORKER. You can get as good terms of them as I could and the best way is to write for just what you want and for the best terms.

If the business of brickmaking is new to you, I would advise you not to experiment; don't waste time and money on doubtful ideas. Just send for a first-rate reliable, experienced man to come and show you how to make, set and burn one kiln. If you get a real brickmaker, you will make many times more money than he will, if you give \$10 to \$15 a day, for his services, and pay all of his expenses. It would take an expert three to four weeks, to show you how to make, set and burn a sample kiln, not less than 50,000 brick. If you have an important case, and need a Doctor, you don't send for a quack, you call the very best skill, you don't ask the price of it, and when you get well, you don't find fault with the bill.



Mr. E. E. R., of Georgia, writes:

I do not know but what you will deem it an impertinence on my part, if so, perhaps you will excuse it, when I venture to tell you, that I am one of your pupils, as I have been a student of your book, and writings, and have derived great benefit from them. But I wish to ask you few questions about burning brick from an auger machine. Is there any way by which I can prevent the brick from "squatt-ing," or crushing, in the benches, only to use great care in watersmoking? The clay is Chattahoochee river bottom subsoil, and fuses quite easily. The burner preceding me, had great trouble with his bench brick, being stuck together. By following your directions closely, I am not troubled but very little in that respect. I have hardly dared to cover top with clay, since coming here, would you advise it? When clay fuses easily, as it does here, will there not be danger in melting brick in body of kiln, under flames first covered? When at the North I covered all my kilns, and saved much fuel thereby. If you will advise me in the matter, I shall consider it a great favor. I came here on account of bronchial troubles, and have fully recovered my health, and begin to think this is pretty near God's country, and have no desire to undergo any more cold Northern Winters. I have had charge of some extensive plants in the East.

There are two main causes for brick crushing in the benches, viz: Brick may be too wet, and soft, to stand the weight of kiln, and the heat may be raised so quick, that the benches, would "water settle." Another cause for squatting, is often found in the too close setting of the brick. If the heat generated in the furnaces, is not allowed to escape freely from the arches, up into the body of the kiln, it soon reaches a degree sufficient to fuse your clay, and the only way you can prevent melting the overhangers, and benches, is to fire moderately, with your doors closed.

A FREE, UNIFORM DRAFT, FROM BOTTOM TO TOP OF KILN,

Is absolutely necessary in making a safe good burn. As to covering your kilns with fine clay, you do not intensify the heat under the blazes, by covering courses, you cover only the spots that are burned, perhaps only two or three feet square at a time and often less, if the hot blazes are strong, this acts as a damper, and deflects the heat to colder places. Set your brick loose and "skintling," and your benches may be seven brick high, and fine overhangers thirty to forty brick, is high enough for your kiln, and have your brick well dried, before set in kiln.

WHEN one receives an injury, through his own negligence, by exposing himself to dangers of which he had ample opportunity to be informed, the courts hold that he cannot maintain an action therefor.—*Exchange*.

#### SUGGESTIONS FOR SMALL COMMERCIAL STRUCTURES.

THE managing editor of an architectural magazine was once asked why he did not publish more designs for two and three story store buildings. He remarked that very few designs were made for that kind of structures which were worth publishing. In his case the answer was not a good one. He published every month designs for ugly dwellings, badly designed office structures and public buildings that, though

majority of store buildings are those of two and three stories. If they were made interesting, as they might be, the beauty of our streets would be vastly enhanced. Nearly all of the little stores and shops are brutally ugly. We have come to disregard the necessity of making them otherwise. We are used to this commonness. Our architects would do well to go back to the 12th century at Cluny and Vendome and other sections of France and copy from the two and three story structures which one finds there in rows lining long streets,



DESIGN FOR A BRICK AND TERRA COTTA FRONT.

pretentious, possessed little of real merit. It was a rare thing that the really good designs which he seems to have had in his mind for the two and three story store buildings were seen in his journal.

It strikes the writer that architects should bear in mind that a very large

each one of which is an artistic gem. Beauty with these people was a habit. They knew nothing else. In comparison, it would appear that ugliness with us is a disease, not incurable but serious. In proof of this, look to the side streets and the outlying districts of our cities



where there are a number of store buildings, look to the country towns, in the buildings around the public square, there is multiplied commonness. This is true not from lack of funds, but from a lack of care on the part of the architect. There has been money enough expended in any one of these buildings to make them at least interesting, if proper attention was given that feature of the work.

The little two story brick structure of which a sketch is shown, is a composition having in mind primarily the practical necessities of a structure of this kind. The decoration is selected from some of the byzantine designs which have been published in the *CLAY-WORKER* during the past months. It is a structure which could be readily carried out in brick and terra cotta.

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Written for the *CLAY-WORKER*.

### MAKING BRICK IN THE DARK.

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BY J. G. GREUSEL.

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A GREAT many brickmakers at the opening of a season, find but very little time to devote to examining their machines, pug mills, elevators, shafting, etc., which have been standing idle during the winter season. Why do they not pay more attention to these articles? Why do they start machinery for a season's work with little or no inspection? Yet on the opening of each season there is a hope that the season will be a prosperous one, and at its close, when accounts are balanced, that the items, which in former seasons told of breakage, loss and repairs would fall way below the average. But, how many see that hope fulfilled?

Implements of brickmaking require as much consideration as do the implements of other trades, and if given the attention they merit, will reward such attention three-fold.

The writer remembers one who began the brick business after serving about five years at that trade; every article used in the manufacture of brick was new. He started out with the brightest of prospects. The first season went well. At the opening of the second, he too, forgot to pay any attention to the articles now one year old. And why should he? They were only a year old! Nonsense, they were all right. He started them and at the end of

the third day, the crown-wheel of the new machine broke down. He muttered something about the machine not being as represented, and wished he had bought another make. A new wheel, however, was soon in place and the machine again started up. All went well for a week, when this wheel broke as did the other. He was now more positive than ever that he was being imposed upon by an unscrupulous firm. Another wheel was ordered; another week's work; another breakdown. He called in one of his brother manufacturers, who immediately pointed out the cause of the trouble, which was, after the frost had left the ground, one side of the machine's foundation had settled about an inch and a half, thereby forcing the weight of the machine on the crown-wheel, which, added to the strain it experienced from the grinding shaft, was more than it could stand.

I could cite many instances where break-downs to shafting, elevators, couplings, carriages, etc., might have been averted had a little precaution at the start been observed.

It is, I think, a wise plan to thoroughly examine everything before starting a season's run. Look to your machines, see that they stand plumb, that their carriages and tables are properly adjusted, and that tubs contain nothing that will obstruct the knives or press. Give careful attention to the elevators; they should be sound and firm, and their chains should be of even length. Note whether the beds for the shaftings are solid, and, the couplings thereon should be secure. A thorough examination requires but a little time, and in it lies the secret of bringing to a fulfillment at the season's end, the hope that was foremost in the early spring.

It may be well to add a few words about our friend. Since the time of the break-downs, he has never failed to spend considerable time to the overlooking of everything about the place. He is still in the business and very prosperous. He often refers to the incident we have mentioned, when he is giving advice on brick matters, and always states that was a period in his career when he was "Making brick in the dark."

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E. L. Cook, State Farm, Mass., in renewing his subscription says, as he did not get an early start this season, he moulded until the first of October, al-

though most of the yards in that vicinity closed down the middle of August. Mr. Cook says his sheds are full of brick but he expects to dispose of all of them before spring.

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### SMALL THINGS.

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It is verily true that life is made up of small things. It is the stroke on stroke which fells the great oak.

It is the odd moments profitably employed, which count in life work.

If the small things in business are kept well in hand it will prove a prime element of success.

No matter how broad or comprehensive one may plan, if the details are left to take care of themselves the business will be a failure.

In almost every business undertaking in this age the margins of profit are small. So small that if the small things are disregarded the result will be a failure; otherwise if the business is well planned and the details looked after with vigilance the success of the undertaking is assured.

This is applicable to all kinds of business but to none more than the manufacture of drain tile. From the very beginning every little step should be carefully taken. From the digging of the clay to the storing of the tile on the yard, even the little things in selling all should be faithfully done and not left undone.

If the little things do not receive attention the end will probably be a failure. If a mixture of clay will make it more plastic and work into better tile, don't neglect it, follow in detail the process that will make the better product.

In all things strive to do away with every unnecessary step, it will be so much saved.

See to it that every little thing is done in the right way and that no unnecessary things are done. One of the most demoralizing losses about a factory is the waste of time—too much talking, too much jesting, it may be, in work hours. Only a few moments at the time but when multiplied by a large number the aggregate may eat up the profit. Careless handling, careless labor, and anything to put in the time, are serious little things in conducting a business.

Look after the small things and the large things will work satisfactorily. Improve the moments and the day will be well spent.—*Drainage Journal*.



Written for the CLAY-WORKER.

## THE CLAYWORKING INDUSTRIES OF OHIO.

### Tenth Paper.

BY EDWARD ORTON, JR., E. M.

#### REPRESSING.



PRODUCT of the brick machinery described previously, is complete and merchantable brick so far as their form is concerned.

After drying and burning, they become a marketable product.

But many paving brick makers have introduced a second mechanical process, for producing the finishing shape, by which the bricks are dropped into a mold and pressed.

This operation is called repressing, though in most brick processes, it is really the first application of pressure in a confined place. However, the term serves to distinguish between the manufacture of dry press brick, which usually are called merely "pressed" brick, and those which have been made by stiff mud machinery and then pressed.

The purpose which makers have in view in repressing their output are:

1st. To give their ware new and ornate shapes, not attainable by the use of a die through which the clay flows in a stream.

2nd. To smooth the rough edges and sides caused by the wires of the cutting tables, and to give the brick a better surface.

3rd. To compact and consolidate the material into as dense and homogeneous a structure as can be obtained, and to try and obliterate the laminations and air cavities produced in the manufacturing process.

The value of the repressing process has been much over-stated, and fictitious values of brick have been made and kept up, on account of the alleged improvements in quality, and the additional cost of manufacture. Recently, however, a distinct counter current of opinion has set in. Opposition to repressing began with those who had no machines, but many manufacturers now repress only a small part of their output, or none at all, while their represses stand idle.

The claims of those who oppose repressing are as follows:

1st. That the structure of the brick is determined in the passage of the clay

through the brick machine and die, and that repressing the brick while just out of the machine, tends to break up their first structure without in any way improving it. Further, that laminations which were scarcely noticeable before repressing, are found after the change in shape and dimensions, to have been opened out and made much more detrimental than before.

2nd. That cavities or fissures in the clay cannot be made to weld together and disappear by pressure after the brick is formed.

3rd. That the brick is not increased in density, because it is impossible to compress a fluid mass to any extent; the pressure will change in shape but not change in bulk.

4th. That the brick undergo a process of surface flow in adjusting themselves to the new shape of the repress die. The idea is based on the assertion that the pressure only affects the brick on its outside, or "skin deep," and that the change in shape is accomplished by a rapid movement of particles of the surface without change in the interior.

This latter assertion is a very absurd one; whatever may be the facts concerning the relative value of repressed and plain materials, the championship of such theories as this, carry no weight. Plastic clay acts under pressure like a fluid, and is governed by the same laws as control fluids, and the first and most elementary law concerned, is that when pressure is applied to one part of a fluid it is transmitted equally to all other portions. And the theory of surface flow and unaffected interior are, on their face, absurd and inadequate.

However, the fact remains, that many paving brick makers assert that the surface of their repressed material chips with much more ease than the plain material. For instance, in loading two cars of material, one plain and the next repressed, it is asserted that the chip-pings falling from the brick during their handling will be twice or more in quantity in the latter than in the former.

In regard to the other assertions, there is indication that they are often true if not always. It is an assured fact that a laminated brick is not in any degree healed of its laminations by repressing, also, that the material is not made more dense.

The question of the benefits of repressing all hang on the first claim, that the structure, as altered by repressing, is not as desirable as that given by the

machine at first. No one can gainsay that the material advantages claimed in the way of appearance, shape and smoothness of surface are true. Also is it apparent that a ragged, wire-cut surface is more likely to absorb water, than a smooth one.

The usual process of repressing consists of dropping the blank brick into a tight box whose length and breadth are each a little greater than those of the brick to be pressed. This difference is necessary to give clearance, so that the bricks can be dropped into their place easily and automatically. The usual allowance for side play is one-eighth to three-sixteenth of an inch and the difference in length is usually one quarter and sometimes even a half inch.

The thickness of the blanks is such that when the pressure is applied the brick expands, filling the die and decreasing in thickness in proportion to the change in the other dimensions. Now, if the box has no vents and the top and bottom plungers fit it tightly, further motion of the two plungers toward each other will either compress the clay or break the machine. And as all repress manufacturers have a wholesome regard for the reputation of their machines and do not like to have them break in vital points, it happens that all represses are provided with some means of relief after the clay has filled the die.

In one press, widely used in Ohio, the relief is obtained by springs in the main rod, which transmit the strain from the shaft to the pressing head. So, in this case, it is impossible to exceed a certain pressure, for when that is attained, the springs relieve any increase. With this arrangement, there is no security that the products will retain anything like a standard size, for if a blank be introduced, containing one cubic inch more clay than it should, it will be flattened out into a square brick which is just so much thicker by the distribution of the extra inch. Also, in the other case, when the brick is too small instead of too large, the readjustment of the shape will be partly accomplished, but it will lack the final pressure which consolidates it, for the full power of the machine can only be exerted when the clay present is enough to just exceed the capacity of the die.

Now, the effect of such repressing as this is probably injurious to the brick, rather than beneficial to it, for it is impossible to put any pressure on the



brick above that used to shape it up well. Any excess is relieved by the springs. Under such conditions there is more likelihood of opening out the laminations and breaking the bonds than of consolidating them.

In another well known and widely used repress, the size of the die and blank are adjusted as before, but with this difference, that the brick always has a slight excess of clay above that needed for the new dimensions it is required to take. The die is then provided with vent holes, and through these the excess clay is squeezed out, more or less as the cubic contents of the individual bricks vary. The vertical depth of the pressing chamber is under control by a screw which can be quickly regulated, and if the bricks coming to the press are found to be a little larger or smaller than they ought, it is only the work of an instant to regulate the depth of the press box so that whatever size the brick are, there will be an excess of clay. This plan is much superior to the former, in one respect. The pressure obtained is a sure and reliable quantity, for it will require within small variations, the same pressure to expel the excess clay of one brick that it does with the next. Differences of temper would make a difference of pressure, but the repressing cannot be done with either very soft or very hard clay, so that but little variation on this head is practically felt. The main fault with this plan is, however, to be found in the likelihood of the irregularity in the size of the output, not from brick to brick, but from day to day. The change of size is so easy to produce, that the press feeder is likely to alter the size of the brick for some trivial or short-lived reason, and fail to return to the standard again. As a result, it is claimed that regularity of output is hard to secure where these presses are used.

When pressure enough is used to cause the excess of clay present to be forcibly discharged out of a small vent, the structure of the brick would seem to be as good as that previous to pressing. But, the vent holes wear to a large size with amazing quickness. The rapid flow of the gritty clay through them, acts like a file and soon the holes are so large that the issue of clay begins at a much lower pressure or without obtaining as high a pressure. Not only this, but when the hole is large, the flow of clay being started suddenly, continues for an instant after the pressure is re-

moved, and consequently the brick has less clay in it, than ought to exist in its cubic bulk. This fault shows at once when the brick are dried, being indicated by small horizontal cracks opposite each vent hole. These cracks extend some distance into the substance of the clay and are due to the unequal compactness of the material, where the flow of clay was in excess of what was needed. So that while it is best to press a brick hard enough to cause it to issue from the vent holes, it must be carefully noticed that the vents are not allowed to exceed their proper size, and that the issue from each brick is not excessive.

In one place in Ohio, the repressing is still further improved. The blank is put into a first repress, and shaped by it to the required size. The excess of clay is allowed to escape by vent holes. The block is then transferred to a second press which imparts no new features of shape or size, except a very slight diminution in all its dimensions. The variations in the blanks entering the first press is regulated by the vents. But the block as it enters the second press is supposed to be always uniform in size, and there are no vents or relief springs or any means of saving the machine from the exertion of the full pressure of which it is capable. Consequently, the slight amount of condensation and compression which is possible with a fluid material is given, and without doubt the product is greatly improved in structure and strength by its treatment.

If it were feasible to furnish blanks of strictly uniform size, then there is nothing to prevent any repress from doing the same thing with one pressure as is attained here in two. But machines must be guarded against variation in size or they will break, and so far, variations in size must be expected in wire-cut brick.

With a view of trying to determine to some extent the justness of the various assertions about the influence of repressing bricks, the result of the Ohio tests of paving material (which will receive full treatment in a subsequent article) were compared and assorted. It was found that all the repress varieties represented in the test, 26 in all, showed an average loss in the rattling test of 17.92 per cent., while the plain brick, 19 varieties in all, showed a loss of 17.42 per cent. This figure, while it points against repressing, can hardly be significant, as the margin is so small

and the kinds and materials represented were so various and diverse.

Another trial, made specially and solely to throw light on this point, was made with four varieties of brick from Canton, Ohio. The bricks were made of shale, and there were samples of both plain and repressed material from each works. A rattling test of 1,000 revolutions was given, and the results showed, Repressed Brick 13.23 per cent. loss; Plain Brick 14.84 per cent. loss. Also in this same test, bricks from one factory, which had been selected with special reference to this test, and which represented material in which all other conditions had been made uniform, showed as follows Repressed 15.02 per cent.; Plain 19.06 per cent.

These three tests, two of which show results in favor of repressing and one against, are far from conclusive. It would be necessary to manufacture a number of bricks at each of several factories, having special reference to keeping every condition absolutely uniform, except that of repressing; making a set of plain and repressed bricks from each factory. The rattler test, conducted with strict fairness on such material, would undoubtedly be strong evidence in favor of which every kind of material showed the lowest average loss.

In practical use, there is not sufficient evidence yet at hand to justify radical assertions either for or against repressing. Plain brick, having square corners and edges probably lose more chippings in the first years wear in a street than repressed brick with round or beveled edges. But after the first year, the contest is one strictly in merit, and the soundest structure is sure to win, other things being equal.

If repressing is going to remain as a permanent feature of paving brick manufacture, it must prove its value by making the structure sounder and more solid than a brick machine can do, and it is safe to say, that no hasty, insufficient, and partial pressure is likely to do this. The final pressure must be without relief or issue to make it really useful.

#### A BUSINESS TRANSACTION.

Little Bo Peep,  
She lost her sheep,  
Which was quite agonizing;  
But she found them again,  
Without worry or pain,  
By simply advertising.

—Printers' Ink.

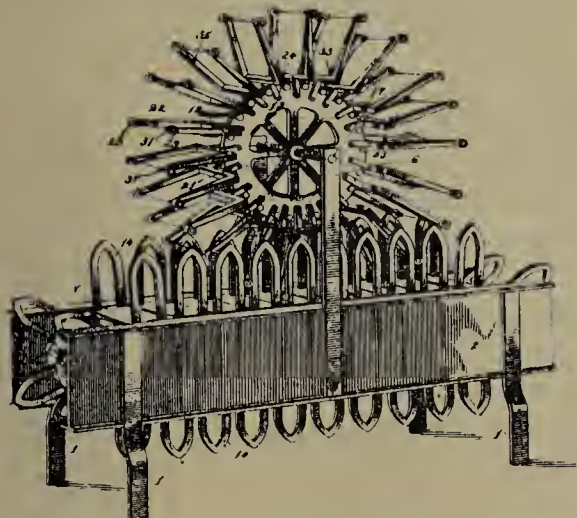




THIS DEPARTMENT IS DEVOTED EXCLUSIVELY TO INVENTION AND PATENTS RELATING TO THE CLAY INDUSTRY, AND IS EDITED BY MR. EDWARD C. WEAVER, ATTORNEY AND COUNSELOR, IN PATENT LAW, 900 F ST., N. W., WASHINGTON, D. C. COPIES OF ANY PATENT WITH DRAWINGS WILL BE SENT AT COST, NAMELY: FIFTEEN CENTS FOR EACH COPY. ANY INFORMATION AND ADVICE IN REGARD TO PATENTS WILL BE GLADLY GIVEN. ADDRESS ALL COMMUNICATIONS TO THE EDITOR.

**TILE OR BRICK CUTTING MACHINE**, by Jacob Bensing of Malinta, Ohio. Filed January 4, 1894. No. 524,302.

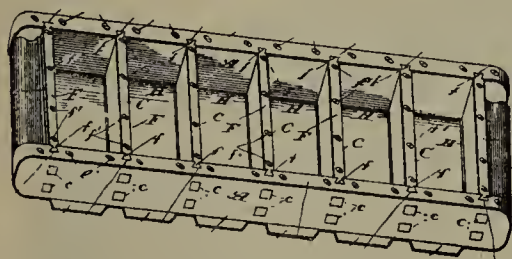
The table is provided with an endless carrier, the sides of which are provided with a series of inverted U formed guides, these latter being placed in parallel pairs, and so proportioned as to measure



the length or width of a brick. Over the table is placed a revoluble wheel armed with a series of parallel arms which support transverse cutting wires. The ends of these arms are provided with friction rolls which engage the guides before referred to, by which means the action of the cut off wires are regulated.

**BRICK MOULD**, by Dan. J. C. Arnold of New London, Ohio. Filed January 16, 1894. No. 524,927.

The invention is practically the binding of the edges of the sides and ends with metallic strips in which are dove-

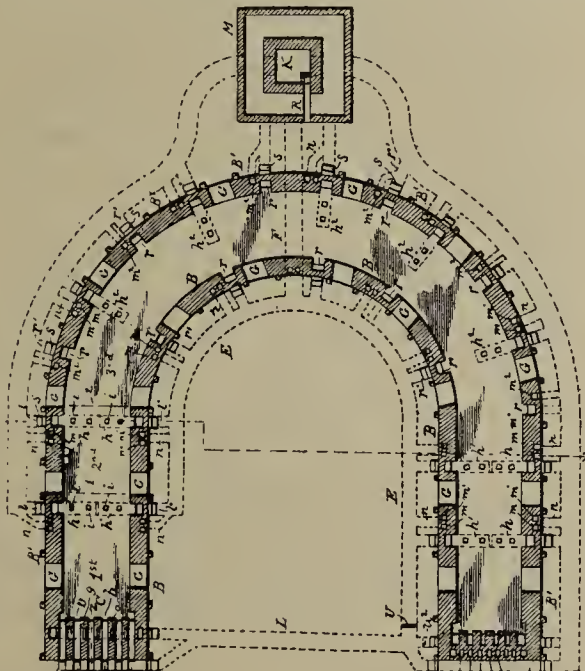


tailed similar metallic strip bindings that protect the edges of the mould

partitions. The bottom is also protected by corrugated strips inclined to fit the wood form.

**BRICK KILN**, by Carl F. Kaul of Madison, Neb. Filed March 10, 1894. No. 524,442.

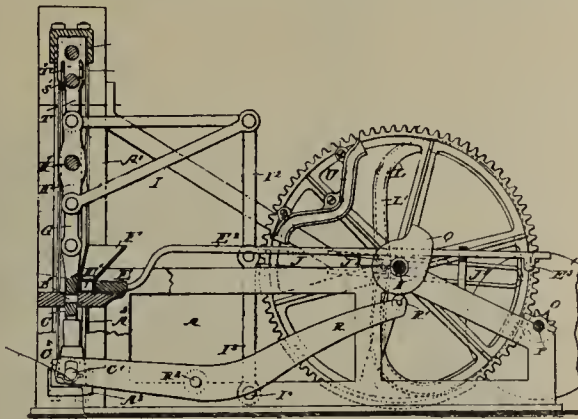
*Claim:*—In a continuous kiln, main and underground flues, at and along the opposite sides of the kiln, branch flues connecting said main flues sever-



ally and independently with the interior of the kiln from opposite sides thereof, and a smoke stack, to which said main flues lead and with which they are severally connected.

**BRICK PRESS**, by Louis F. Gerding and Ed. C. Harrison of St. Joseph, Mo. Filed Nov. 15, 1893. No. 525,199.

The brick press comprises two plungers, a link connection to one of the



plungers, a lever fulcrumed in the frame of the machine and pivotally

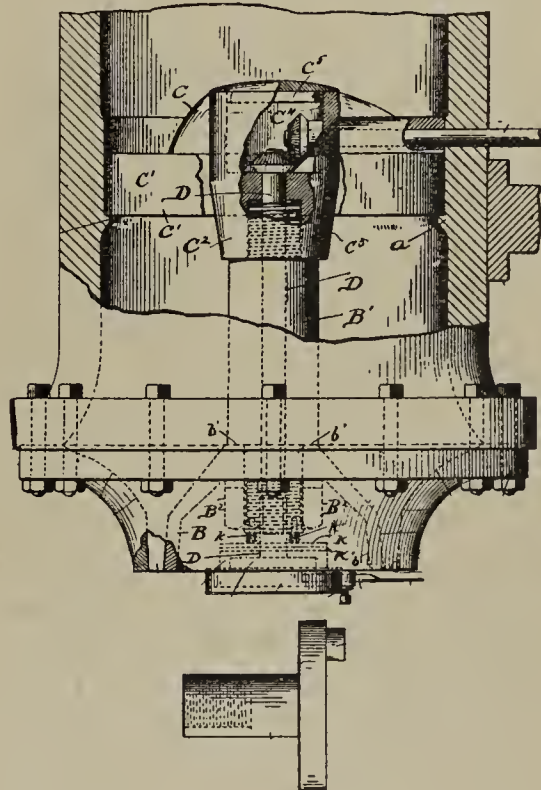
connected to the link, links connected to the said lever one on each side of its fulcrum, these links being also directly connected with each other at one of their ends, and toggle levers one of which is pivotally connected with the said links at their point of connection while the other is pivoted to the frame of the machine, all combined with a means for operating the toggle.

**KILN FOR FIRING POTTERY**, by Lewis Lawton of Trenton, N. J. Filed December 3, 1893. No. 524,390.

The novelty of the kiln is in the disposition of the flues in a kiln of the usual type.

**CUT OFF MECHANISM**, by Wm. W. Wallace of Willoughby, Ohio. Filed Nov. 7, 1893. No. 526,274.

The device is for semi-plastic ma-



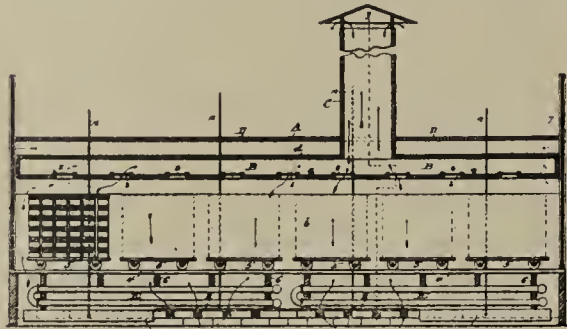
chines for the making of hollow tiles. A shaft carrying a cutting knife at right angles, is set in the head or die plate, and is given revoluble motion by means of bevel gear and power shaft. When the material has reached the proper length, the shafting is revolved carrying the cutter about the circle.



Minor mechanisms are introduced for the purpose of adjustment.

DRYING KILN, by William G. Galloway, of Chicago, Ill. Filed Feb. 15, 1894. No. 526,349.

The compartments of the drier have inlet flues between them regulated by



proper valves, such flues being parallel, while the outlet products are transverse, and lead from one compartment to another and out.

#### A NEW BRICK PRESS.

The latest repress on the market is that designed by Mr. F. E. Frey of The Bonnot Co., Canton, Ohio. This machine is a departure from the principle of applying the power is the rolling wedge or cam. The power is applied in a direct line and without the intervention of levers, toggle joints, piston or cranks. No machinery is under the die to become clogged with dirt and there are no joints to wear. A simple stiff frame moves on two guides up and down in the double repress and back and forth in the single. A simple hand wheel operating a screw regulates the pressure. The double repress is made single or double geared to suit the location of any driving shaft. The pressure is applied to nearly the full extent then relieved and repeated with a long retained hold until a permanent form is given to the brick. The slide for the feed which so often is a source of annoyance through wear is under the table away from the dirt. A large oil chamber supplies the oil to the roller and table, lubricating both sides of the brick. The lower pressure plates in the dies are made to drop a moment as the brick are pushed in so as to prevent the brick from sliding too far. The vent holes in the dies are lined with hardened steel and are easily replaced when worn too large. All of the shafts and slides as well as the rolls are made of the best steel. If desired the double repress can be fitted with one die for large blocks. The gearing is very heavy being  $5\frac{1}{2}$  inches on the face and

with shrouded cogs. The manufacturers claim that an examination will show that this is the simplest and most effective repress yet put on the market, and in support of this assertion are willing to send them on trial to responsible parties. A cut of this press is shown on page 395.

Written for the CLAY-WORKER.

#### PHILADELPHIA BRICK MANUFACTURERS AND THEIR PLANTS.



ONE of the prettiest, cosiest, cleanest and best conducted yards in this City of Brotherly Love may be seen between Market and Vine streets on 60th street. The plant is not large, nor modern, but unquestionably good and substantial, a little paradise of a works any gentleman brickmaker might be proud of, and as might be expected he is the envy of the neighboring brickmakers.

The plant consists of a Chambers "C" machine, a horse power tempering wheel and pit and two fine Dutch kilns 10 arch each. I must not forget the drying sheds, for they are there.

The owner is evidently a gentleman of taste, and unconventional at that, utterly disregarding anything straight, square, plumb or level, hence the diagonality of the posts, and curvilinearity of the boards of which the sheds are comprised, more especially the drying sheds where the long interminable straight lines are broken by the pro-

jecting ends of boards two or three feet longer than their fellows. In the kilns this same breaking up of straight and regular forms is observed. To this end, no door frame in the kiln is set up square, nor any two at the same angle, the walls and corners of the kilns conform to the same rule, hence there is that beautiful irregularity in lines so reposeful to the eye of the man of a mechanical turn of mind? The same irregularity pervades the yard throughout; dirt dumps promiscuously arranged all over the place variegated by sprinklings of scrap iron and broken tools, wheelbarrows, carts and other things too numerous to mention but none designed for anything but ornament in their present state?

My visit was on a very cold day and I only saw one of the teamsters round, a man whom I knew; I asked him if Crawford was about and if he made any money with this yard. "Oh h—l no," he replied, "he only runs this when he thinks he will, he's too d—n well fixed to let this thing bother him much." I thought as much; for a brickmaker must be well "fixed" who can afford to ornament the entrance to his works with a six mould Quaker soft mud machine out in the weather, rusting and rotting away.

The photo shows the best but by no means the most picturesque view of the works. TRIPOD.

When people see your name constantly in the paper they begin to believe they know you; and it is but a short step from acquaintance to patronage.—*Ex.*



ROBT. CRAWFORD'S BRICK WORKS, PHILADELPHIA.



Written for the CLAY-WORKER.

### DIDN'T SUIT THE MUSE.

Being the Veracious Account of How Artist Dolliber Trifled with a Poetic Effusion — His Advertising Adjunct.



LAST month the CLAY-WORKER illuminated its imbecile page (the one that I monopolize) with the harrowing story of Dolliber's desperate attempt to illustrate a novel. The matter which will incite the readers of this grey covered journal to riot this time is the true history of Dolliber's failure to illustrate poetry. The words that follow are those of the wretched Dolliber:

#### DOLLIBER AND THE POET.

"One day I was sitting in my studio, which was half of a lawyer's office for which I paid \$6 monthly, invariably

not in advance, when a man came in who looked as if he wanted a divorce, so I paid no attention to him, thinking he wanted to see the lawyer. But he said:

"Is Mr. Dolliber about?"

"Yes, he's about—about as usual. I'm Dolliber."

"Ah, good! I'm Jackson Busk, I'm a poet."

Mr. Busk weighed at least 250 pounds, was red-headed where he wasn't bald and had the asthma. I was surprised at his business.

"Yep," he went on cheerfully "I used to be a brickmaker, that is, I run the Pullington Porous Pressed Brick Company durin' the World's Fair, but when the dull times set in, I took to literary pursuits, and now, as I said, I'm a poet and I've got a poem I want illustrated."

Well to make a long story short I waded through the most terrible lot of poetry that ever was written. There were 1167 pages of foolscap, closely written and there were at least twenty lines to a stanza. I couldn't have read

it all in a month and he wanted the pictures in a week.

So I skimmed over it and got the general tone of the stuff and the kind of people he was trying to describe and made a lot of pictures that I thought would suit, and then let him fit them in to the places where they belonged.



"Ne'er more of thee, black hearted varlet."

I made a few extracts from the poem, and, that you may yet see that while I may not have made pictures that absolutely fitted the lines, that I, nevertheless, caught the poet's spirit, I reproduce some of the extracts I made:

Yet at morn again  
Came the same old pain.  
And I saw the storm gods whirling through  
the air  
With Desolation's armies ev'rywhere  
The long and raging lines reaching back,  
Torch placed and wild-eyed in the wrack.



"Take thou my heart, aye, e'en my knightly head."

Beyond the far days of the wind-god's time  
A fair god looked upon the young lands prime.  
And winds and armed Knights.  
Woe to the Gail,  
When Asculp thither rides  
Woe to the Gail.

When young Walulah's of Hy-Cualan King  
His mighty ax upraised leads on his Kernes,  
And 'tis Bun Derger who from horse dismounts  
And up the hill besides his henchman strides.

Beyond or note of curlew from the sea  
Brief is Kynfalghen glance toward far Dun-laven,  
Where bides the Waglom strength behind thick  
walls.

With gesture sudden toward the cloven mount  
And all his soul does battle in his eyes  
Of steely gray

A muttered something parts,  
The henchman's lips, whereat the chieftain,  
wrath,  
Striking his ax-point in the turf, breaks  
forth:—  
"Art thou my clansman, Fergus?  
Set the face against the cloudy reddening of  
the sun  
Thy keen eyes fix upon the hill-top dark."

"Back, ev'ry man; here is my spoil,  
The rest is for you all," he cried and turned  
Grasping the proud, fair woman by the waist  
Then waved them off with threatening of his  
sword.  
He turned, lo! the grim firelit form was gone,  
As swallowed in the gloom or by the sea.  
"Ay, but at a bloodier cost,"  
Grim Fergus grumbles as his eyes flash fire  
"Who takes a bond of doom counts not the  
cost."



"Then came lighted from conquest home."

"My joy was Taiuda,  
The beautiful, the wonderful, the queen  
Of knowledge and sorcery so sweet  
My soul swoons at the thought of it.

Locked in mine arms within my castle keep  
How she was born a Norseland-Viking child.

His winged raven for a hit, 'out tool, heli-  
forged and nest in basest earth  
Thoul't blight forever him who touches thee.

A springald rhymmer with a fluting voice  
Took up the mockery and gave it barbs.

He cannot share that kiss,  
There, there upon my brow love Talusca.

"So then" I gasped, "are pagan dogs  
To have thus text and chapter,  
And the man who wars—  
On them no prayer save this cold speech of  
thine?"

She hath my pledge; as I have hers, sir priest,  
I still would make her mine, as I am king."

And so this blank, blanketty, blank  
verse rambled on and I couldn't make  
head or tail as to who was who or where  
the plot came in but I made the pic-  
tures and took my chances. I took too  
many chances. I never got a cent, but  
here are the drawings, you are welcome  
to them."

Thus ended Dolliber's second hard  
luck story. There is one more on the  
fire.  
CHARLES LEDERER.



Written for the CLAY-WORKER.

### THE NEW YORK MARKET.

ANOTHER month of the brickmaking season of 1894 is past, and still there are some who are moulding. "Why?" is the question asked, but a satisfactory answer is not forthcoming. The market is not in a condition to warrant shipments, the prospects for the fall demand is not of an encouraging nature. The weather at this season of the year is uncertain for open yard manufacturers. With all these conditions existing, they still keep at it.

Last month I spoke of the sale of four million brick at the very low price of \$2.50 per M., and could not see where there was a paying return for the investment. Since those words were penned, there has been a complete change in the transaction, and it looks very squally for the purchaser. The sale called for four million good, hard-burned brick then under the shed, (which was about all the burned brick there was,) at \$2.50 per M., loaded on the boat. If the purchaser insisted on his purchase, the parties would have no brick to ship elsewhere, and as there were plenty of green brick to be burned, he allowed them to load out of the stock he had purchased.

When the brickmaker had shipped about 1,300,000 a receiver was appointed for the firm. The purchaser of the four million had failed to put notice of ownership on the kilns, and the receiver claimed them as a part of the assets; that being the case, the purchaser's loss would be considerable. Why the firm did not mention the sale when they made application to the court for a receiver, has caused various constructions to be put on their action in the matter. The result was, that the purchaser had to employ counsel, argue the case before the chancellor of the State. The decision upheld the sale, but as the firm was not in liquidation, the purchaser has to pay for the loading of the remaining 2,700, which will lessen the chance for a profit on the deal unless there is a raise in price.

#### A SURPRISE

To many not connected with the brick business, came about the middle of last month, when the firm of Merhof Bros. was placed in the hands of a receiver. The firm was the second largest producer of common brick in this section, Sayer & Fisher holding the first place in that line. Those directly connected with the trade have been looking for a

collapse for the past two years. They have been running at full capacity, turning out brick and placing them on the market regardless of price, while others were running their yards at a reduced rate. This spring, as your readers were advised, an effort was made to induce all makers to defer moulding till the middle of May, so as to reduce the vast output. This firm molded their first pit the 29th of March.

#### SOUND ARGUMENT

Is contained in friend Crary's article in the Sept. number of the CLAY-WORKER, and if the Merhof Bros. had followed anywhere near sound business principles, they would have been a thriving, strong firm, in fact, would have been in as good shape as the firm they tried to imitate—Sayer & Fisher. The three brothers are practical brickmakers, were workers and supervised the business themselves. One had charge of the yard; the sale of all stock was in the hands of another, while the third attended to all the business connected with the yard.

A lesson to all is contained in the failure of this firm. Theirs is but a repetition of many that have gone before, only on a more extensive scale. They have been in charge of front brickyards at Croton, N. Y. In the early seventies they purchased land on which a part of the present plant stands. The low price of brick at that time and the bursting of a boiler caused a loss of about five thousand dollars, which was a hard blow to men just starting out, but by the help of friends they pulled through. The advance in the price of brick in 1879 and through the eighties, was the beginning anew of complications that have now resulted in the property passing out of their hands.

#### EXTENSION OF OPERATIONS AND PURCHASE OF LAND

Has landed them at last. They seemed to have had the idea that they would be able to control the trade, with the aid of some other large firms, and thus drive out the small yards. They bought land that was of no use to them, for fear that someone else would come in, buy and locate. A major portion of the land lays along the Hackensack river and is so low that the tide raises over it. Where they have built yards they have been costly, as the bottom is of black muck, and after they would get a kiln under the shed it would settle to such an extent that it would be necessary to dig out the gangway to get wood to the

arch to burn it. The weight of the kiln caused the soft muck to slide out into the river, and to retain it a tight bulkhead had to be built, entailing additional expense.

As friend Crary says, their credit had to be extended, which we all know is like the leak which sinks the ship, if allowed to go on. Certainly it is a short sighted policy in any brickmaker to load himself with unproductive land. Of course, where the clay deposit is but from four to twenty feet in depth, a large area is required. In this case, however, the clay runs from sixty to a hundred feet in depth.

#### "HARD TIMES"

Has had to bear the blame for a good many of these failures in the past as well as the present, and in the future, I suppose, people will continue to attribute trouble to that source, when in fact the cause lies farther back. There is a cherub that sits up aloft and takes care of the life of poor Jack. Just so there is a record in the county clerk's office which shows that in the case referred to, in the best of times in the manufacture of brick, the credit of the firm was extended to the utmost limit. Hard times must not be accused of all evils in the financial world. When men keep plunging deeper and deeper into money difficulties, the blame should be placed where it belongs.

Napoleon met his Waterloo. Ferdinand and Ward, the so-called first financial Napoleon, met his downfall in the Bank failure and hastened the death of General Grant. The next Napoleon was Ives, who followed in the footsteps of his predecessors, and now the brick trade has furnished "would-be" Napoleons in that line, with the same result—failure. When there is capital behind any large organization they can dictate terms, but when the corporation has to discount and borrow money wherever they can, like Napoleon, their reign is short.

#### THE NEW YORK MARKET.

The arrivals keep the supply above demand. Why the shipments are made is beyond my power to say, unless money is sorely needed even at a sacrifice. Last week there were a few days of rain in which no brick were laid. At points of shipment they loaded them, with the result, a market with ten million brick laying at the dock and no buyers. There are a few brick being stocked for winter use, as from time to time, the dealer can pick up a good grade at a low rate. The quotations remain about the same, from \$3.75 to \$4.50 top with a shade from the first rate in some cases—on the quiet.

A. N. OLDTIMER.

Hackensack, N. J.



## AMONG DETROIT BRICKMAKERS.

Brick, during the close of summer took still another drop, common selling at \$4.50, stock and ornamental at \$6.

Of the several plants that began operations June 1st. nearly all have closed for

Dennis Burke is burning the largest kiln of brick for the season comprising 936,000.

Brick burned with natural gas found very little favor with Detroit masons and in some cases were flatly refused, brick burned either with wood or crude oil being preferred. Yet how different are the ideas of men.

Recently a mason from Washington, D. C., was engaged by a Detroit lady to erect a residence and barn. He visited all the brick works, got their prices and in one or two cases took samples of brick burned with crude oil. Finally he reached the plant of Greusel Bros., the only

these same prices, would, no doubt, awaken the market as nothing else would, and the demand would be something enormous. Masons hope they will remain the same while some have been considering the advisability of purchasing great amounts, and storing them away in the advent of a raise. As one mason remarked: "If brick remain at \$4.50 after the tariff discussion is settled I can do thousands of dollars worth of work, but if the price is advanced I'll have to forfeit my contracts."

The Detroit Copper & Brass Rolling Mills will erect as soon as possible a mammoth shop and warehouse, requiring nearly 2,000,000 brick. Greusel Brothers are under contract to furnish the brick, which has necessitated their resuming operations immediately.

A well known Detroit mason has given out how to produce a kiln of all red brick, not one salmon colored brick among the whole lot. Here is the secret: Instead of sanding the moulds with ordinary moulding sand, use the black core sand that has been used in foundries and thrown away. He claims the brick will "slip" from the mould as easy with this sand as with the regular molding sand, and that it has the properties of imparting a brilliant red to every brick when burned, even though the

the season heavily stocked. Those heavily stocked are Archer & Collins, Joseph H. Clixby, Lonyo Brothers, Dennis Burke, Daniel Brothers, Francis Hyns and Haggerty Brothers.

Crude oil as a fuel for burning brick has come to stay. It is said a majority of the brickmakers will equip their plants this fall with it.

The prospects for a huge demand this fall are bright. The Union Trust Company, have broken ground for a mammoth eleven story business building, the Leonard & Carter Furniture Co., a ten story warehouse and salesroom, the Chamber of Commerce, have in the course of erection a monster ten story structure, and Mr. Walker, son of ex-Judge Walker, will erect a magnificent dwelling requiring nearly two million brick.

Archer & Collins, it is understood will supply all the brick required for one of the new high schools, let August 9th. This firm though young have enjoyed a highly prosperous business and during the late dullness have been as active as the average.

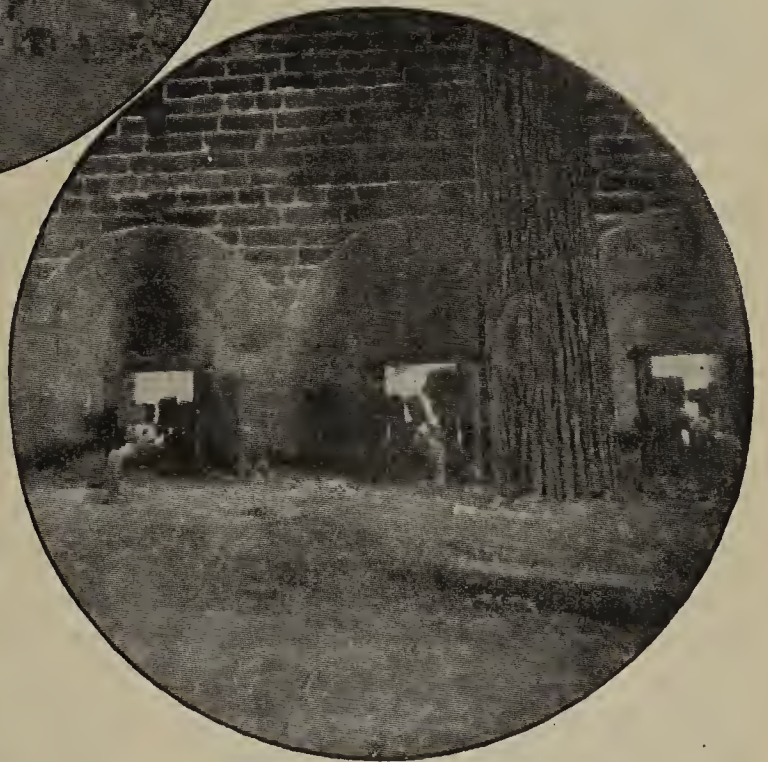
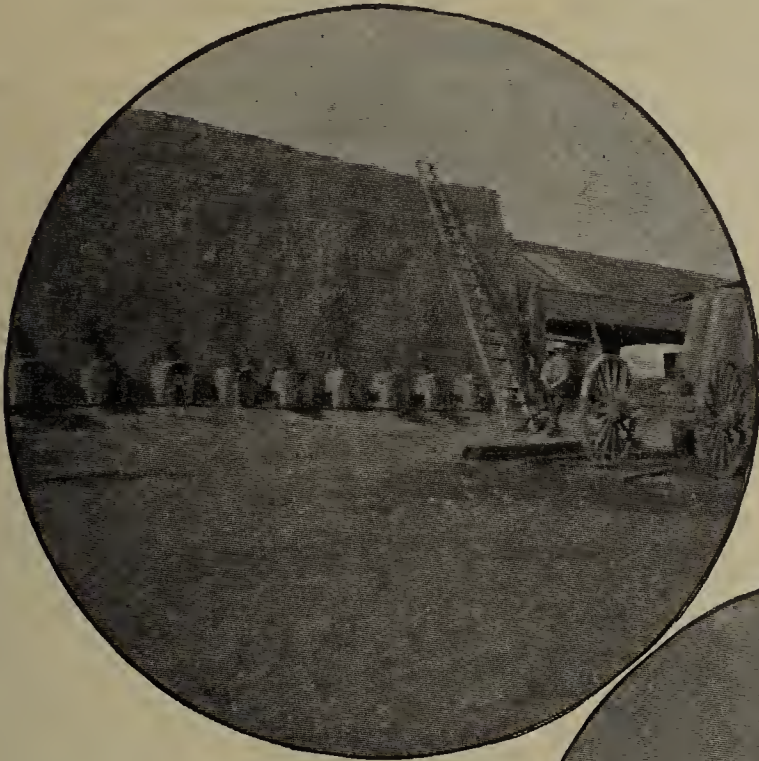
The Central High School, over which there was controversy, the bill for same being vetoed by the Mayor, will, from present appearances be built; it is generally understood the Board of Education will pass it over the Mayor's veto.

Detroit firm having any brick burned with natural gas then on hand. As soon as he saw the kiln he remarked "that's the kind of brick I've been looking for, they stand the weather better than anything I ever saw." His job required 150,000 and as the kiln held something over that amount he purchased the whole lot and what he did not use he shipped to Washington.

It has been some time since brick were swelling at \$4.50, it has had the effect of giving those of means courage during the passed depressing dullness. Now that the great tariff question is settled,

brick are soft they will have a red color.

The Hall & Wolf Co., are a very busy firm, they began operations June 1st, and have been making something over 60,000 a day ever since and are



BURNING BRICK WITH OIL.



not yet stocked to their full capacity.

C. Clippert & Son, were the lucky ones to capture the contract to furnish all the brick required for the monster sewer through Field Avenue. Messrs. Clippert & Son, have undoubtedly, been the busiest brickmakers in this locality, having had in constant operation since the opening of the season both their plants. Neither plant is stocked to its full capacity; it is safe to say, they will have work for their employes as long as the weather will permit.

There is a rumor afloat to the effect that this vicinity will be graced with two brand new steam plants, next season.

The Detroit Pressed Brick Co., the only firm in this city, that manufactures dry clay pressed brick, which article is steadily gaining popular favor, burn their brick exclusively with crude oil. The pressed brick burned with this fuel are far more attractive than those burned with wood. This firm has furnished their pressed brick to some of the most imposing buildings in Detroit among them is No. 19 Fire Engine House, the handsomest fire department quarters in the city.

If the prices remain unchanged the prospects are good for a steady increase in the demand from now on until cold weather sets in.

Frances Hyns the veteran Detroit brickmaker, has closed for the season, with both sheds well stocked. Mr. Hyns is one of the oldest brickmakers in the city. Coming here when his present location was almost a wilderness, he soon became interested in brickmaking and has been actively engaged in that business since. He is a successful business man in every sense of the word, and has become widely and favorably known through a long and well conducted business career. No gathering in the country, where speech making was a feature in the entertainment, was considered complete without his presence. Being an able and interesting talker, he has gained the name and is often referred to as the Springwell orator.

The several plants now in operation will close about the middle of October.

John C. McDonald, is the only Detroit brickmaker who makes a specialty of all sizes of drain tile.

The St. Joseph Retreat at Dearborn is making extensive repairs to their large asylum, and enlarging its dimensions by a spacious addition. Albert Wagner,

the only brick manufacturer in Dearborn, a little town adjoining Springwells, is supplying the brick for same.

Brick are moving with a good demand and remain firm at stock \$6 and common \$4.50. Prices will not be raised for the present.

Haggerty Brothers have had placed on their yard a side track, connecting them with the Flint & Pere Marquette road. Making their shipping facilities all that could be desired.

The Chamber of Commerce building, a structure when completed will be eleven stories high. From the basement to the top its frame is of solid iron and steel incased with brick. Work is now on the ninth story, and in the course of two weeks the bricklaying will be finished. DOROTHY DALE.

#### SOUNDS LIKE OLD TIMES.

WE are advised by the Frey-Sheckler Co., of a decided revival in trade. Their salesmen have been unable to reach all quarters from which inquiries are made. It has therefore become necessary for the office men of the company to go out after some of the contracts obtained. They have since the first of September booked sufficient orders to keep them running steadily until the first of March. Several of the orders being for spring delivery. Especially in their repress line are they exceedingly busy. Orders have been received for eleven of their Eagle represses and that department is working 15 hours a day to make prompt deliveries.

They advise us also that they have booked orders for four of the celebrated Bucyrus Steam Tunnel Dryers ranging in capacity from 30,000 to 70,000.

At this dull season of the year, it is quite evident from the number of valuable orders received by the Frey-Sheckler Co., that their machinery is thoroughly appreciated by the clayworkers of the United States.

They advise us that they are busy at work upon their 1895 catalogue which they promise will excel anything of the kind ever put out.

We predict for them the same continued success that they have enjoyed in the past.

The advertiser who curtails his advertising expenditure too much in dull times is likely to find the dullness has come to stay.—*Printers' Ink.*

## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

### The Situation At Chicago.

*Editor Clay-Worker:*

When we wrote our September letter we were confident in saying that all business lines seemed to have taken courage from the fact that the Wilson bill had become law, and that we were to see better days in the immediate future. Desire seems to have been father to the hope in this case, and the first month has not in any manner, so far as we can discover, been a realization of it. We can see little, if any, improvement in the business situation throughout the country. While some lines may have had a little increase in business, owing to the shortage of manufactured goods, still, taken as a whole, we think the month has been a disappointing one from a business standpoint. The table of bank clearings in the principal cities of the United States does not seem to show any increase in the volume of business over that of a year ago, and compared with that of two years ago the falling off is simply lamentable.

The decrease in certain lines of business is very marked, and the lowering of prices very decidedly so, especially as regards china ware lines. A visit to our principal wholesale and retail china dealers show a reduction of from 10 per cent. to 50 per cent. in the selling price of these wares. Beautiful sets of china ware exposed in the show windows of our large houses in some instances show a decline in price far exceeding 50 per cent. Such facts as these seem to indicate that the clayworkers in these lines have to meet with a competition which it will be hard for them to bear.

As regards the condition relative to the brick trade, it does not materially change. Prices of both pressed and common brick are about the same with a tendency to go lower. As the demand seems to grow lighter and the anxiety of manufacturers and dealers to sell increases correspondingly, it would seem that the bottom has not yet been reached. A careful canvass of the architects' and builders' offices in this city presents nothing of an encouraging nature for anything like an average fall business in the building line. All the



materials, brick, lumber, etc., as well as wages, are unusually low, and still seem to fail to satisfy those inclined to build. Several large buildings have been figured upon and laid to one side, although the figures at which they could have been constructed were extremely low. Courage seems to have forsaken those who have contemplated building, and there is but little, if any, encouragement for the near future in the building lines.

About a year and a half ago the Swedish Ceramic Manufacturing Co. was organized in this city. The company purchased part of a block at the corner of Fifty-ninth and Throop Streets on which they erected quite an extensive factory for the manufacture of enameled brick and glazed wares generally. On

Pressed Brick Co. has recently started a large plant for the manufacture of glazed brick, and are making a very good showing both as to the quality of their brick and the quantities in which they can turn them out. They are being used in the courts of the Marquette Building, corner Dearborn and Adams Streets, now well along towards completion, and in the Reliance Building, corner State and Washington Streets, and in many other places throughout the city and western country. Chicago has no longer to depend upon Eastern or English manufacturers for its glazed brick.

The readers of the CLAY-WORKER who have been so fortunate as to make the acquaintance of Mr. W. D. Gates, President of the American Terra Cotta and

factory will be in first-class order for the continuation of business. While Mr. Gates's loss has been very heavy, it came at a very opportune time, if it must come, when he had no large contracts on hand and no large amounts of manufactured goods in store to be destroyed. There has been no time since his works were first started that his loss could have been lighter, and we have authority for saying that while the loss is heavy there are some gains to be made through the fire, and that the new plant will be larger and better appointed in many ways, and can be run when completed to much better advantage than the one that has been destroyed by fire. We understand that his kilns were not materially damaged. Of course, if they



WORKS OF THE AMERICAN TERRA COTTA & CERAMIC CO., THREE WEEKS AFTER THE FIRE.

March 22nd of this year the company went into the hands of a receiver, and the plant was sold by order of the court on Sept. 14th, and we understand was purchased by J. C. Gifford at a very low price. Mr. Gifford has begun putting the factory in order, and has secured the services of S. Linderoth as manager and superintendent, and will operate the plant under the name of the American Ceramic Works. In this connection we would like to say that we think it in very bad taste to appropriate a name so closely imitating that of the American Terra Cotta and Ceramic Co., who are thoroughly well-known and advertised throughout the country. We understand it is the intention of this new concern to begin the manufacture of encaustic tile. We think they are perhaps very wise in not undertaking to manufacture glazed brick, as the Tiffany

Ceramic Co., whose works are located at Terra Cotta, Ill., we feel sure are with us in heartfelt sympathy with "Brother Will" in the almost entire loss of his works by fire on Sept. 12th. Certain it is that all of your readers, who have an intimate acquaintance with Mr. Gates, will fail to find words to express fully their sympathy for him; and we are sure that they have not failed to extend their sincere expressions of sorrow at his loss. Mr. Gates is a man full of energy and perseverance, and his "grit" is fully as enduring and lasting as that used in the manufacture of his terra cotta product. Although a month has not yet passed since his works were destroyed, he has two large buildings almost wholly completed, and is pushing others as fast as possible towards completion, and by the time this communication is fairly before your readers his

had been, his loss would have been much heavier. We trust in this, as has been the case in other losses by fire, it may be a gain instead of a loss. How often this happens! While fires seem to be our worst enemy, in re-building, with all of the improvements of the day and more money possibly to use in re-building and improving, a better result is reached in many ways. Was not the burning of our own city of Chicago a sure proof of this? The twenty-third anniversary of this is now close at hand and buildings, which were then reproduced on an improved plan, are being re-modeled or torn down to give place to newer and better structures. Now we are building better and hope to improve still more. The age of the old world's buildings—public buildings and homes—go far to show us how much more mutable our constructions



are than theirs. We are young yet in this new world, but is it not time that we should improve more in this respect? Have the improvements in our buildings kept pace with our improvements in other lines, in the useful and beautiful? We should as a people be keenly alive to this.

COSMOPOLITAN.

Chicago, Oct. 8th.

#### Crary To Waplington.

Editor Clay-Worker:

In September issue of CLAY-WORKER my good friend Waplington wishes to know how it is that clay will absorb carbonic acid and ammonia, and very kindly criticises me for saying so in a late article on the "Weathering of Clay." I have said, time and again, that I do not pretend to be learned in chemistry. I leave that to such excellent writers as friend Waplington. But as chemists do not quite "know it all," I think I can venture to say what I know, by actual well tried experiment, even though I cannot give a well known chemical reason or technical explanation, I read in a class book of Prof. Youmans, (page 123), "Clay possesses the valuable property of condensing carbonic acid and ammonia from the atmosphere."

I read, also, on page 186, "Diastase, a nitrogenized principle, found in seeds during germination, acts upon starch, converting it into dextrin and then into sugar without itself undergoing any change. 'It acts by the power of *Catalysis*.'" It is the same with sulphuric acid; "Thus, if starch is boiled in a little weak sulphuric acid, it is converted into sugar, and if at the termination of the process the acid be examined, it will be found to remain unaltered. \* \* \* \* The phenomena of *Catalysis* are not well understood." (See page 35 Youmans class book.)

It is a very easy matter to find names for things that mystify us. We may call *catalysis* "presence action," or "contact action," and then if we ask what do these mean? we can say *Catalysis*. So with the play of words, we can handle a mystery and yet be in the dark. As ammonia is constantly formed by the decomposition of matter, and as clay is a powerful absorbent, it is not unseasonable to say that it absorbs ammonia.

I have been about and at work with burning brick kilns in all climates and seasons, over sixty-five years, sometimes when and where it was very sickly in the neighborhood, and I have never yet known a man working at, and near

a kiln of burning brick, to get sick or unwell in any way, though often very much exposed. Now, what was the prevention? I can't tell, can friend Waplington? I think the nearest we can get to it is to say, it was "*Catalysis*" or "presence action." Yes, that was exactly it; it was "presence action," sure.

J. W. CRARY, SR.

#### Philadelphia News.

Editor Clay-Worker:

The building and brickmaking interests of Philadelphia can be shown briefly as follows: for the first nine months of 1892, 1893, 1894 by 19, 19, 17, those figures represent in millions of dollars the amount of building done, in round millions for the first nine months of each of those years. So this has not been as bad a year as might be supposed. There is a possibility that we may catch up, before the end of the year. The brickmakers are the men who know more than any one else about building prospects. Some of them think we are on the eve of as great a building boom as was ever seen in this city, giving as reasons the trolley extensions into suburban localities where real estate is cheap, that capital is seeking employment, that demand for small houses in the suburbs is increasing and that manufacturing is going there faster than in the built up sections. The brickmakers have done better than they acknowledge. They complain of hard times but they have not been so bad when we are within two million dollars of last years building outlay.

The general feeling is that the building of trolley lines will stimulate building next year. These lines have been built up and down and all around our city. A trolley line has been projected from Camden, just opposite Philadelphia on the Delaware river, to Trenton, (30 miles) the capital of New Jersey. Then there are others to run northward 20 to 30 miles.

Our brick manufacturers expect to have a moderate amount of business all winter. Considerable winter work is projected.

Murrell Dobbins has been quite busy supplying home and foreign markets.

The regular conference meeting of the Master Builders' Exchange was preceded by an informal reception to Mr. John S. Stevens, ex-president of the organization, who has just returned from a trip through Norway and Sweden.

The Builders' National Machine Mortar Co., are having great success in delivering mortar to builders all over the city, at first there was the usual prejudice against the innovation, but experience shows that the plan works well and saves trouble. Much depends on prompt deliveries and the officers of the company attend to that. Besides there are recognized economies in the plan.

There is talk at the Builders' Exchange of one or two new combinations among builders, to enter upon big operations. The thing has been only talked of, heretofore most of the big building has been carried on by individuals. To their credit it can be said that for several years past there has been only one important failure. There has been talk of such a combination of builders as would ensure success. It is proposed to improve the character of the houses to make them finer and larger, and then offer them for sale on easy terms. Some such scheme as this has a good chance. A vast amount of land has been converted into eligible building sites, and we think 1895 will be the banner year of this decade. Prices may start on an up grade as they have after previous depressions, and if so, long headed capitalists and promoters will prefer to build in 1895 than later under possibly higher prices.

As to labor agitations, very little can be predicted. Trades unionism here is strong but conservative. Tens of thousands of men have their own homes and that affects the situation. Nearly every man is in a building and loan association. There may be labor strikes next year, but of one thing we can rest assured the Philadelphia employers will start out with the most liberal rate of wages they think they can stand. The outlook is encouraging.

ANON.

#### Roofing Tile—Method of Fastening, Etc.

Editor Clay-Worker:

Although somewhat late in the day, please allow me to thank Mr. Engle for his reply in June issue to my question regarding the method employed to remove old nail fastened roofing tile from the roof for use upon other structures.

I am, however, very far from being convinced of the feasibility of removing them in the way described. No doubt a thoroughly vitrified and annealed tile will stand the nail being pried out as described *immediately after being laid*, especially if wire nails and white pine



sheathing have been used; but how about *old tile* which have outworn the building upon which they were originally placed, where the nails have become so rusted into the wood as to render it almost impossible to remove them at all? This is, in reality, the question at issue.

Mr. Engle does not agree with me that "An interlocking tile, hung on the sheathing by cleats, with a lug beneath by which it can be fastened by wire, where necessary, is by far the best pattern, etc.," but thinks that "In actual work, fastening by lug and wire will be found by far a more expensive manner of laying tiles than with nails."

If Mr. Engle will investigate the practical part of this business, he will find that exactly the reverse is the case.

The interlocking cleat and lug fastened tile, can be laid by any intelligent man almost as quickly as they can be handled; there are no nails or other items of expense, except a very little copper wire, which is only really necessary in the most exposed positions. There is no loss from breakage through the hammer glancing off the nail, etc., which Mr. Engle admits is of sufficient importance to warrant the substitution of screws. Another advantage is, that any defective or broken tile can subsequently be easily removed and replaced from beneath, without even going on the roof, if desired. The principal thing, however, in favor of this class of tile is the ease with which it can be taken off the roof. This renders possible and encourages the use of tile on occasions where it would not otherwise be practicable. For example, to quote a case in point: For the annual Autumn feasts at present going on in Tuxpam, nearly all the proprietors of the eating, drinking and gambling saloons, etc., (temporary structures put up for the six or eight weeks the feast lasts) came here and bought roofing tile to cover their buildings, knowing that, as soon as the feast is over, they can easily dispose of the tile at full price, and so have the use of it for the time for nothing.

In this part of the country nearly all temporary building, even the cheapest sheds, are covered with these tiles, which, when no longer required, are taken off and either sold or stored away, without any deterioration whatever in value. This can be said of no other roofing material.

I cannot understand why a roofing

material, embracing so many good qualities as tile, without having one single serious defect, does not make more headway, unless it is that its perfections are not sufficiently "noised abroad," and that the patterns principally in use are too small to ensure successful competition in the matter of price.

Just so soon as the unquestionable advantages of the large interlocking cleat and lug fastened tile are known and appreciated, just so soon will it largely usurp the place of every other form of roofing material.

Tuxpam, Mexico. R. M. GREER.

#### A Paving Brick Center That is to Be. *Editor Clay-Worker:*

The rapid growth of southern cities and the sanitary conditions of the south have made the paving of streets a necessity. Naturally the people of these cities look to the North for the best material for this purpose. That brick have received a very important place in the estimation of the southern people, is evident from the paving already done in Jacksonville, Pensacola; Chattanooga and Nashville, but the paving brick business is in its infancy and the future has great things in store for it. It is not the purpose of this letter to enlarge on the prospects of street paving in the south, but to give a brief description of the prospects of Birmingham, Ala., as a manufacturing center for street paving brick. Shales are found near the city in abundance. They lie in the coal measures and are inexhaustible. Lying near this shale is a very strong plastic clay, suitable for mixing with it. By combining these two clays an excellent paver can be made. This combination has been found to work well on the brick machine, dry and burn safely. The brick burn a dark brown and are very tough and strong. The beds of shale and clay vary in depths from 20 to 100 feet thick and are cut through by railroads leading into Birmingham. This clay can be laid in Birmingham—including freight—for 35 to 40 cents per ton or counting four tons per M brick at a cost of \$1.40 to \$1.60 per M. The best coal can be bought F. O. B. cars at works for \$1.10 per ton. This coal has been well tested in burning brick and has been found equal to any.

Colored labor can be had for 85 or 90 cents per day. No city in the south is as well located for shipping facilities.

Geographically Birmingham is centrally located, being about equally distant from the large cities of the south. She is well supplied with railroads in having some of the best lines of the south. Brick not up to the standard of pavers, could easily be disposed of as there is a demand for a better grade of common brick, especially for furnace work and sidewalks.

The writer has no clay land to dispose of, but writes for the purpose of making the readers of the CLAY-WORKER acquainted with one of the undeveloped industries of the south. The time will be when Birmingham will be to the south, what Canton and Galesburg is to the north in the paving brick business. At no point south can such a combination of cheap clay, coal, labor and transportation be found which bespeaks the future this letter prophesies.

LAND O' FLOWERS.

#### Ohio Valley News.

*Editor Clay-Worker:*

There has been a very good demand for both fire brick and sewer pipe all Summer, and the various plants are just at present very busy, as sewer and paving contractors are in a hurry to close up their contracts before the bad weather of fall sets in.

An unexpected and unusual rise in the Ohio river about September 20th was a great boon to the brick manufacturers in the New Cumberland region. Many had large southern contracts for delivery by water and many boats have been loaded since April. On this rise over 5,000,000 brick besides large quantities of sewer pipe were shipped to southern markets. The Mack Mfg. Co., of New Cumberland, shipped 3,000,000 to Louisville; two steamboats were required to handle the shipment.

Messrs. McMahan, Porter & Co., of New Cumberland, W. Va., and the Freeman Fire Clay Co., of Freemans, Ohio, have taken a large contract for sewer pipe for the city of Charlottesville, Virginia. There is about 35 miles of pipe to be supplied.

Application was made in the Common Pleas Court by T. H. Montgomery, receiver of the Markle Fire Clay Co., of Markle, Ohio, to sell real estate for benefit of the creditors. This is a model sewer pipe works, and was only operated about a year and went into the hands of a receiver in January of this year. As this company owns large clay lands and buildings, kilns, etc., are in excellent



condition, the creditors will receive the amount of their claims. The principal creditors are B. Barrett, Son & Co., of Wooster, Ohio, for engine and boilers, Jas. Means & Co., of Steubenville, Ohio, for sewer pipe press and pans, and J. W. Penfield & Son, of Willoughby, Ohio for brick machinery.

The Advance Fire Clay Co., of Uhrichsville, Ohio, a new corporation for the manufacture of paving brick will begin operations this month.

Mr. L. B. Duhigg of Scranton, Pa., who has been superintendent of the eight brick plants of the Mack Mfg. Co., of New Cumberland, W. Va., has resigned and has been succeeded by Robert McCafferty of New Cumberland.

The Mack Mfg. Co., has lately made contracts to supply enormous quantities of brick to the cities of Washington, D. C., Detroit, Niagara Falls and Buffalo.

There was an effort made to form a combination of paving brick manufacturers, and a meeting was called in Cleveland early in September; for some reason the Ohio river brick men did not take kindly to the project, as none were in attendance.

The Brewer Pottery Co., of New Brighton, Pa., has been reorganized as the Beaver Valley Pottery Co., and operation will be commenced at once.

BUCKEYE.

### Inactive But Hopeful.

*Editor Clay-Worker:*

Thinking that a few lines from this vicinity might be of interest to some of your readers, will take it upon myself to be the author of them.

Our city situated upon the bank of the Mississippi river has a population of 12,000 or 15,000 people. Is noted for its fine melons and sweet potatoes as well as other garden truck raised on an Island below the city, and shipped to all parts of the United States.

We find here several brick yards, but only two of them using machines in making brick, they being the Muscatine Pressed Brick Co., and the Muscatine Terra Cotta Lumber Co. The Pressed Brick Co., make a very fine building brick (as do most of the other yards) using a Henry Martin machine, which they only run in the mornings, getting their clay in, in the afternoon for the next mornings run, making in this way 10,000 to 12,000 daily. Their clay needs no grinding, is dumped into the pit and wet down, and ready to work in the

morning. They dry their brick in long sheds using no artificial heat, and have to shut down as soon as cold weather comes on. They burn in the old fashioned kiln using wood for fuel.

The Muscatine Terra Cotta Lumber Co's plant is located about a mile east of the city on a spur of the Rock Island Railway, and a short distance from the Mississippi river, nestled in between high hills, so that one does not see it until they stumble upon it.

The clay or shale lays in stratas, each differing from the other, and running from a whitish to a bluish gray color, is very plastic and stands up well under fire, they having vitrified 93 per cent. of them without their getting out of shape. This clay makes a number one paving brick, and drain tile, and we think would do equally well in sewer pipe. The brick when burned are hard and tough with a clear ring, and will not absorb more than 3 per cent. of water in a two weeks soaking. Their crushing strain according to a test made at the U. S. Arsenal, Watertown, Mass., was 12,360 pounds to the square inch.

The clay was first ground in a Frost Dry pan, pugged in a Wallace No. 2 pug mill. Brick are made on a Wallace Little Wonder running three streams, cut off with a Cunningham Automatic table, dried in a drier of our own construction and burned in a Eudaly kiln holding 150,000. They come out of kiln in nice shape except that we found some broken in two about the middle, and from the looks of the bats think they were broken before burned, although in setting them we were careful to get only sound ones.

I would like to have some of your readers give me through the CLAY-WORKER the reason for their breaking in this manner. My theory was that in running three streams if one bar lagged a little the other two running faster would pull it along and break the bond in the clay, without its being visible to the eye, but if that were the case they would not all break in the middle.

This plant is now lying idle while our city is putting in her first brick pavements, getting her brick from Galesburg and Des Moines and paying heavily for freight on them. The reason for this is that the company did not have the amount of capital necessary to put up the kilns for burning brick, nor to operate the plant after putting in good engine, boilers and machinery. They are now figuring with parties who

may take hold of it and next year will see us making our own pavers.

DARTMUS.

### Only a Matter of Time.

*Editor Clay-Worker:*

Enclosed I hand you my check for \$2.15 to pay for CLAY-WORKER and exchange on check.

I am the owner of a brickyard in Louisville, Neb., 25 miles distant from Omaha, have a capacity of 30,000 per day and manufacture only paving brick but times are so bad out here that I have not run more than one month this year. In ordinary times I could not manufacture enough to supply Omaha but this year there is no brick or any other pavement put down.

Common brick are sold here from \$5.50 to \$6 delivered, (I do not want any of that in mine.) The price for paving brick is from \$11 to \$12, and for the 15 per cent. which are generally not thoroughly vitrified in the kilns, I can sell for sidewalk brick in Omaha at \$10.

As soon as my term of treasurer expires, I intend to enlarge my plant and will make besides pavers also fire and pressed brick.

Ever since I have subscribed for the CLAY-WORKER, I have read it with considerable interest and the little I know about the brick business I have picked up from reading in your paper, and some experimenting in the yards. By and by I guess I shall make a full fledged brickmaker.

HENRY BOLLN,  
City Treasurer.

Omaha, Neb.

### TOUCHED THE RIGHT SPOT.

In a letter to the editor of recent date Mr. W. R. Cunningham, secretary of the Wallace Mfg. Co., Frankfort, Ind., says: "The September number of the CLAY-WORKER is lying on my desk, and I must say that it is following nature's laws, 'improving with age.' 'Management of Machinery,' by D. W. Stookey, is of particular interest, especially to clay machinery manufacturers, and we doubt whether one of that fraternity could pen their sentiments or experience more fully and to the point. And I sincerely hope that every machine user in the land will read this article, and if they do so, I am confident that many of the trials and tribulations of the user and manufacturer of brick and tile machinery will be obliterated."



# THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK  
MANUFACTURERS' ASSOCIATION OF THE  
UNITED STATES OF AMERICA.

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T. A. RANDALL & CO.,  
5 Monument Place. INDIANAPOLIS, IND.

## THE THIRD PARTY.

In the adjustment of the labor question it must not be forgotten that there is a third party whose interests are not second to either employer or employee. They are paramount in many cases. A railroad does not exist that capitalists may make money in operating it, or that laboring men may find employment. Railroads exist that the whole community may have cheap and rapid transportation, and this universal public has a right to rely upon the transportation at the usual time and in the usual way at well-known prices. Hence any disturbance of the established arrangements is a fraud upon the public which legislatures and courts must provide against. The greatest sufferers in the railroad disturbances of last summer were not the owners of the roads who lost millions of dollars by it, nor of the employees who lost even more, but it was the public whose business and pleasures had all been adjusted to the system of transportation which they had been induced to rely upon. Perishable freight was lost, and many persons who depended on railroads, suffered for accustomed food, not to mention the interruption of travel to the great inconvenience of thousands.

It will be a great oversight of Congress as well as of the State Legislatures if some provision of law does not guard against the recurrence of the same ex-

perience. Judge Harlan's recent decision in the railroad cases is right, as the law now is. Men should be permitted to quit work at their pleasure. But when they have contracted to do a given thing as every railroad contracts, or should contract; when it contracts to deliver goods or passengers on schedule time, they should be compelled to do that thing, hence the managers of the roads, or the operators should not be allowed to stop midway of the journey at the expense of this third party, the public.

This third party, the public, has it within its power to compel the parties of the other part to come to time. Judge Harlan's decision is good so far as it goes, but to meet the demand of the public both legislatures and courts must go farther. This may imply that employees on railroads shall not be allowed to quit service without giving timely notice. The public, the third party and by far the greatest in interest will demand this.

## RED VS. PARTY-COLORED BRICK.

The question as to whether the future cities will be built with red brick or brick of other colors, is one which will be settled independently of any intervention of ours. R. Brick in his contribution to this number, takes up the cause of red brick, and shows that he has a very high regard for this color and is somewhat skeptical as to the great progress that is claimed in the prophesies as to the future use of colored brick, other than red. On page 340 of this issue we give a clipping from the *Washington Post*, which proclaims boldly for the lighter colors and relegates red brick to the rear. Both of these contributions are partisan in character. We all know that the history of brick shows that a very large proportion used have been red. In this instance however citations from history, argue nothing for the future. Splendid light colored brick of varying shades and qualities of color are now made, and architects are making liberal use of them. The proportion of light colored fronts is largely on the increase. So that for the time being, at least, it is evident that the use of various colored brick will largely increase. They are even coming to be used in the exterior finish of frame house foundations and chimneys and their artistic value in contrast with certain colors which are given to frame

houses, 'is too clear to' admit of argument. It has heretofore been the custom to use red brick regardless of the color of the frame work, but now that brick are made of different colors which will harmonize properly with any shade which one may wish to use on a frame house, we will find quite a market for this material. A market that is by no means insignificant. If people get started in the right way to use the colored brick for this purpose, it will make a larger market than their use for commercial structures. There is no question as to the absolute artistic excellence of red brick any more than is there question as to the artistic value of other colors. Red brick will not become obsolete by any means, but will continue to be used extensively for the simple reason that they are in every way desirable.

## THE SILVER LINING.

W. D. Gates, president of the American Terra Cotta and Ceramic Co., whose works were burned last month, writes that the work of rebuilding has progressed famously, and they will soon be in much better shape than they were before the fire, for the new buildings are larger and more conveniently arranged than the old ones, so that perhaps what at first appeared as a great calamity may prove a blessing in disguise. Aside from this view, friend "Will" says that the very many acts of kindness shown him by friends and neighbors, who have proven themselves friends indeed, would reconcile one to almost any loss. His workmen started this feature by waiting on him in a body immediately after the fire and begging permission to work for an indefinite period without pay. Such evidence of loyalty and sympathy reflects credit upon the employer and employees alike. The photo of the works three weeks after the fire, shown on page 353, indicates that they have all been hustling in true Chicago fashion.

## THE FUTURE OF BUILDING.

Architects and contractors are even now being consulted with respect to next year's building. The indications are for good business. There is an impression that building values are very low and that this is a good time to build. Such an impression had quite an effect on the building interests of many sections even this year. While



the general volume made up by small building was not relatively great, the proportion of good buildings constructed was large. With the return of better times which is imminent and the impression as to low values, there can be no question but that next year will be quite an average one in the general volume of business done.

#### AN AMERICAN BRICKMAKER'S OBSERVATIONS ABROAD.

Mr. E. C. Sterling of St. Louis, president of the Hydraulic Press Brick Co., and all the branches of that great concern, as well, has returned from his summer vacation spent in Europe, apparently in the best of health.

Speaking of his trip abroad to a representative of the CLAY-WORKER, he said, "I spent a months time in England and Scotland, but saw very little, if anything, of particular interest to brick-makers. I noticed that they do not make brick in as great a variety of color; neither do they use as many ornamental brick as we do in this country. There, when ornamental work is required in connection with brick work, terra cotta is almost always used.

"Semi-dry clay machines have been used to a limited extent over there, but the proportion of that class of brick is so small that they cut but little figure, and I am not at all surprised by the fact, for the climate is so damp and it rains so large a portion of the time, that it would not be feasible to operate a dry clay machine, unless a clay dryer was used in connection with it.

"I am of the opinion that in both the manufacture and use of brick, especially pressed and ornamental, we are considerably ahead of our English cousins."

#### PERSONAL MENTION.

C. T. Drake the well-known and deservedly popular proprietor of Drake's Standard Machine Works; Chicago's pioneer clay machine manufactory, has been honored by election to the thirty-third degree of Free Masonry. This is the highest degree of that ancient organization and one that is only conferred on a few of the most faithful of its followers. It is a distinguished honor of which friend Drake is justly very proud.

Ernest G. Alden, manager of the Terre Haute (Ind.) Pressed Brick Co., called at our sanctum recently. He was just starting out on a ten days tour of the

pressed brick works of Indiana and Ohio with hope of getting a few pointers that will be of some benefit—a good thing to do. Many older brick manufacturers might profit by a similar course. Mr. Alden reported a fairly good season and a promising outlook for '96.

S. Linderoth, Chicago, favored us with a brief visit early in the month. Mr. L— was formerly an architect but a few years ago become interested in clay work and is now at the head of a new company that will engage in the manufacture of eucaustic and art tiles. An extensive plant will be established near the Windy City and Mr. L's mission was the inspection and purchase of the necessary machinery, etc. A first class equipment will be provided and under Mr. L's able management will soon be in successful operation.

Wm. Simpson the genial secretary of The Simpson Brick Press Co., Chicago, looked in on us recently. He reports business as satisfactory all things considered and thinks the Simpson presses will go into several new plants the coming season as well as in a number already established that will enlarge their capacity, if the promised improvement in trade materializes.

#### TRADE LITERATURE.

C. & A. POTTS & Co., Indianapolis, have out a very unique circular informing brickmakers that they can't miss it by using the Potts Clayworking Machinery and that the quality and price of same will be made satisfactory. The illustrations are purposely quaint and crude, with the view of putting prospective patrons in a good humor. If you want to smile write them for a copy.

E. M. FREESE & Co., Galion, Ohio, have favored us with a copy of their new illustrated catalogue of brick and tile machinery. It is a handsome book of 140 pages with a richly embossed cover in green and gold. Besides the customary cuts and descriptions of their various brick and tile machines, the book is illustrated with some beautiful half tone engravings of their works, and plates showing the many forms of ornamental brick, tile, etc., made on their machinery. An elaborate index makes it a convenient book of reference. A copy will be mailed free to any of our readers applying for it.

THE TOWER GROVE BRICK AND MACHINE WORKS, St. Louis, have issued

a neat catalogue in which the Progress Brick Press is fully described and illustrated by a series of colored plates that show its construction and method of operation in a graphic manner. A sectional mould is one of special features of the Progress Press which those interested in dry press brickmaking should investigate. A copy of the catalogue can be obtained by writing the above named company.

INDIANLAND AND WONDERLAND is the appropriate title of a beautifully illustrated book issued by the Northern Pacific Railroad Co., that is both instructive and entertaining and for a copy of which we are indebted to Mr. Chas. S. Fee, General Passenger and Ticket Agt., St. Paul, Minn. The book is a veritable gem, typographically. It tells in an interesting way of the wonders of the Yellowstone Park region and contains maps and pictures of the chief points of interest. A copy will be forwarded to any of our readers who send six cents in postage to Mr. Fee.

THE OTTO GAS ENGINE, the first and best of its kind is the subject of a four page pamphlet recently received. A new portable "Otto" is illustrated. It is made in three sizes of 8, 13 and 22 horse power, and is said to be very efficient and economical. For full particulars write The Otto Gas Engine Works, Philadelphia, or John Wallace, agent 35 East Ohio street, Indianapolis.

THE HYDRAULIC-PRESS BRICK Co., St. Louis is sending out a folder which explains the *modus operandi* of the Graves Patent Oil Burner which they now offer to the trade. The fact that this burner has been used by several of the Hydraulic plants for several years past is a guarantee of its efficiency for burning brick.

THE INTERNATIONAL BUILDERS' TRADES EXHIBITION. We have received the programme and announcement for the next yearly display to be made by this institution in the Royal Agricultural Hall, Islington, London, N., Eng., from March 25 to April 4, 1895. During the exhibition last spring a large line of brick and tile machinery was shown in operation and elaborate displays of terra cotta and pottery were made. It is expected that the coming exhibit will be still more extensive. Those desiring further particulars should address Mr. J. M. Callender, manager American and Foreign section, 27 Chancery Lane, London, W. C., England.



## OCTOBER.

**H**O! crisp October, when trees turn sober  
And the purplish asters grow,  
And over the hill with a right good will  
The west winds steadily blow.

There are chestnut burrs where the partridge whirrs,  
The fluttering woodland through;  
And the children know the spots where grow  
The apples of russet hue.

Wherever we turn the bright leaves burn,  
The squirrels chatter and scold;  
And, the by-ways lining, the vines are twining  
Their masses of green and gold.

From the schoolhouse pane in the little lane  
There are wistful glances cast,  
Toward the rippling pond and the woods beyond,  
Where the nuts are falling fast.

At the stroke of four from the open door  
They hasten with laughter loud;  
With basket and stick the nuts to pick,  
A bare-footed, noisy crowd.

The golden rod in the wayside nod  
To a glory of burnished flame,  
And the leaves that are dry in a great troop fly,  
As if 'twere a madcap game.

Like delicious wine is the air divine  
Of the scorpion's breezy days;  
And the boughs all swing to the winds that sing  
A psalm of speechless praise.

—Guy Wetmore Carryl, in *Truth*.



## A REFLECTION.

**S**HE makes a fair picture. I cannot but note  
This fact, as together we pensively float,  
Where lilies abound and the rushes grow high,  
Beneath the dark blue of a midsummer sky.  
There's a light in her eyes and a blush on her cheeks,  
And dimples that dance with each word that she speaks.  
The sun, slanting westward, just touches her hair,  
With flecks of pure gold, and I, seeing it there,  
Reflect that I'm paying, (as idly we float),  
Two dollars an hour for this confounded boat.

—Art in Advertising.

## A NEW VERSION.

Jack and Jill went up the hill to get a pail of water,  
But the things they said when they fell down  
They really hadn't oughter.

—Cincinnati Tribune.

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Morrison and Reep, \$3.00

## "BRICKMAKING AND BURNING,"

J. W. Crary, Sr., \$2.50

## "TABLE OF ANALYSES OF CLAYS,"

Alfred Crossley, \$1.00

## "DURABILITY OF BRICK PAVEMENTS,"

Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address T. A. Randall & Co., Indianapolis, Ind.

## ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and Belleville, Ill.

ESTABLISHED 1859.

**R**ed Pressed and Ornamental Brick of unsurpassed quality a specialty and can be furnished in any desired quantity. Builders who desire the finest pressed brick at reasonable prices, are requested to write for illustrated catalogue and price list.

Rock-faced and Roman brick, red and brown, granite, mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

**ANTHONY ITTNER, Telephone Building, ST. LOUIS, MO.**



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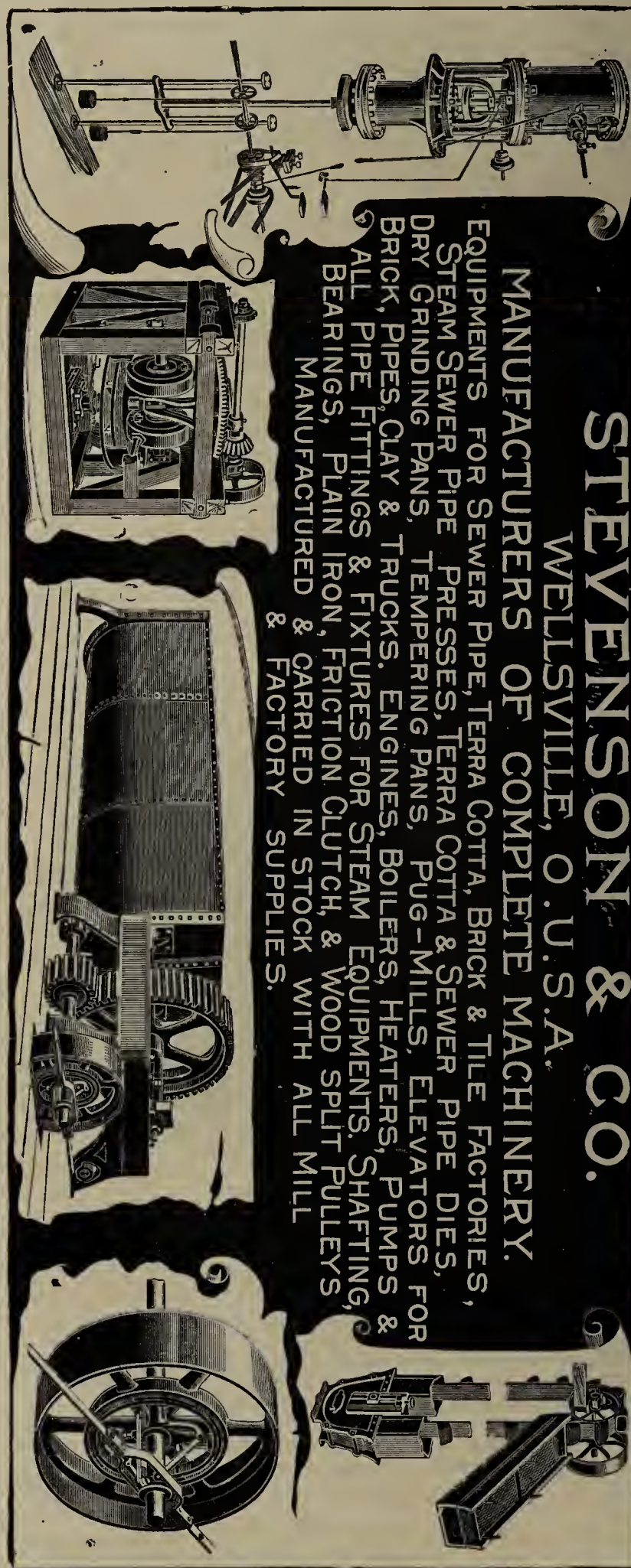
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**STEVENSON & CO.**  
WELLSVILLE, O. U. S. A.

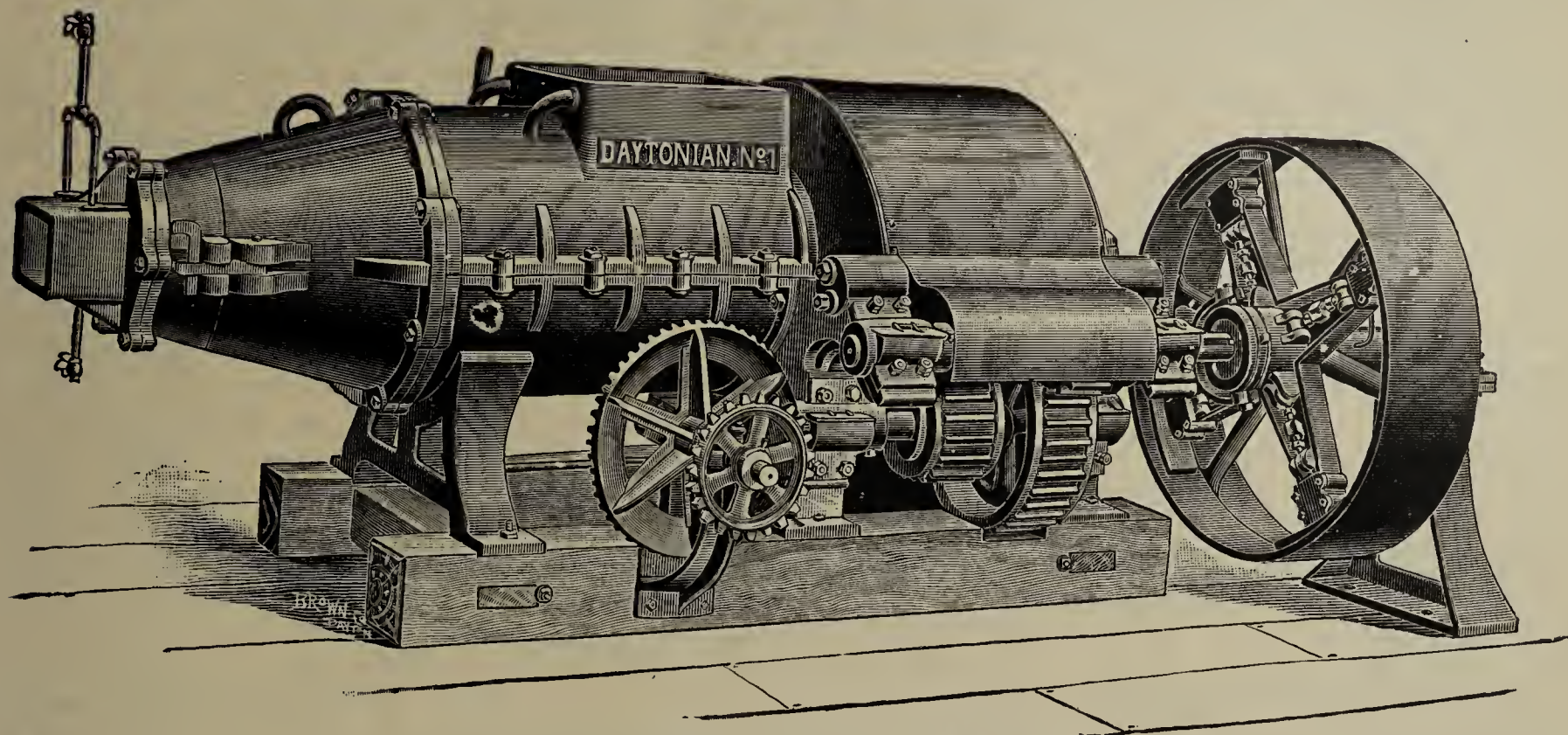
**MANUFACTURERS OF COMPLETE MACHINERY.**

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES,  
STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES,  
DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS FOR  
BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS &  
ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS. SHAFING,  
BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS,  
MANUFACTURED & CARRIED IN STOCK WITH ALL MILL  
& FACTORY SUPPLIES.



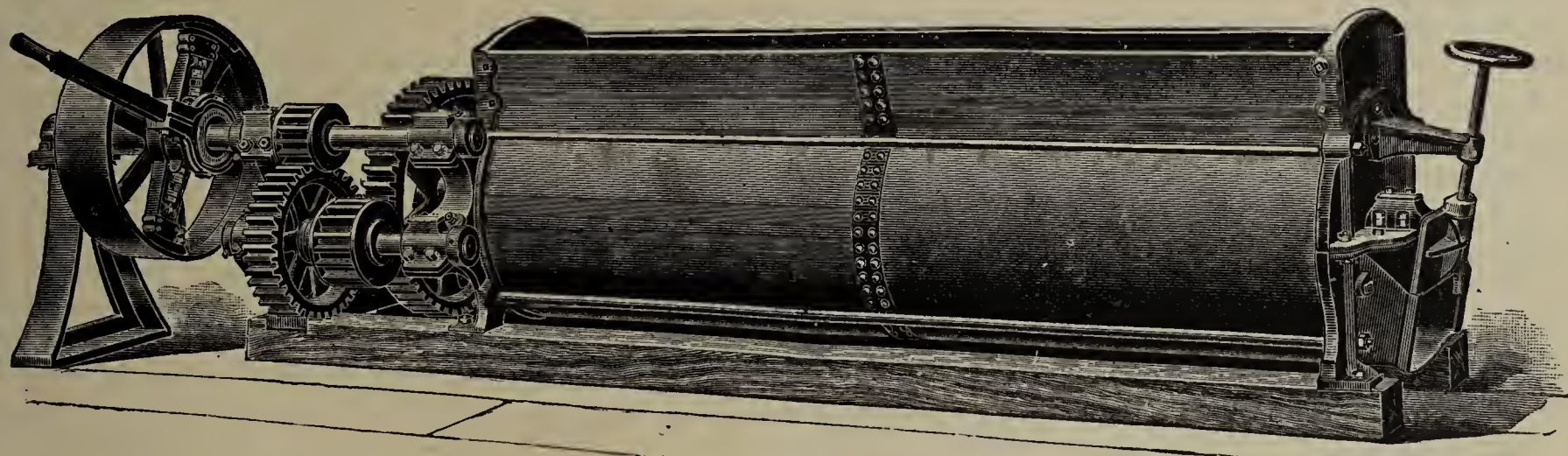
# RAYMOND'S

✦ Brick ✦  
Machinery.



DAYTONIAN No. 1 BRICK MACHINE.

The mechanical perfection of our modern line of brick machinery is astonishing the World.



No. 1 COMPOUND GEARED PUG MILL.

*Brick Machines,  
Cutting Tables,  
Pug Mills,  
Revolving Screens, Etc.*

*Disintegrators,  
Crushers,  
Dry Pans,  
Re-Presses* Adapted to  
ALL USES.

**C. W. RAYMOND & CO., Dayton, Ohio.**



## EDITORIAL NOTES and CLIPPINGS.

Salineville, O., is to have a new brick and tile plant.

D. K. Cecil will establish brick works at Gaffney, S. C.

A large brick plant is to be located at Gladdens, Pa., in the near future.

H. B. Shields & Co. will erect a large brick and tile plant at Ellwood, Pa.

A company is being formed at Kingston, Tenn., for the manufacture of drain tile.

Martin & Ledbetter, brick manufacturers, Murfreesboro, Tenn., have dissolved partnership.

The St. Louis (Mo.) Terra Cotta Co. has been incorporated with a capital stock of \$15,000.

The firm of Hill & Crovert, Barnard, Ind., has been dissolved and Hill Bros. will succeed them.

A large plant is being erected at Port Washington, Ohio, for the manufacture of paving brick, pottery and tiling.

One hundred thousand dollars will be expended in brick pavement at Owensboro, Ky., in the near future.

Brick manufacturers in need of good workmen can easily secure them by a small "ad." in our "Wanted" columns.

The Jacksonville (Fla.) Brick Co., has put in some new machinery, thus enabling them to increase their output.

Peoria (Ill.) Brick Co. has been incorporated by Wm. Jack, L. T. Houghton, W. W. Hammond and C. T. Hall.

If you are looking for some good second-hand machinery, examine the "For Sale" columns of the CLAY-WORKER.

The Peerless Brick Co., Philadelphia, Pa., will increase the capacity of their output by the erection of another large kiln.

Arrangements are being made to rebuild the Kirkham Art Tile Works, of Akron Ohio., which was destroyed by fire recently.

The attention of those of our readers who are interested in improved methods of burning brick is called to page 386 of this issue.

The Northwestern Tile and Terra Cotta Works, near Granville Station, Wis., was sold at sheriff's sale the 29th ult, to Mr. Duermachter, who expects to manage the concern; for \$3,575.

If you have something you do not want or want something you have not got, advertise in our "For Sale, Wanted, Etc." columns.

The Georgia Buff Brick Co. has been incorporated at Atlanta, Ga., with a capital stock of \$50,000. Jas. T. McAllister is interested.

L. L. Torbet, Society, Hill, Ala., is in the market for clayworking machinery for a new brick plant soon to be established at that place.

A steam brick yard will be opened in Nashville, near York, Pa. Wm. Ness is interested, having discovered good clay to a depth of fifteen feet.

Andrew Thaison, E. A. McMath and C. J. Brown have incorporated the Houston (Tex.) Pressed Brick and Tile Co. Capital stock \$30,000.

The Vincennes (Ind.) Sewer. Pipe Works burned the 29th ult, entailing a loss of \$40,000. The factory gave employment to 140 men the year round.

Geo. Mason, Washington, D. C., has purchased the Potomac Terra Cotta Co.'s plant Terra Cotta, D. C., and will have entire control of same hereafter.

The Cayuga (Ind.) Pressed Brick and Coal Mining Co. are in the market for manganese and other materials used in the manufacture of grey and mottled brick.

A stock company to be known as the "Best Brick Co." has been incorporated at Mechanicsville, N. Y. The plant will have a daily capacity of 40,000 brick.

The kiln shed at Edmester's brick yard Everett, Mass., caught fire the 29th ult, which communicated with other parts of the plant resulting in a loss of \$1,000.

W. B. Shafer's brick works at Catasauqua, Pa., have started up again. Chas. Bear is superintendent, and they are working day and night to fill orders now on hand.

The Griffin Enameled Brick Works, Oaks, Pa., has been sold to Wm. T. Bergen, a New York capitalist who, it is said will keep it running more regularly than formerly.

The Jones Brick Co., Knoxville, Tenn., writes: "We enclose herewith check to cover subscription to CLAY-WORKER for one year. It is worth many times the price of subscription to any person in the business of brickmaking."

T. H. Cunningham, of Palestine, Ill., would like to correspond with an experienced potter, desiring a permanent situation, either as partner in the business or on a salary.

Jno. T. Maynard a prominent brick manufacturer of Fulton, Va., died at his home in that city the 3rd inst. Mr. Maynard was 57 years old, and has been engaged in the brick business nearly 30 years.

The City Council of Pasadena, Cali., has passed an ordinance prohibiting brickyards within the city limits, same to be in effect on and after January 1st 1895. The ordinance was vigorously opposed by the brick manufacturers.

The Simpson Brick Press Co., of Chicago, write us, stating that their President, Mr. P. L. Simpson, has closed several large deals in Europe for their machinery. Mr. Simpson is certainly to be congratulated on his success in foreign countries.

E. M. Freese & Co., Galion, Ohio, write us that trade has been good with them this season. They have recently shipped outfits of machinery to Pennsylvania, West Virginia, Tennessee, Kentucky, Indiana and Iowa, besides several to different points in Ohio.

The Bonnot Co., Canton, Ohio, are receiving numerous orders for their new double repress and report a very good trade on represses. It is said that the new repress is much more simple in construction than those in common use. An advertisement of the new repress appears in this issue.

At a recent meeting of the Piscataqua (N. H.) Brick Manufacturers' Association the following officers were elected: President, E. Oscar Pinkham; vice-president, John Raitt; treasurer, J. W. Clements; secretary, D. L. Pinkham, Dover Point. The members report that the past season has been a very fair one.

Jas. Cozatt, Dubuque, Iowa, in a recent letter, says: "We commenced making brick March 7th and shut down August 6th, having made in that time about 3,000,000 brick, and now have on hand 750,000. We make our brick on a Penfield machine and dry them with a Sharer dryer, and intend making quite a number of improvements in the spring."

A visitor at the works of the Somerset & Johnsonburg Mfg. Co., Johnsonburg, Pa., reports that the works are in splendid condition. Mr. Alfred Yates is

*Continued on Page 364.*



## Oriental War Bulletin.

On inside cover page  
 Markets of the world. Continued  
 In this period of strife for the  
 Straights, barrel apparatus  
 Be with their stereotyped  
 Make war with the powers that  
 Company is everywhere  
 Of the Wall & under the factory  
 Crusher & cutter  
 Automatic Cutters  
 And all improved with Cunningham Mills  
 Latest improved with Cunningham Mills  
 Strength achieved with her  
 Her magnitudes and number  
 Again to the Big Wonder with  
 She is to the wise to make war  
 Has made rapid advance  
 While the Little Wonder



## Editorial Notes and Clippings.

(Continued from Page 362.)

General Manager of this Company. One of the conspicuous improvements lately added to the plant is two revolving screens built by the Bonnot Co., Canton, O. This is one of the best plants in Pennsylvania.

Sercombe, Osman & Warren, Exmouth, Eng., patentees of the "Perfect" kiln, report that among recent orders is one from the British Government for one of their 16-chamber kilns, to be erected at Curragh Camp, Ireland, and another from the Farmley Iron Co., of Leeds, Eng. They claim to have sold more kilns in England the past season than all other kiln firms combined.

The trade of the Bonnot Co., Canton, O., has experienced quite a boom, and it has been necessary to increase the working force considerably. This Company supplies not only pottery machinery, but brick machines, represses and other machinery required in a brick plant. Judging from present indications, "good times" have indeed, returned in the business.

We are informed by H. W. Classen & Co., Baltimore, Md., that they have disposed of the lime, cement, fire brick and sewer pipe branch of their business to the Maryland Lime and Cement Co. Mr. H. W. Classen is a member of the latter firm and will take part in the management of same, and will also continue in the brick business under the old firm name, with office at 305 McElderry Wharf.

The Chambers Bros. Co., Philadelphia, Pa., write that they had a little spurt in business earlier in the season, but just at present things are very quiet with them. They are just finishing the rebuilding of their works which gives them an entirely new foundry building with new cupolas and cranes, and in the machine works three clean floors 170 feet in length each. They are evidently prepared for the rush when it does come.

Mr. Elmer E. Spencer, an experienced clayworker, who has recently returned from England with the formula for making the celebrated English White Enameled ware, has enlisted capital and entered into a contract for a term of years to manufacture all kinds of glazed and enameled ware at Crawfordsville, Ind. A plant has been established un-

der the name of the Crawfordsville Ceramics Company, and is now producing a high grade of stone ware. The enterprise will not confine itself to ordinary wares, but will also manufacture decorated ware and white enameled brick under Mr. Spencer's supervision.

A New York subscriber writes that he has option on some very valuable clay land situated near a large market. There is an inexhaustible supply of good clay for the manufacture of both red and buff brick, excellent shipping facilities, etc. He would like to interest some one with capital sufficient to establish a modern plant. Any of our readers desiring to communicate with him can do so by addressing "New Yorker," care this office.

J. W. Penfield & Son, Willoughby, O., report that they have been having an excellent trade during the summer, and now have on hand quite a number of unfilled orders. They say the fall trade has not shown any remarkable signs of activity yet, but presume in a short time the brick machinery trade will feel the effects of the general revival of trade, which is confidently expected by many, now that the long-discussed tariff question has been temporarily settled.

The Standard Dry Kiln Co., Indianapolis, report that there is some little indication of improvement in business. Inquiries seem to be quite numerous and they are getting some orders. They closed a contract last week with the Terre Haute (Ind.) Brick & Pipe Co., for a drier, and are also putting one in at

Houston, Texas, for Mr. M. Butler; one at Glen Falls, N. Y., for the Glen Falls Portland Cement Co., and another for Messrs. Oliphant & Pope Co., Trenton, N. J. They are figuring on quite a number of other plants and while they don't look for any rush this fall, believe they will have a fair business.

The Forest City Sewer Pipe Works of Toronto, Ohio, is undergoing extensive improvements, a new 205 horse power engine is being placed in position, an electric light plant is being added, and a large new south wing is being built to the building in which will be placed five new pans, and a sewer pipe press.

C. J. Holman, of C. J. Holman & Bro., Sergeant's Bluff, Iowa, writes "We seldom see anything about the brickmakers of this section in the CLAY-WORKER, but we are alive yet, and turning out brick and selling them, too. We have run full force nearly all summer, as have also, most of the other yards in this vicinity. There are a good many brick now in the sheds but we expect to dispose of all of them before spring. Prices this season have been above the average."

**W**ANTED. Dry Press Outfit immediately. Give full particulars. Address  
DAYTON BRICK CO.,  
Dayton, Ohio.

101 d

**F**OR SALE. State rights—\$200.00 each to manufacture Finch Patent Chimney Top, costs 50 cents, wholesale price \$2.00, made by hand from common brick clay. For information address  
1011p E. FINCH, Salineville, Ohio.

**F**OR SALE. 1 Simpson 4-Mold Brick Press, latest pattern. 1 Brewer Brick and Tile Machine. Both nearly new, in excellent condition, and used only a short time. Will include delivery in price and sell low for cash. Address,  
NEW YORK HYDRAULIC PRESS BRICK CO.,  
212 Powers Bldg., Rochester, N. Y.,  
or Works, Canandaigua, N. Y.

93 d

## W. S. Ravenscroft,

**L**OCATES all kinds of clays. Tests, analyses, and general information furnished.

Factories planned and erected at lowest cost.

You have clay suitable for buff brick right at your door and do not know it, I will show you where it is. Write me.

## W. S. RAVENSCROFT, C. E.,

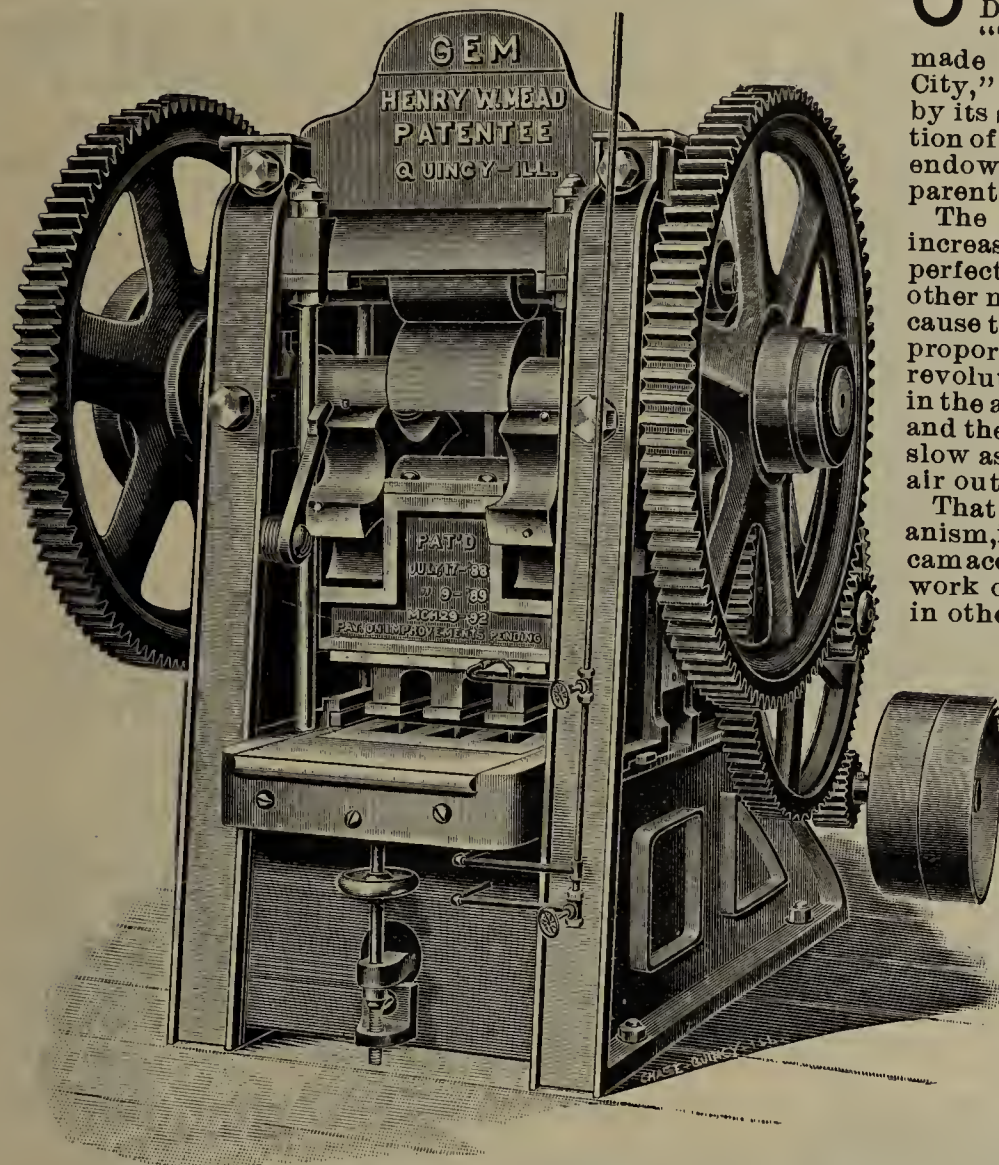
Ridgway, Penn.



# 100,000 BRICKMAKERS

## THE EVOLUTION OF INVENTION

....Is Crudity, Complexity, and lastly, Simplicity....



To be relieved from being the slaves of the brick machine makers by a \$1,000 REDUCTION ON A 3-MOULD BRICK PRESS.

OUR new 3-mould Dry Brick Press "The Gem," made in "The Gem City," illustrates this by its simple adaptation of means to ends endowing it with apparent intelligence.

The reason of its increased output of perfect brick over other machines is because there is a larger proportion of each revolution employed in the act of pressing, and the latter part so slow as to let all the air out.

That acme of mechanism, its original star cam accomplishes the work of many parts in other machines.

The working parts are nearly all above the dust. Other machines have only steam heated plungers. "The Gem" has also steam heated moulds.

The motions of the plungers are such that moist clay can be used.

Its many advantages are covered by four new patents. It weighs 16,500 pounds of the best steel and iron.

### THE EVOLUTION OF TRADE

Also brings simplicity. We will not pay your fare to come and see it work here in our yard nor prostitute friendship or hospitality to make a sale.

The price is \$2,425 F. O. B., Quincy, Ill. Words cannot be arranged that would lessen this price.

This \$1,000 reduction is compelled by the fact that conscience (even in business) has not become quite extinct.

**The Orchardson Dry Brick Press Co.,**

301 Chestnut Street,

QUINCY, ILL.

# Fire Brick

We make a special High Grade Fire Brick (all shapes) for Brick Kiln Construction.

**NOT EXCELLED**

By any. Our quotations will surprise you. We sell Fire Brick on their merits and

their use will prove **AN ECONOMY.**

GROUND CLAY IN  
....BULK OR SACKS.

We solicit your favors.

Manufacturers of....

High Grade Fire Brick for Every Purpose.

**THE AMERICAN FIRE BRICK & CLAY CO.,**

**MINERAL POINT, OHIO.**

MENTION THE CLAY-WORKER,

WHEN WRITING TO ADVERTISERS,

MENTION THE CLAY-WORKER

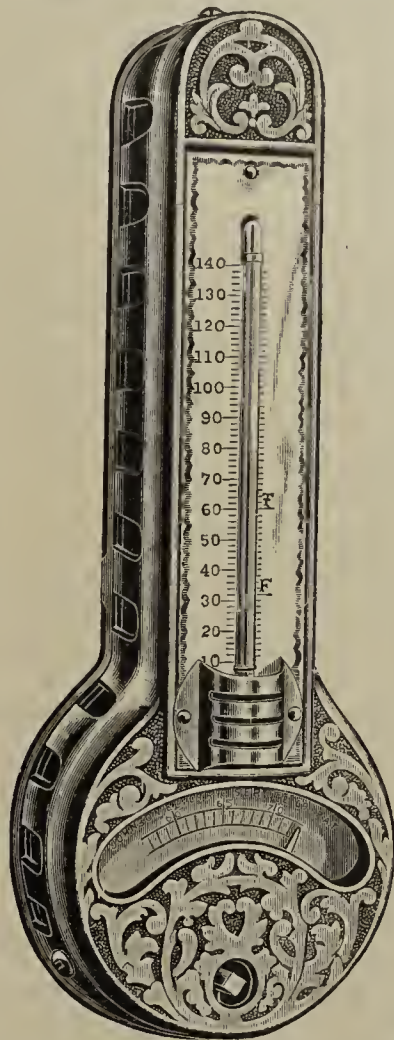
### A THERMOSTAT.

IS a scientific instrument which is acted upon by the temperature. It is about the size, and looks very much like an ornamental, highly finished thermometer. It is connected electrically with the heating apparatus by concealed wires, and automatically controls any kind of artificial heat. It can be set to any degree by an indicator,

after which all you have to do is to let it alone. It does its work perfectly.

In this region where natural gas is used for fuel, it has proved most perfect and reliable.

It has been in use here the past six years and some of our best citizens testify, that with little or no care it has automatically controlled



their natural gas furnaces and other styles of heating apparatus so that all times they are comfortable, never too hot or too cold, but just right, for health and comfort.

The Johnson system of electric heat regulations is being largely used in schools and public buildings, for instance Chicago has it to-day in over one hundred and twenty-five of their public schools.

The largest and finest office buildings, the new Stock Exchange 700 rooms, old Colony Building, 500 rooms; Rookery, 400 rooms; all steam heated are under this system.

The editor of this journal having investigated it is having it applied to his residence.

For full information address the Electric Heat Regulating Co., Builders Exchange, Indianapolis, Ind. In doing so please mention this journal.

For experienced help see the "WANTED, FOR SALE, ETC." columns.



## THE BUSINESS OUTLOOK.

While the present situation cannot be called wholly satisfactory, yet many things have recently occurred to point unmistakably to a speedy revival in the trade. In rapid succession the mining, railroad, coke and steel workers have gone back to work. It would occupy too much space to enumerate in detail all the mills and factories which have reopened after a period of more or less inactivity. Careful personal inquiry among leading manufacturers of dry goods, cottons and the great staples reveals no great lack of business for the coming season.

Reports from the leather trade, tobacco, coal and iron railroads, etc., are to the effect that business is certainly better and that another month at the present rate would do much toward a restoration of confidence in the future. —Art in Advertising.

## UNSOLICITED.

Such a letter as the one below is always very gratifying to the recipient, especially as it was unasked for, and in no way was it even hinted that such a letter was desired. It tells its own story:

Office of UNIONTOWN FIRE-STONE Co.,  
22 East Main Street,  
Uniontown, Pa.

THE WELLINGTON MACHINE Co.,  
Wellington, Ohio.

GENTLEMEN:—Your "Monarch" Brick Machine has been so satisfactory to us that we think we owe you a recommendation. It has proved satisfactory to us in every respect, and we could double our present capacity if we had sale for the brick. If you want to send anybody here to look at it, we will be glad to give them all the information they need. If you see fit to publish this, you can do so. There is no better machine made.

Yours Truly,  
BROWNFIELD & BOYLE.  
Machine in use 18 months.



## GRINDING and POLISHING BRICK.

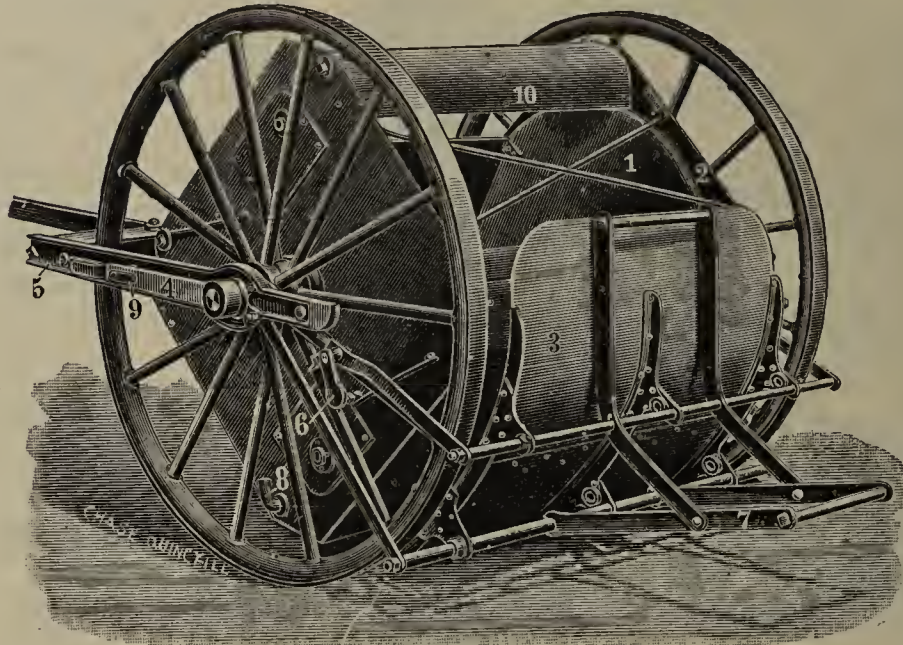
The most durable and nicest brick is a squared, ground and polished vitrified brick. For a machine to make them, with profit and advantage, apply to

**R. KUNSTMAN,** Consulting and Pottery Engineer,  
Dexter Building, 84 Adams Street,  
CHICAGO, ILL.

**WANTED.** Experienced brickyard foreman in yard operated winter and summer. Must understand Whitaker and Lion machines. State experience and salary required. None but good managers of men and highly recommended need apply. Address Box 26 Care Clay-Worker.  
101 d

**SITUATION WANTED.** By a man who is thoroughly posted in the manufacture of front and ornamental and common brick by either the dry clay or plastic clay methods. Have held the position as superintendent and foreman of three of the largest brick works in N. Y. State.  
Address Box 24,  
Care Clay-Worker.  
101 d

## The QUINCY CLAY GATHERER.



For gathering and shedding Dry Clay it is unequalled.

It is self-loading and unloading.

It is the cheapest and most approved Clay Gatherer.

Gathering Clay by this method dispenses with shovellers and avoids strikes.

No Brickyard complete without the Quincy Clay Gatherer.

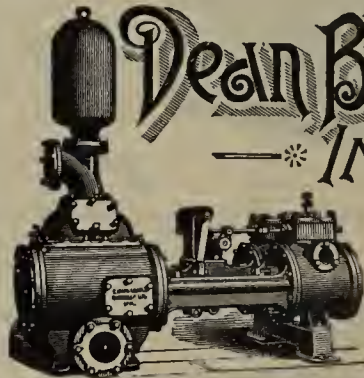
For prices and further information, apply to

**ILLINOIS SUPPLY  
& CONSTRUCTION  
COMPANY,**

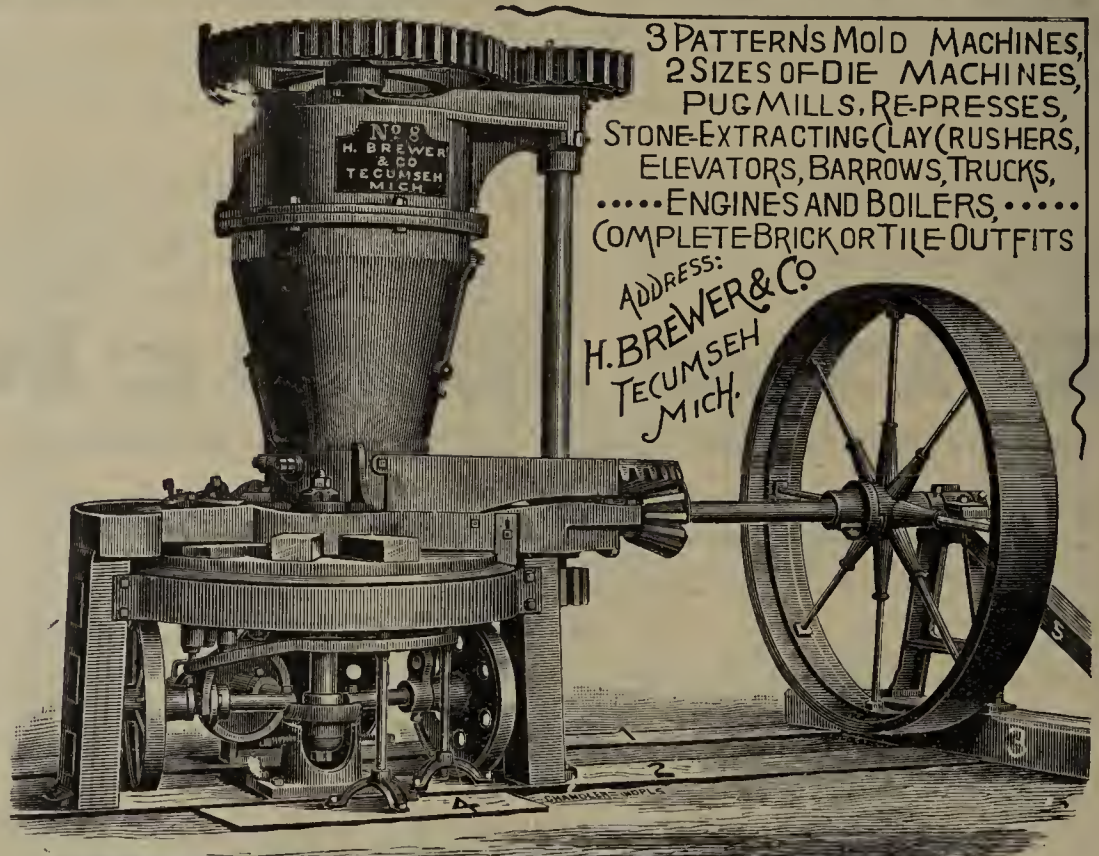
**ST. LOUIS, MO.**

This is by far the best machine that has been introduced to gather dry clay for making pressed brick. No pressed brick works is complete without one.

## Dean Bros. Steam Pump Works, —\* INDIANAPOLIS, IND. \*



**SINGLE & DUPLEX PUMPS.  
HORIZONTAL AND VERTICAL PUMPS.  
Best Design & Workmanship.  
PRICES REDUCED Send for CATALOGUE.**



3 PATTERNS MOLD MACHINES,  
2 SIZES OF DIE MACHINES,  
PUG MILLS, RE-PRESSES,  
STONE-EXTRACTING (LAY) RUSHERS,  
ELEVATORS, BARROWS, TRUCKS,  
..... ENGINES AND BOILERS, .....  
COMPLETE BRICK OR TILE OUTFITS

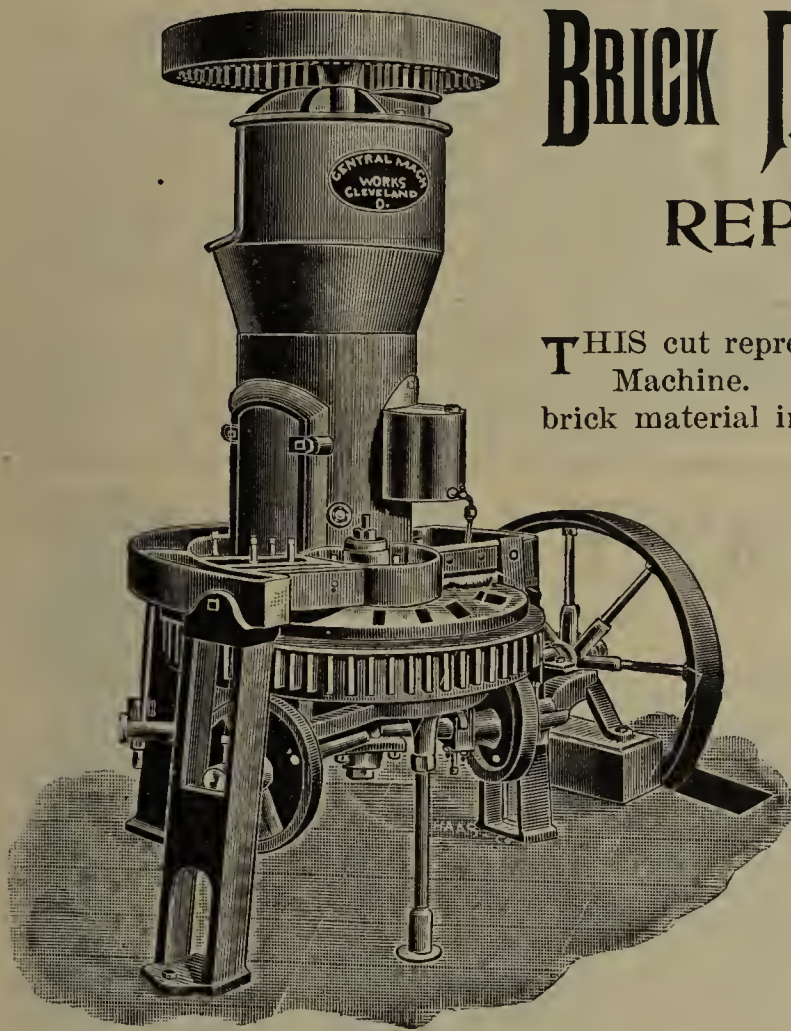
ADDRESS:  
**H. BREWER & CO  
TECUMSEH  
MICH.**



DO NOT BUY A [FOUNDED 1879.]

# SOFT CLAY BRICK MACHINE

Until You Have Investigated Ours.  
W. E. TALLCOT & CO., Croton-on-Hudson, N. Y.



## BRICK MACHINES AND REPRESSES.

THIS cut represents our Stiff Mud Brick Machine. It will work any kind of brick material including fire clay, shale or common clay right from bank without the use of a pug mill. Each brick is pressed separately and can be haked 7 or 8 high, or repressed right from machine.

Over 500 in operation.

Send for price and circulars

Manufactured by

**CENTRAL  
MACHINE  
WORKS,**

226-236 Abbey St.

Cleveland, Ohio.

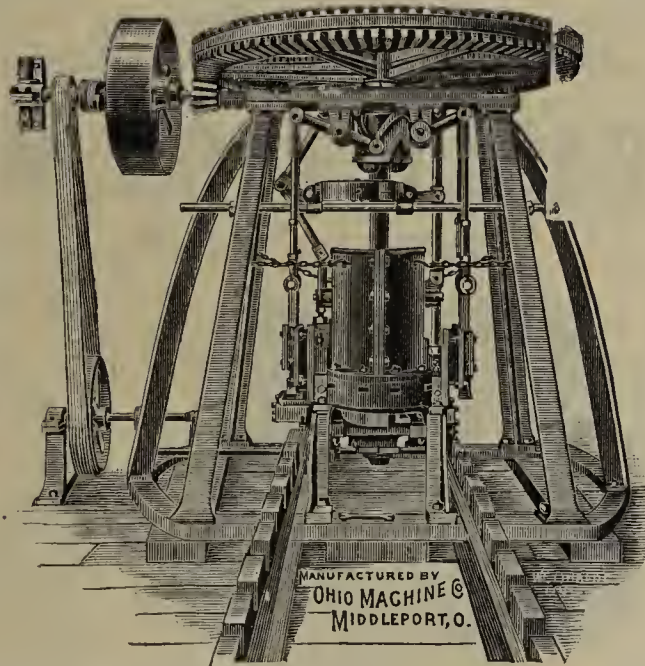
## THE "AJAX" BRICK MACHINE

MANUFACTURED BY

**Ohio Machine Co.,**  
Middleport, Ohio.

Under the very Latest Improved Grant-Murray Patent.

This machine is constructed with the object of giving to purchasers the very best results obtainable for the money invested. It is at once Simple, Durable, Convenient, and Easily operated. We claim these machines make the strongest brick in the market, a brick that is very superior for Street Paving and building purposes. Their superior quality as pavers may be ascertained by reference to some of the leading cities of Ohio and West Virginia. This machine works the clay very stiff, pressing all the clay into each brick that it will possibly contain, thus imparting the quality requisite to a No. 1 Paving Brick. We guarantee these machines to our customers, and solicit investigation as to their merits. For further particulars please correspond with



**OHIO MACHINE CO.,**

MANUFACTURERS,

We manufacture the Grant & Murray Patent Repress Brick Machine, pressing 4 brick each revolution and 40,000 per 10 hour day.

Middleport, Ohio

MENTION THE CLAY WORKER

When writing to advertisers

MENTION THE CLAY WORKER.

FOR SALE, WANTED, ETC.

Advertising rates in this column 25 cents a line, or 4 cent a word, each. insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

FOR SALE. "Little Wonder" brick machine, guaranteed capacity 20,000 per diem; at a big bargain. Apply to BORCHARDT & FENDIG, 94 d Brunswick Ga.

SEND your Chicago collections and legal business to Saylor & Frazer, Attorneys at Laws 171 LaSalle St., (N. Y. Life Building) Chicago, Ill., 6 12 L

ENAMELER. I will undertake to enamel in white or colors, "not slip and glaze," any bricks made of clay. Proof given without charge. Only reliable firms will be treated with by 10 3 cm Box 25, Care Clay-Worker.

FOR SALE CHEAP. 50 No. 2 Iron Clad Dryer Brick Cars, in good condition. Also 5,000 Wooden Brick Pallets (new). Apply ST. LOUIS PRESS BRICK CO., 10 1 d Equitable Building, St. Louis, Mo.

WANTED. A place as superintendent by a practical brickmaker of 25 years' experience in all methods of making. Knows how to handle men. References good. Box 7, 6 1 c Care "Clay-Worker."

PARTIES wishing services of expert in dry press process to superintend the erection of new or the reconstruction of old works, at a fair remuneration, please address PRESS, 8 1 d Care "Clay Worker."

FOR SALE. Several Miller hand presses for repressing Standard press brick. All in good working order. Address W. B. HARRIS & BRO., 10 1 d Zanesville, Ohio.

FOR SALE. Brick yard at St. Johnsville, N. Y. Large bank of clay; Pallet yard; fifty-horsepower engine. Sold on easy terms; nearest yard thirty miles; have lots of business; reasons for selling, poor health. Address Box 1. 8 1 d Care "Clay Worker."

A PARTY with \$35,000 cash wishes to meet with some one with like amount to engage in the manufacture of roofing tile. Has several new patents on roofing tile which will be put into the firm without charge, and has an option on suitable clay lands for the purpose, for a nominal price, situated in Illinois near Chicago. Would like to associate with a good business man to attend to office, but would prefer a practical clay man, as advertiser could attend to office himself. 10 3 c Box 21 Care Clay-Worker.

PAVING BRICK WORKS FOR SALE. The controlling stock in The Logan Granite Clay Co., Logan, Ohio. (Hocking Valley), manufacturers of the best paving brick in the West; clays suitable for fire brick and proofing and sewer pipe. First-class machinery, Iron Clad Dryer and cars. Owners of this stock have other business, requiring all their attention. An established growing business at a bargain. W. A. ADAMS, N. E. Cor. 8th and Plumb Sts., 10 5 c Cincinnati, Ohio.

TO NEW BRICKMAKERS. If you want to save money, and make money by making brick, you must know what your clay will do under the best skilled treatment. If you will send a genuine sample of your clay to me, say 15 to 50 pounds, freight pre paid, I will make a true test of it and send you a sample brick. If you want a kiln made, set and burned, after I know your clay to be good, I will make and burn a kiln for you on terms to be agreed upon before I take your case. No test and opinion of clay will be made for less than five dollars. Address J. W. CRARY, JR., Bluff Springs, Fla. Refer to J. W. Crary, Sr. 10 1 d



**FOR SALE** At easy terms, brick plant in a prosperous town of Iowa, located on four railroads. Good clay and good demand. Machinery in good shape. State will use 1,000,000 brick next season. Address, CEDAR, 83 d Care "Clay Worker."

**FOR SALE** Very cheap. Two Clay Pulverizers in a No. 1 order. One set of Clay Rolls. One four-mould Dry Press. One Clay Elevator. Shafting and Pulleys. A great bargain, if sold together. Address, M. F. W. & Co. 2 tfd Care "Clay-Worker."

**WANTED** a practical brick man with capital to take an interest and management of a plant for the manufacture of building and fire brick; unlimited supply of clay that will burn light straw color, and high fire test; cheap coal; samples of clay and sand furnished. Box 19. 83 d Care "Clay Worker."

**WANTED.** A second-hand four-mould Boyd or Lyon Dry Press Brick Machine. State how long same has been in use, general condition at present time, lowest cash price and all other particulars. Address, Box 17. 83 d Care "Clay Worker."

**FOR SALE.** One Brewer Tile machine, good order. One New Departure Tile machine, good as new. One 40 horse-power engine, good as new. One Brewer Crusher, absolutely new. EDGAR M. HEAFER, Bloomington, Ill. 10 tfd

**WANTED.** To purchase a dry press of the Whittaker make second-hand, in good repair; also dry pan. Address L. C. BARNES, Bloomington, Ill. 76 c

**OUR** former superintendent knew it all, and purchased the following articles, all of which are as good as new, but are not adapted to our business, consequently they are offered at less than the manufacturer's prices. One four-mold Ross-Keller Eureka Brick Machine, for dry pressed; manufacturer's price \$5,000. No reasonable offer refused. One 42-inch Ross Disintegrator, made by George Wenger, of St. Louis, Mo.; quite new; well adapted for tile business. One Worrell's No. 2 Rotary Dryer, complete except the stack; quite new; excellent for drying various materials. One Flower Packer, made by S. Hawes. Above articles can be seen at our factory, at Clayton, Mass. E. L. KERR, 93 d 94 Liberty Street, New York City.

**SECOND-HAND MACHINERY.** We offer the following second-hand machinery cheap for cash:  
One Wallace Brick and Tile Machine.  
One Ohio Brick and Tile Machine.  
One Acme Brick and Tile Machine.  
One Hoosier Soft Mud Brick Machine.  
One Hoosier Auger Brick and Tile Machine.  
One Brewer Brick and Tile Machine.  
One Bucyrus Crusher.  
One Hoosier Crusher.  
One Cunningham Automatic Cutting Table, in good order.  
One Adrian Automatic Cutting Table, in good order. THE DECATUR LEADER MFG. CO. 8 tfd Decatur, Ill.

See our Advertisement on page 195.

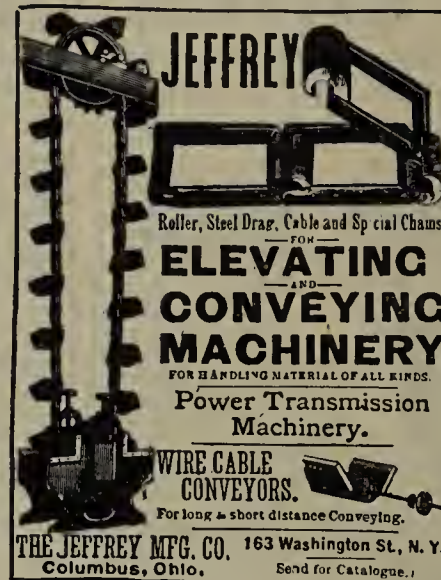
#### HALF RATES

(with two dollars added) will be made by THE WABASH LINE, to points in 21 States of the great West, Northwest and Southwest, for the Homeseekers' Excursion, October 9th, 1894. Don't forget the dates, and that these rates will apply to Kansas City, Omaha, Denver and other prominent cities. Tickets will be good returning twenty days from date of sale. Stop-over privileges allowed. For full particulars apply to the nearest railroad ticket office of the Wabash or connecting lines, or to C. S. CRANE, Gen'l Pass. & Ticket Ag't., St. Louis, Mo., or GEO. D. MAXFIELD, D. P. A., Indianapolis, Ind.



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For Handling  
CLAY,  
COAL,  
SAND,  
BRICK,  
TILE,  
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Also Furnish  
RUBBER,  
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Manufacture  
SHAFTING,  
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BOOTS,  
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ETC.

## NEW DISCOVERY KILN.

Patented April 13, 1886, June 12 1888, Nov. 17, 1891.

More Than 1,000 Now Stand as Monuments of Fame to its Inventor

It is neat, compact, durable, easy to handle, constructed on scientific principles. Has been improved and now burning almost everything made from clay, such as Sewer Pipe, Vitrified Pavers, Etc., to Pottery and finer wares. Built any size up to 100,000. In short it leads the way.

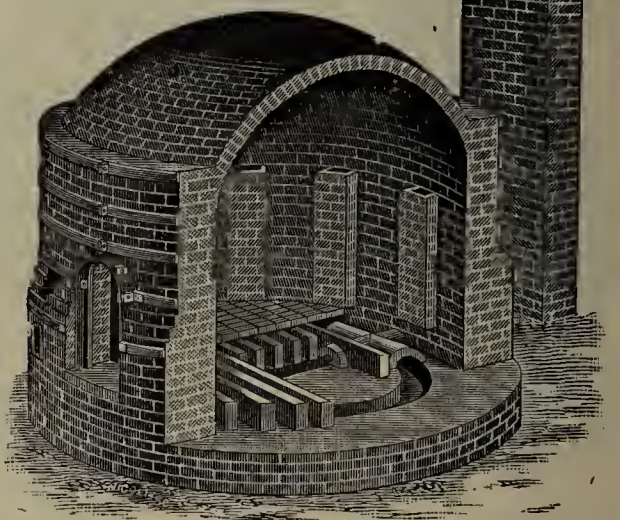
Reward For Information of Infringements.

To know more and what they say of it, address,

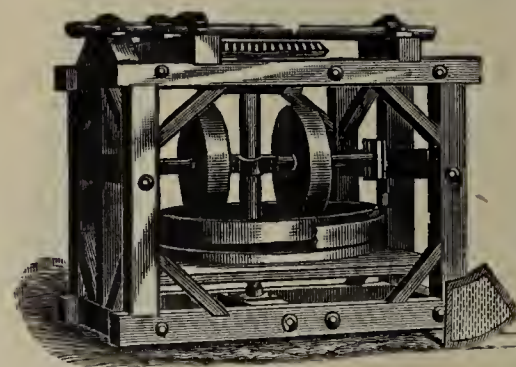
E. M. PIKE, Patentee

CAPT. G. H. ETTLA, Agt. } Marietta, Pa.

Chenoa, Ill.



## EAGLE IRON WORKS, DES MOINES, IOWA.



FOUNDERS,  
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DRY AND WET PAN CLAY CRUSHERS. CLAY ELEVATORS AND CONVEYING MACHINERY TO ELEVATE AT ANY ANGLE. ENGINES, BOILERS, POWER PLANTS AND TRANSMISSIONS.

Highest References from Users.

Correspondence solicited.

[Mention the Clay-Worker.]



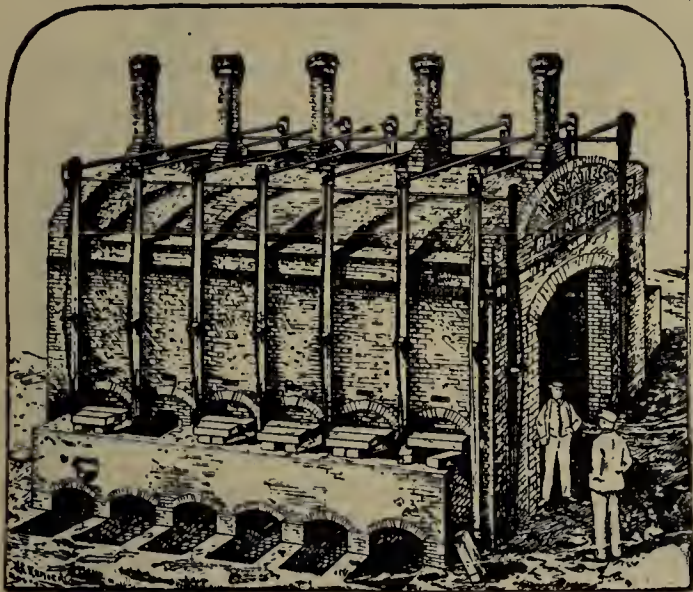
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Look out for our *New Iron Frame Dry Pan*, which we are now perfecting.

It embodies new and valuable patented features peculiar to itself, and will easily lead them all.



# The YATES IMPROVED DOWN DRAFT KILN.



For Burning All Kinds  
of Brick.

BOTH ROUND AND SQUARE KILNS.

Fully Protected by Patents.

THIS Kiln has worked its way to  
to the front by results, which is  
the highest test of merit.

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Malden, Mass.

Don't Fail to Get Our Descriptive Circular and References.

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SANDING MACHINES.

This cut represents the latest improved Champion. No belts, apron or gearing. Simple, strong, and Serviceable.

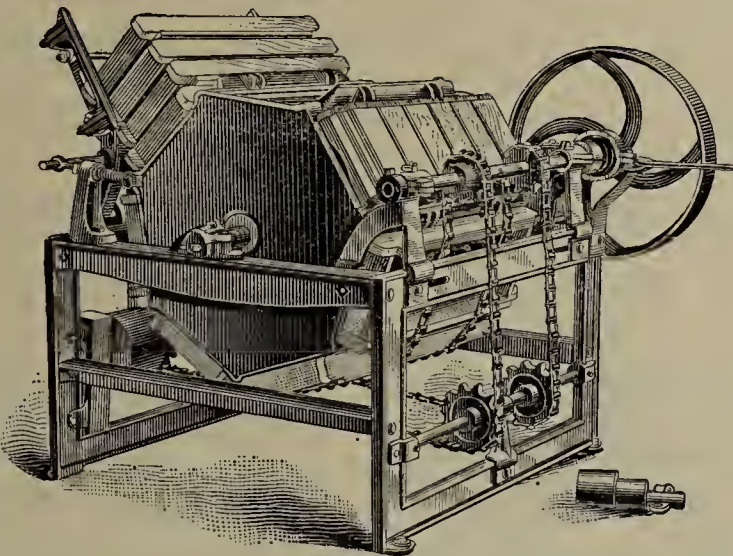
**A. H. NEWTON,**

Manager and Sole Agent,  
HAVERSTRAW, N. Y.

**NOTICE** To Brickmakers, Dealers  
and Others.....

Any person purchasing Champion machines from other than the above, render themselves liable to damages, as no other person has the right to manufacture said machines.

The suit brought against one of my purchasers by Buck has been abandoned, and suits are now being brought by me against users of Buck Machines as infringers of my patents. **A. H. NEWTON**



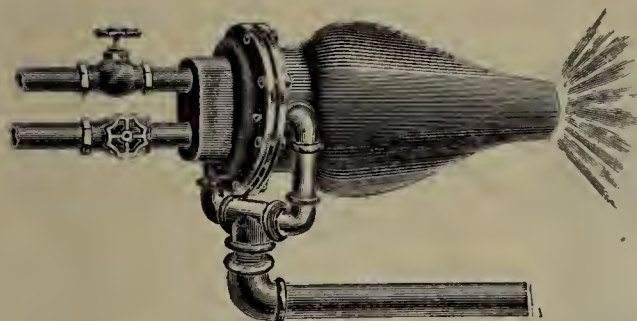
## THE THURMAN FUEL OIL BURNER CO.,

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GENERAL OFFICES: 35 and 36 Cordova Building,

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We are not Connected with  
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The only perfect Crude Oil Burner on the market. The cheapest and best. Absolutely smokeless. It is Economical. Reliable. Requires no expert to manage. Cheaper than Coal. It perfectly atomizes the oil with the air and steam.

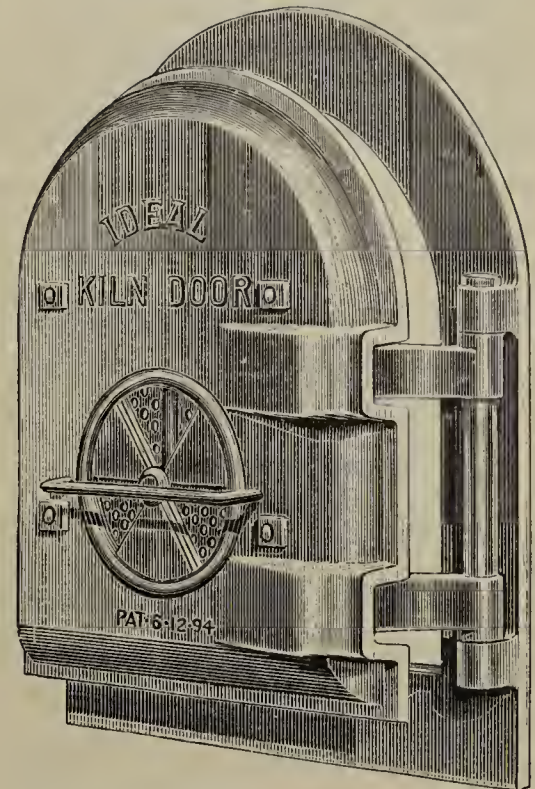
**MAKES LESS NOISE THAN ANY OTHER BURNER.**

For stationary Boilers, Brick Kilns, Locomotives and all Steam Plants. No soot. No Sparks. No Smoke. No Odor.

**TRY OUR IMPROVED BURNER IN YOUR KILNS.**

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By using the **IDEAL DOOR** all evil effects of exterior air currents are obliterated. Increased percentage of high grade brick and of uniform color.

Economy in fuel consumption. Absolute control of fire under all circumstances. Address for particulars and cost.

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**OUR New Patent Disintegrators.**

- One 24-inch Disintegrator.
- One 30-inch Disintegrator.
- One 36-inch Disintegrator.
- One 40-inch Disintegrator.
- One 48-inch Disintegrator.
- One 60-inch Disintegrator.

We also have two disintegrators of different makes.

- One Shale Breaker.
- One 6x6 upright engine.
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- One pair 14x14-inch Marine Engines.
- One pair 16x20-inch Marine Engines.
- One 10x10 horizontal self-contained engine.
- One 10x16 slide-valve engine.
- One 12x24 slide-valve engine.
- One 16x30 slide-valve engine.
- One 18x30 riding cut-off engine.

Two pair mining engines.

One Duplex Steam Pump, 6-inch suction, 5-inch discharge.

One Duplex Steam Pump, 5-inch suction, 4-inch discharge.

One double-acting steam pump, 4-inch suction, 3 inch discharge.

One double-acting steam pump, 3-inch suction, 2-inch discharge.

Also big lot of smaller pumps.

One Gates rock crusher.

Two builder's hoisting engines, with boilers.

One portable engine and boiler on wheels.

Eight stationary boilers, different sizes.

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One Steam elevator.

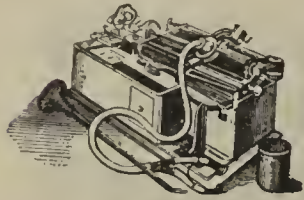
A big lot of large pipe, valves, etc.; also, shafting, pulleys, hangers, belting and supplies of every description.

For particulars, prices, etc., apply to

**SCHOELLHORN-ALBRECHT MACHINE CO.,**

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Saves time and money in your office. Affords an endless variety of entertainment in your drawing room. Let us have our representative call on you, or write for descriptive Catalogue.

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Potter's Chemist,

\*—60 Butler Street, TRENTON, N. J.

**G**IVES special attention to the analyzing of clays, flint spar and all materials necessary to the manufacture of pottery, sanitary ware and brick. Clay beds examined and if necessary experiments made on the spot, showing the adaptation of the clay. After twenty-five years of experience as a manufacturer and potter's chemist, Wm. Clayton has now given up the whole of his time to analytical chemistry as it is applied to clays, etc., their compounding and manipulation and practical use. Mr. Clayton gives opinions and practical advice to those intending to build and operate potteries and can furnish bodies, glazes, etc., etc. Particulars on application.

## THE MANUFACTURE OF GLAZED BRICKS AND GLAZED SAN- ITARY WARE.

A complete and trustworthy guide, giving full particulars concerning production together with the latest English recipes, which have cost many thousands of pounds to discover.

Published by the

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Price \$2.00, post free.

Remittances to be made payable to H. Greville Montgomery, and crossed London & Westminster Bank, Templer Bar, London.

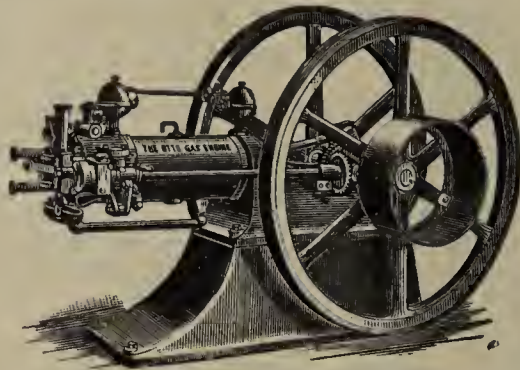
Almost the whole of the first edition of this valuable book was subscribed to before publication.

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OTTO GAS ENGINE WORKS, 33d and Walnut St., PHILADELPHIA, PA.

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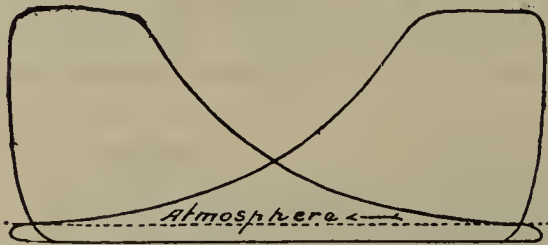
1 to 50 H. P.

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Send for Catalogue, Prices, etc., describing work to be done.

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EFFICIENCY AND SAFETY.



DEAR SIR:

The above shows 5 lbs of vacuum, and more may be obtained in winter. Mr. Raabe also reports that it cost 16 h. p. to drive the fans, but the 5 lbs of vacuum, due to their use, aided the 16 in. di. "Corliss" engine to the extent of 16.65 h. p., and the 5½ lbs 18.33 h. p.

Rahway, N. J.

FORDS, N. J., April 9th, 1894.

MR. S. G. PHILLIPS.

DEAR SIR—I refer you to the indicator diagrams, showing a vacuum of 5—5.5 pds. You can easily see that the fans will create a vacuum.

The vacuum pump was not employed—neither did any cooling water assist to draw the exhaust steam through the pipes.

You may refer to me for full explanation.

I am yours very truly,

H. RAABE, M. E.

## The Effective Utilization Of Exhaust Steam A Specialty.

"And Met the Requirements in Every Case."

PHILADELPHIA, December 14, 1892.

MR. S. G. PHILLIPS, Woodbridge, N. J.

DEAR SIR:—Replying to your favor of recent date, it gives us pleasure to state that all of the Dryers erected by us under your patents for customers have given satisfaction and met the requirements in every case. The bricks have been dried uniformly without cracks. Yours respectfully,

CHAMBERS BROTHERS Co., J. H. Chambers, Gen'l Mgr.

"I think you have the Dryer the brick people are looking for."—Jno. C. Gibson, superintendent of the Fulton Brick Works, Richmond, Va., thus writes after having their Steam Pipe Dryer reinforced to dry in one-fourth of the time formerly required, by applying the fans inside; and the manager writes, also recently: "Not over 12 hours to make them very dry—the best by great odds of any in the market—the writer has looked the matter of Dryers up very fully, and been to see about all of any importance."

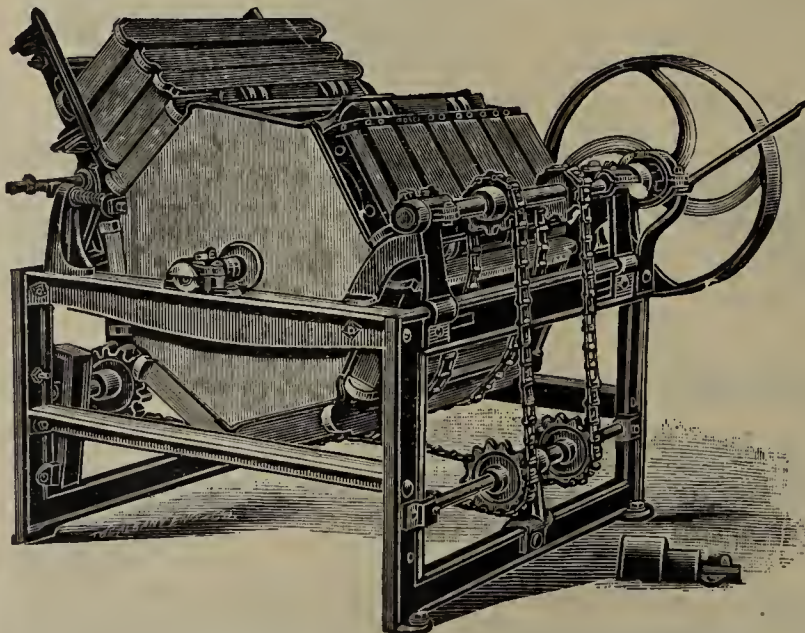
S. G. PHILLIPS, Agent and Patentee, 161 Grand St., Rahway, N. J.

# J. A. BUCK'S

NEW CHAMPION

BRICK MOULD

## SANDING MACHINE.



J. A. Buck, the inventor of the Champion Brick Mould Sanding Machines, is now the sole owner of said machine, having purchased the interest of Mrs. H. E. Tubbs, who purchased at Receiver's Sale all the right, title and interest of Albert H. Newton, Andrew C. Newton and Sylvester Newton to letters patent for said machine.

The "New Champion" is a great improvement over the old "Champion," doing away with belts and gearing, and being much more simple and durable.

There has been a large number of the Improved Champion Sanding Machines sold this season and they are giving the very best satisfaction. Prices so reduced that no yard can afford to be without one.

Address all communications

Mention the Clay-Worker.]

to J. A. BUCK, No. 76 Oneida St., COHOES, N. Y.

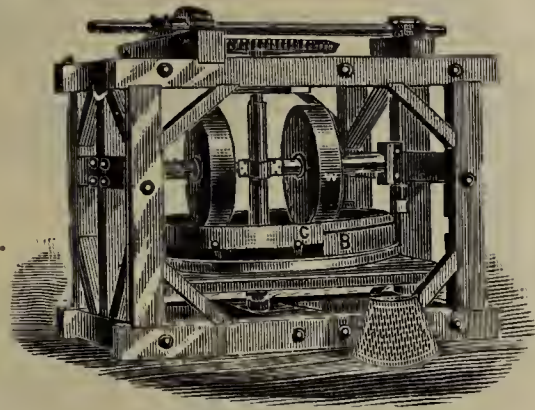
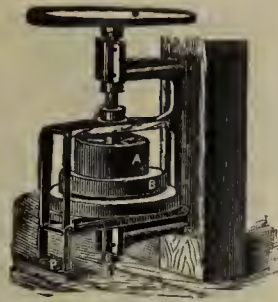
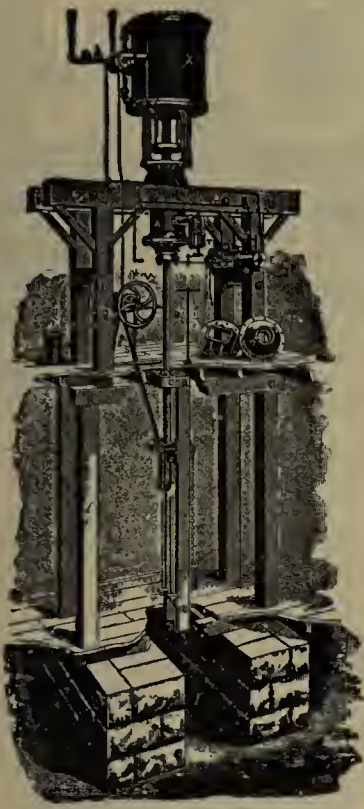


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Write for Catalogue.

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4000 TO 5500

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BY HAND-POWER.

Pumps, Hand-power Pumps.

(LOUD'S PATENT.)

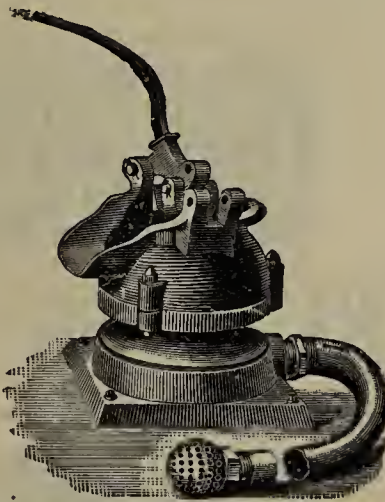
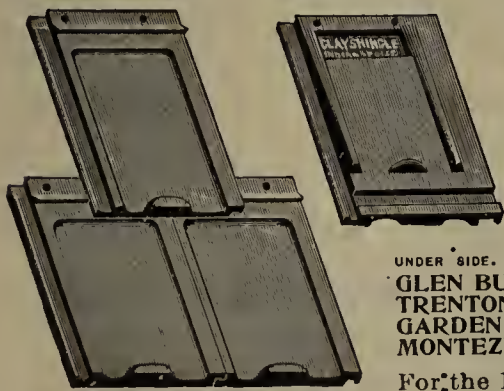
These Pumps are simple, durable and low-priced.

A large capacity and easy working pump for **Brick Yards, Water Works, Sewer Contractors, Foundation Builders, Miners, Quarries** or wherever it is desired to raise a *large quantity* of water by *Hand-power*. The pump has large valves (*accessible by hand*) and will pump water containing *sand, gravel, mud, sewage matter, etc.*, without *choking* or any *perceptible wear*.

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Besides making Vitrified Stone Sewer Pipe we manufacture and keep in stock a full line of

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Trains connect at Terre Haute for E. and T. H. points. Evansville sleeper on night train. Sleeping and parlor cars are run on through trains Dining cars on trains 20 and 21.

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ESTABLISHED 1845.

Clay in stock in any quantity, in barrels and bulk by the carload.

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The Baltimore and Ohio Southwestern Railway has arranged a series of Home-Seekers' excursions to points in Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi and Louisiana at one fare for the round trip.

The dates of these excursions are as follows: November 6th and December 4th.

Tickets will be good for twenty days, with stop-over privileges in State to which ticket is sold.

A splendid opportunity to visit the Valley of Virginia and other points South.

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Solid Train Between  
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Direct connections to and from all points in the United States and Canada. Trains arrive and depart from the Indianapolis Union Station as follows:

DEPART.	
No. 20 Passenger.....	7:05 a. m.
*No. 22 Passenger.....	1:20 p. m.
No. 24 Passenger.....	7:00 p. m.

ARRIVE.	
*No. 21 Passenger.....	10:30 a. m.
No. 23 Passenger.....	2:50 p. m.
No. 25 Passenger.....	6:20 p. m.

Trains not marked run daily except Sunday \*daily, †daily except Saturday.

No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. & A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west.

For time tables or any other general information call on any agent of Lake Erie & Western or Ft. W.

C. & L. railroads, or address C. F. DALY,  
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Traffic Manager, Indianapolis, Ind.

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PACIFIC COAST:  
SAN FRANCISCO LOS ANGELES PORTLAND

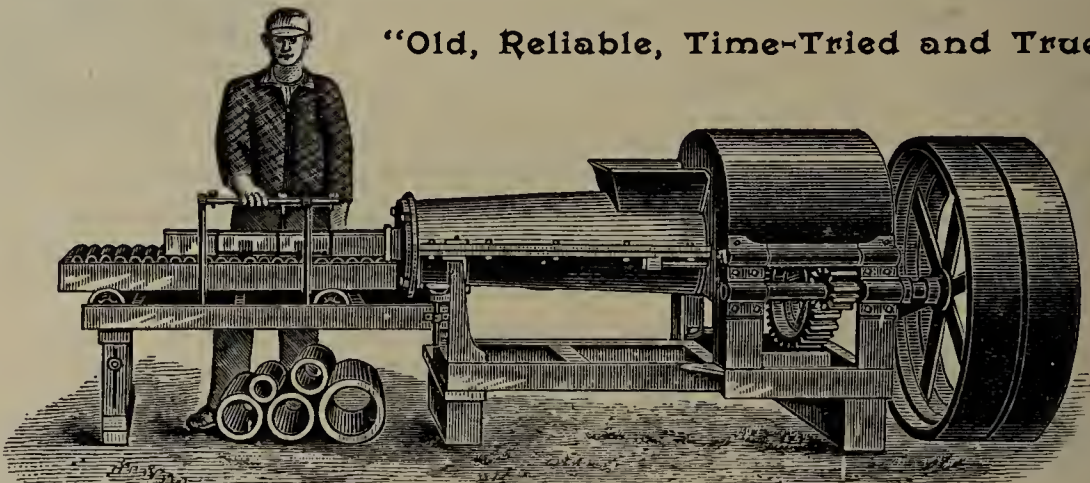
Victor Bicycles have more improvements and give better satisfaction than any other make.

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"Old, Reliable, Time-Tried and True."



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This machine works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. Patented June 22nd, 1880; and February 12, 1884. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

**We have had Twenty-seven Years' Experience in the Manufacture of Brick and Tile Machines.**

We have made an improvement on our No. 1 Machine by which we can make tile from 3 inches up to 12 inches and on our No. 2 Machine we can make tile from 2½ up to 10 inches.

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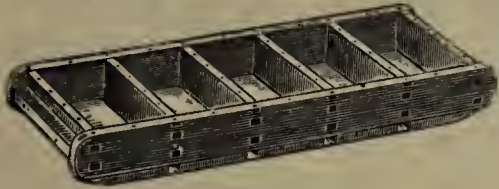
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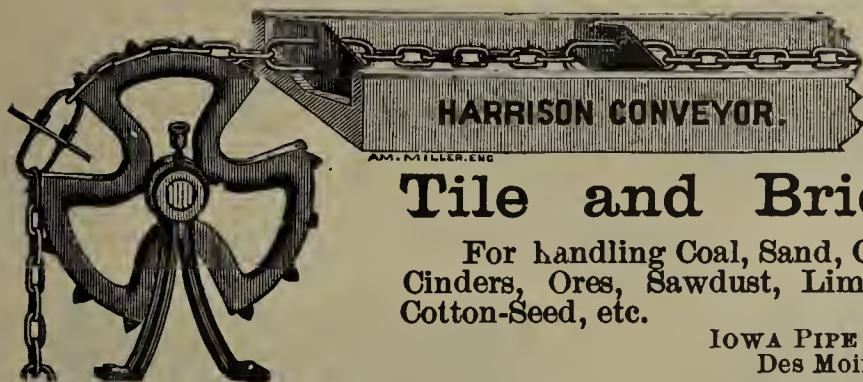
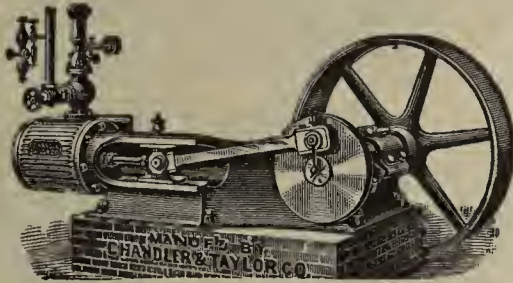
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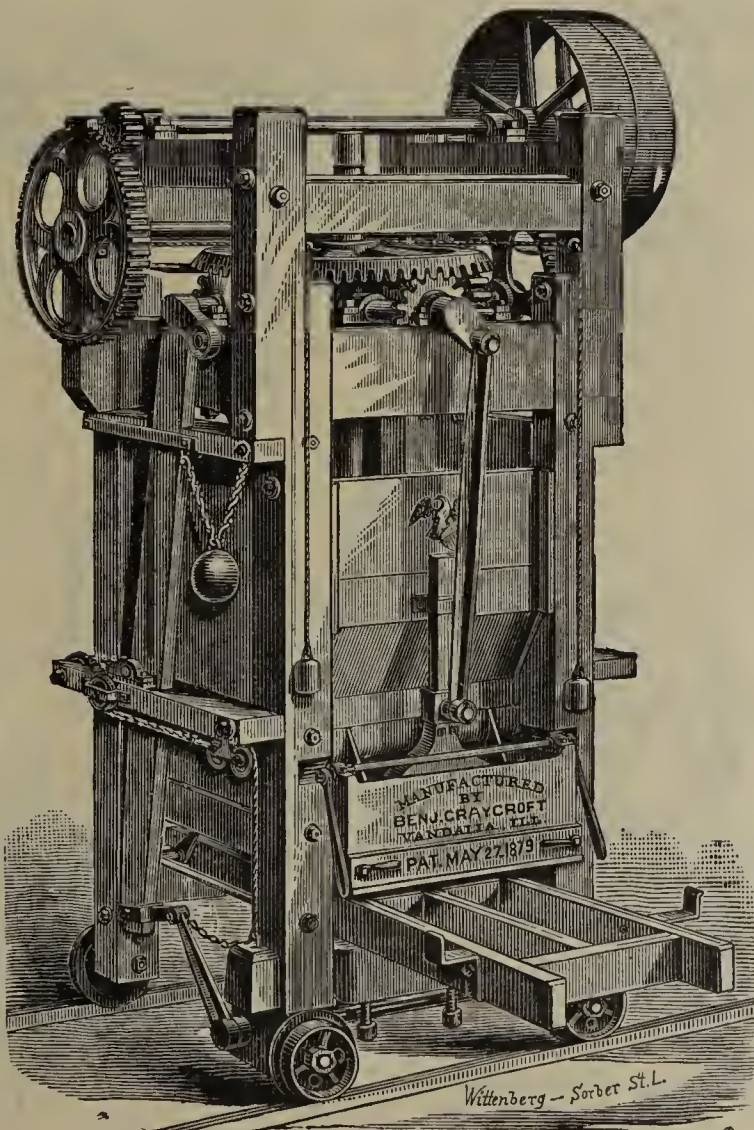
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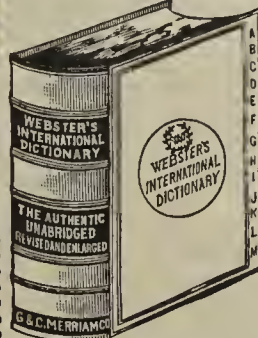
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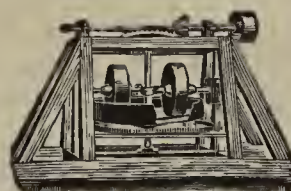
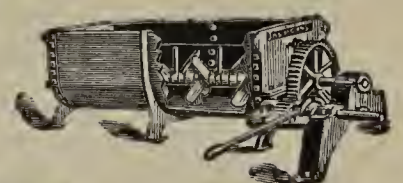
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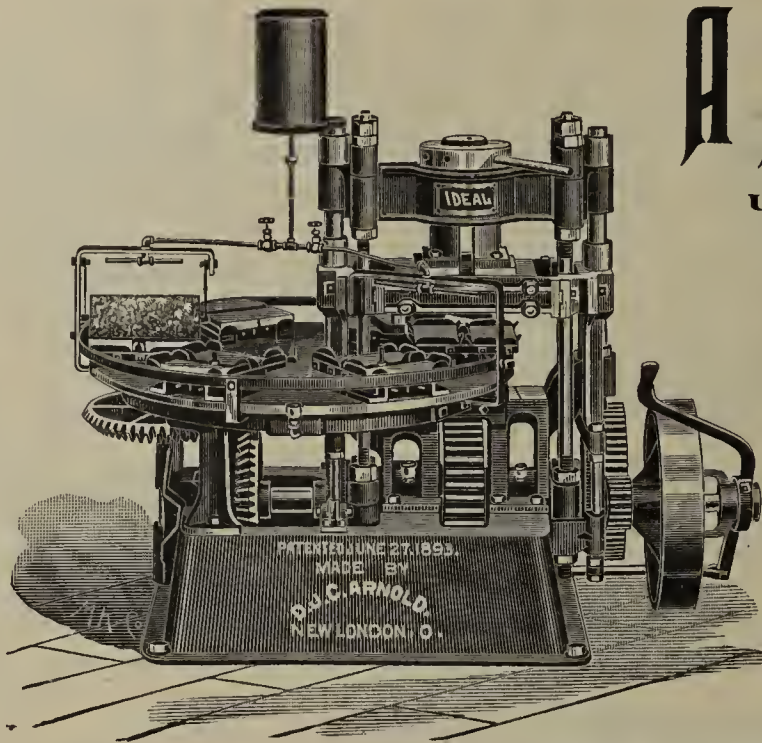
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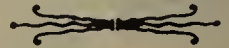
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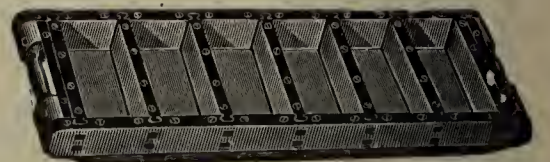
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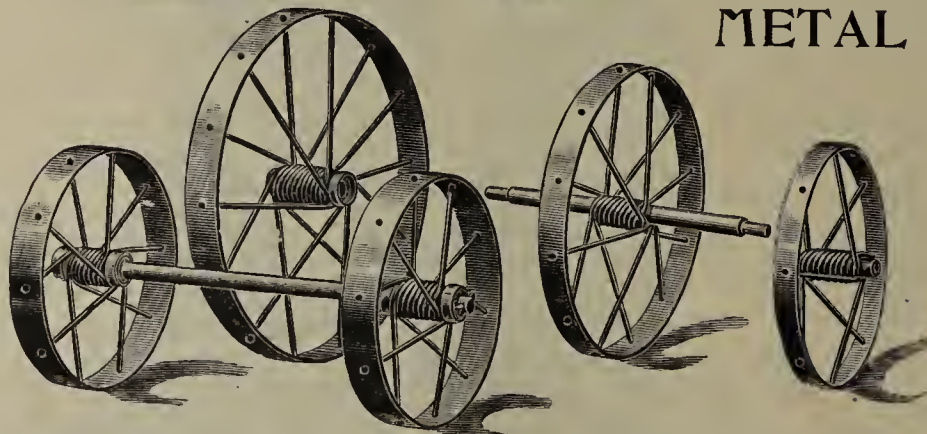


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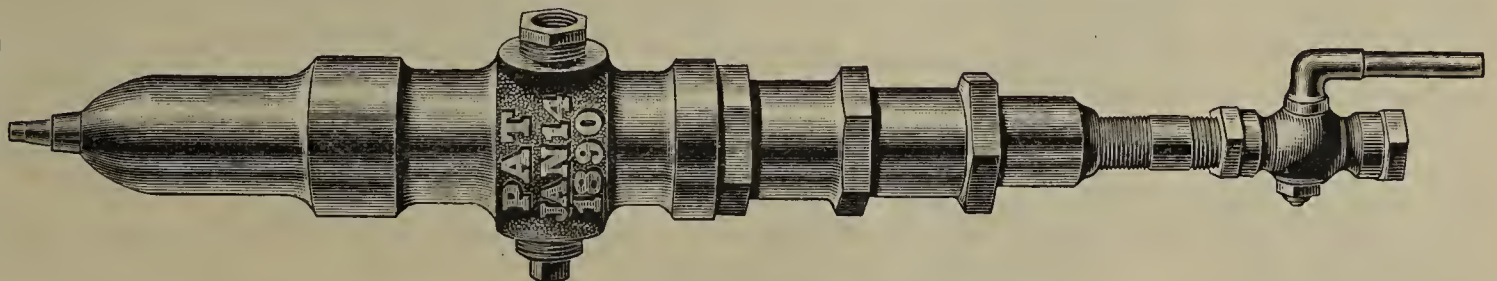
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Office Waters Pierce Oil Company.

HYDRAULIC PRESS BRICK CO., CITY. St. Louis, July 21st, 1894.

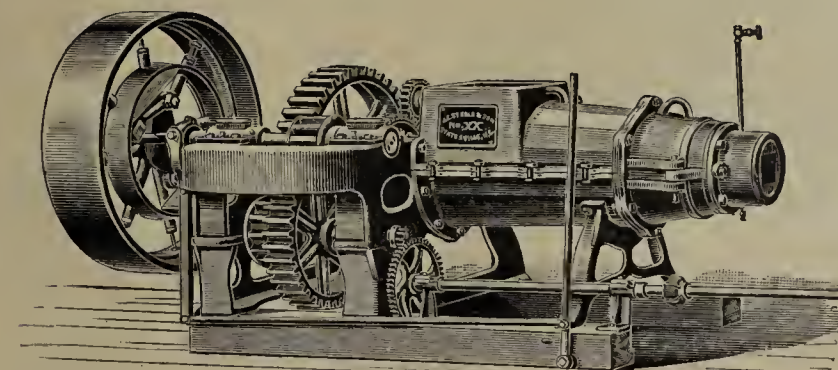
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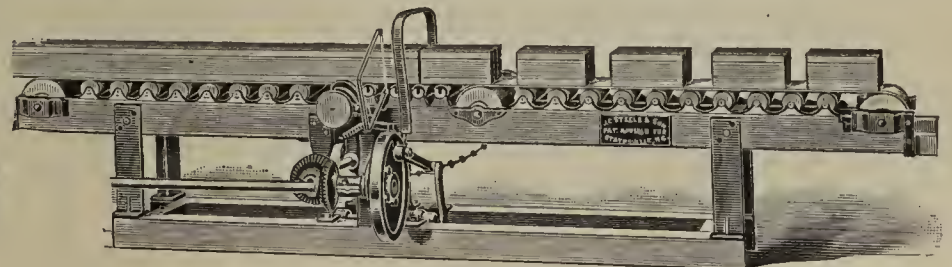
The New South XX.

[Mention, the, CLAY-WORKER.]

## THE NEW SOUTH

and Frogs, and our Improved

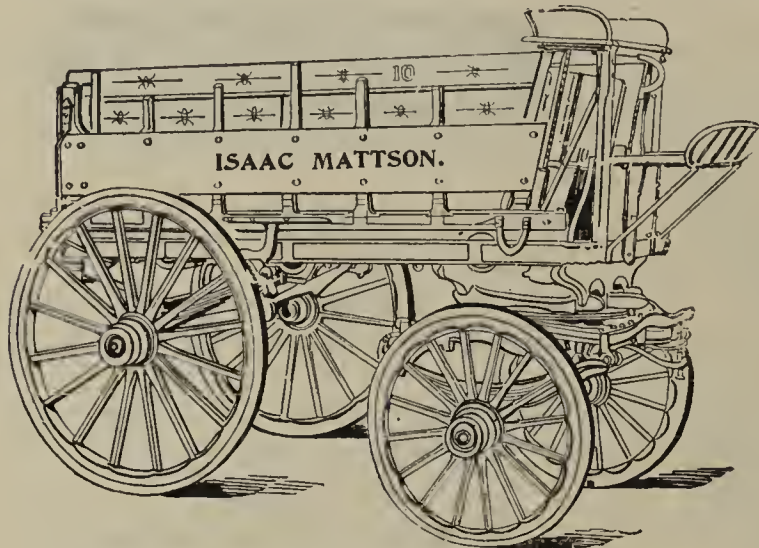
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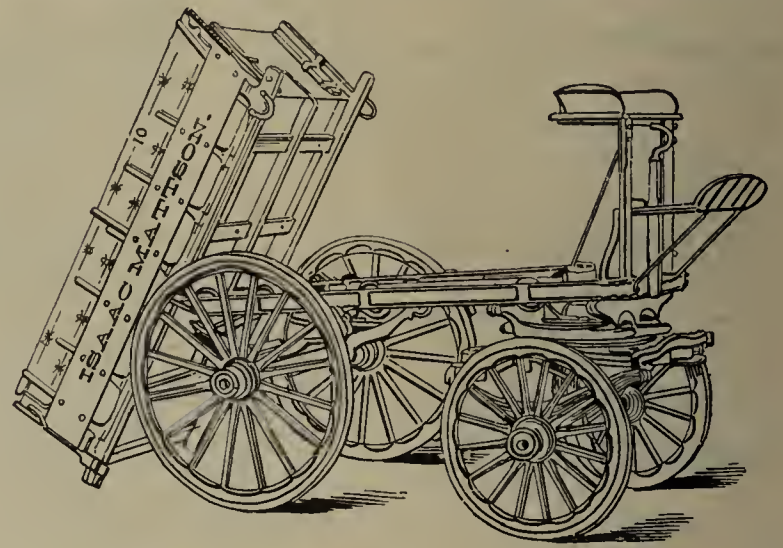
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FOR  
BRICK,  
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WEIGHT about 2,500 pounds, light running, strong and durable, consequently the best wagon made for brick. Made to carry from 1,000 to 2,000 brick and can be handled as easy as a two-wheel dump cart. The body runs back on rollers. Also manufacture a line of carts, wheelbarrows and brick yard supplies. Send for price list, etc.

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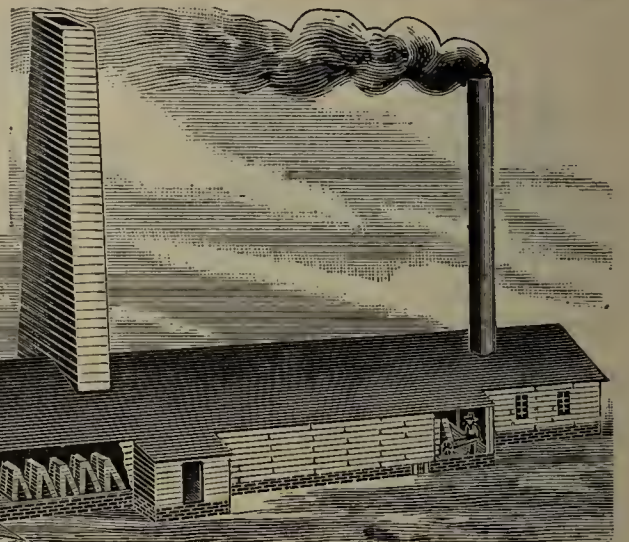
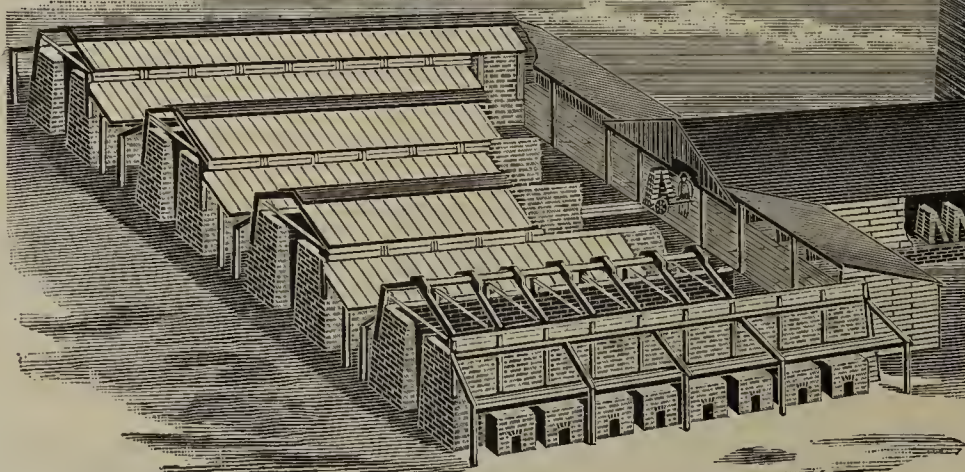
## The Mock Portable Rack and Pallet System FOR HANDLING BRICKS.

The Most Expeditious, the Safest and Easiest Method of Handling Brick from Machine to Kiln.

IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.

What Users say of the MOCK SYSTEM.

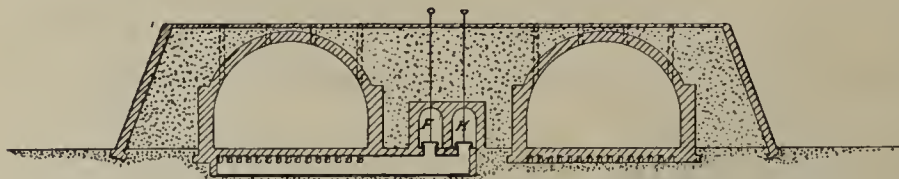
Mr. J. C. Adams, Indianapolis, Ex-Pres. of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for four seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."



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Marks a Great Advance in the Art of Continuous Burning

Accuracy of results reduced to a certainty.  
Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.  
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Read what some of the users say about Youngren's Continuous Kiln and be convinced.

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Yours truly

SAN JOSE, Cal., Aug. 25, 1893.

PETERSEN BRICK CO.,  
Per H. M. STAMMER, Superintendent.

For particulars address

P. L. YOUNGREN, Oakland, Cal.

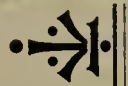


**The BOSTON BRICK ASHLAR.**

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

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TOOLED FACE.



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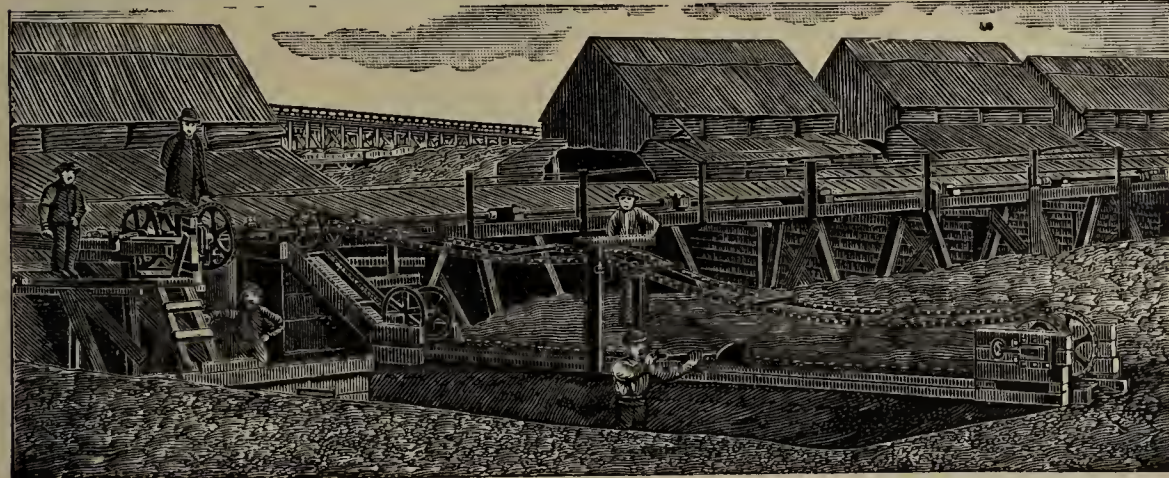
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} LICENCEES.



Mey Detachable Chain Belt, Patented Feb. 7, 1888.

**T**HIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



Mey Patent Clay Elevator.

**F. H. C. MEY** CHAIN BELTING  
ENGINEERING WORKS,

APPROVED APPLIANCES FOR . . .

Elevating, Conveying &amp; Transmission of Power

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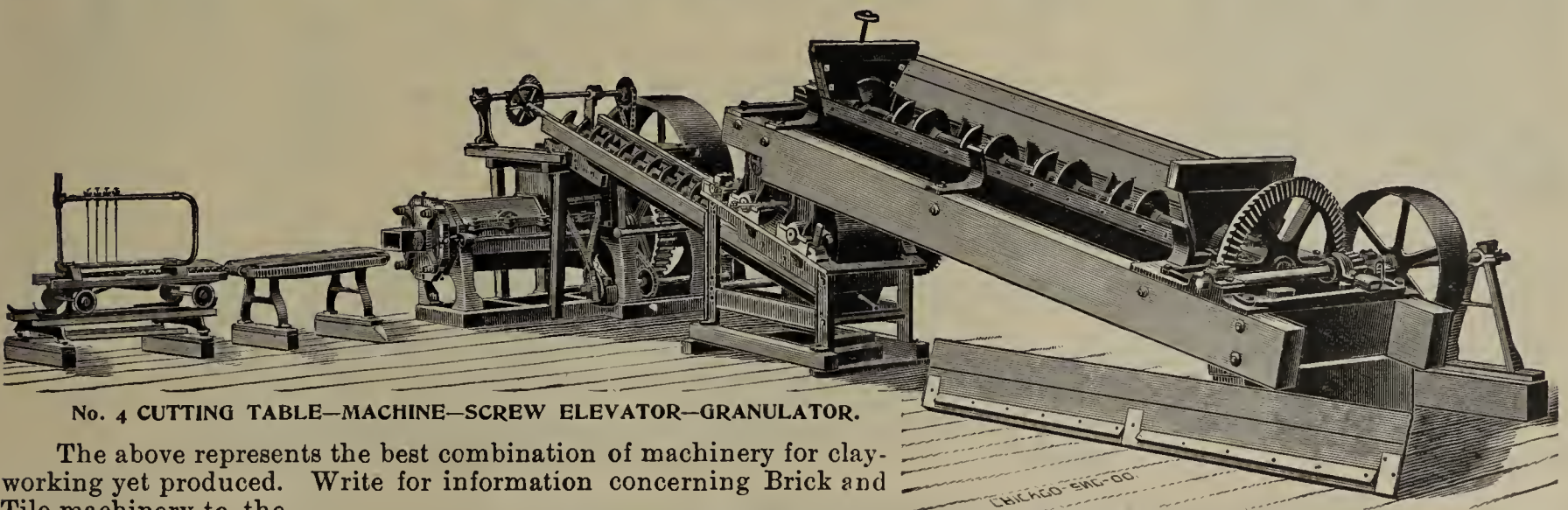
at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

**Make Many More  
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of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED  
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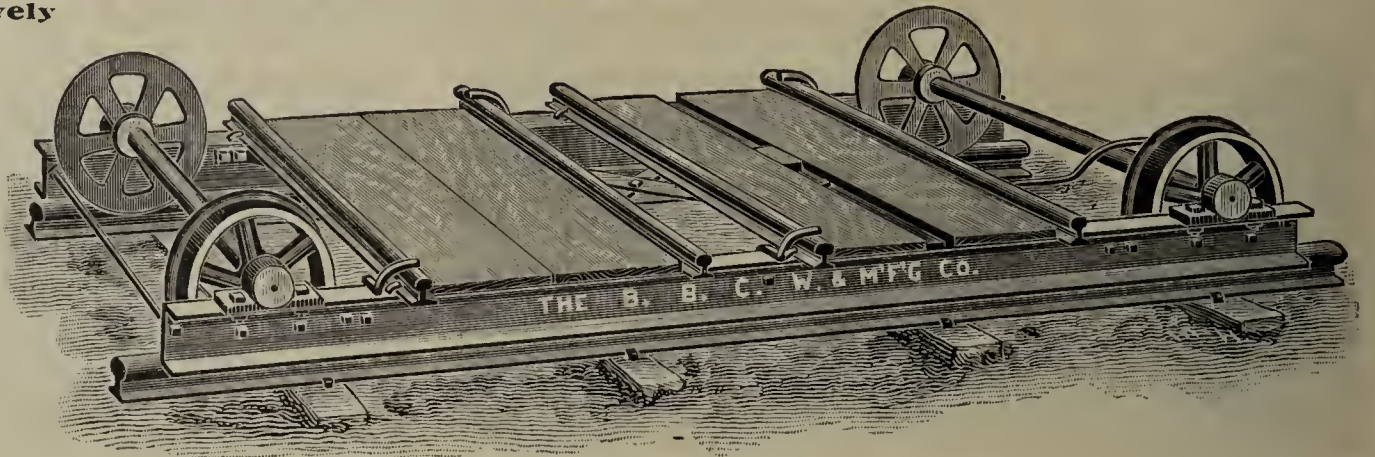
The above represents the best combination of machinery for clay-working yet produced. Write for information concerning Brick and Tile machinery to the

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Please mention The Clay-Worker.

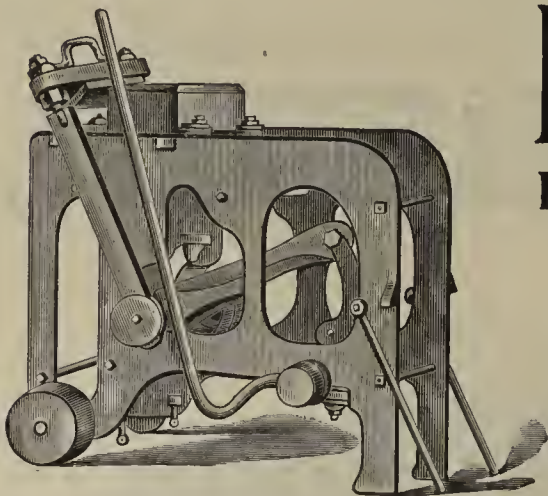
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...OF THE **L**ATEST  
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COMPLETE OUTFITS A SPECIALTY.

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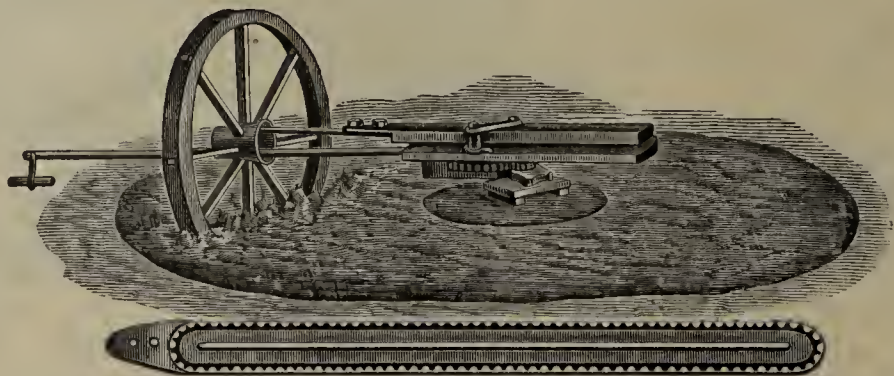
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## PHILADELPHIA BRICK MACHINE WORKS

Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



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These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.



STEAM ENGINES,  
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STEAM PUMPS,  
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## DO YOU MAKE DRY PRESS BRICK?

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FORMS AND PLUNGER  
FEET, FOR DRY  
PRESSED BRICK.

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DESIGNERS AND MANUFACTURERS OF

Special Machinery and Tools for all Purposes.

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[Mention the Clay-Worker.]

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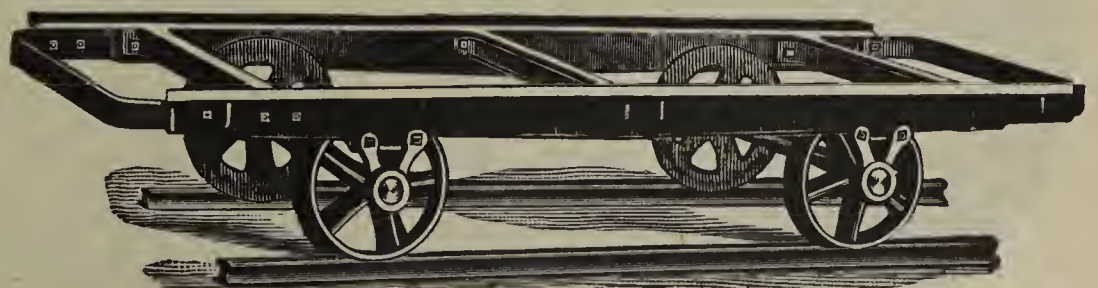
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Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

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# CLAY WORKING MACHINERY

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MACHINERY OF ALL KINDS.

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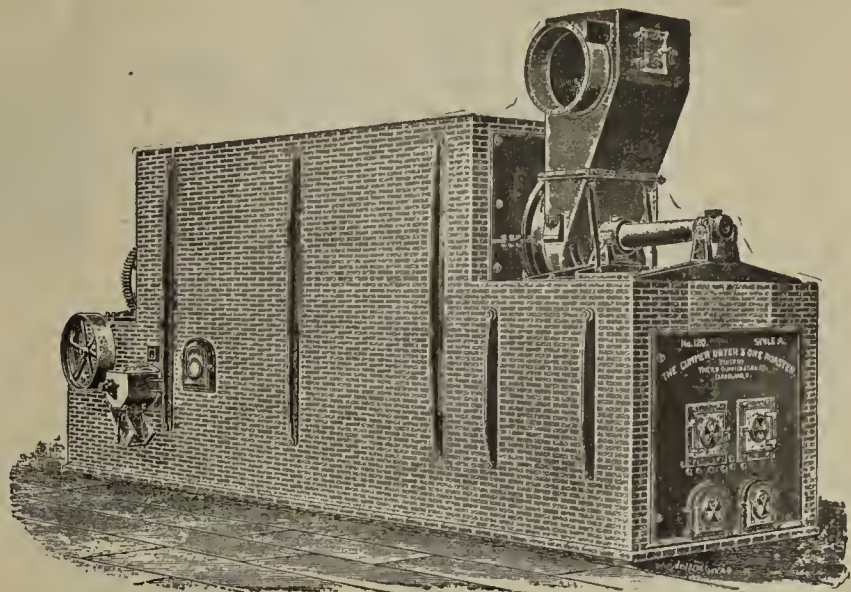
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CATALOGUE  
A



LABOR DISPENSED WITH; VERY LITTLE FUEL USED; NO BREAK DOWNS; SUPERIOR PRODUCT OBTAINED: CLAY DRIED SUMMER AND WINTER, RAIN OR SHINE, ARE A FEW OF THE SPECIAL ADVANTAGES OBTAINED BY USING THE

# Cummer Clay Dryer



## SIX SIZES MADE.

Prepares from 3 to 20 tons of clay per hour for dry pan or pulverizer. The clay is handled mechanically (without men) from bank to press or other machines.

### NEW METHODS.

#### DRIES

Phosphate, Sand, Earths, Paint Stocks, Peat, Coal, Salt, Marl and Clay for Cement making, Chalk, Cereals of all kinds, Tankage, Night Soils, Animal Manure, etc., etc.

#### CALCINING AND ROASTING MACHINERY

for Gypsum, Ores of all kinds, Phosphate, Paint Stocks, etc., etc.

## THE F. D. CUMMER & SON CO.,

613-616 Arcade,

CLEVELAND, OHIO, U. S. A.

SEND FOR  
OUR NEW CATALOGUE.

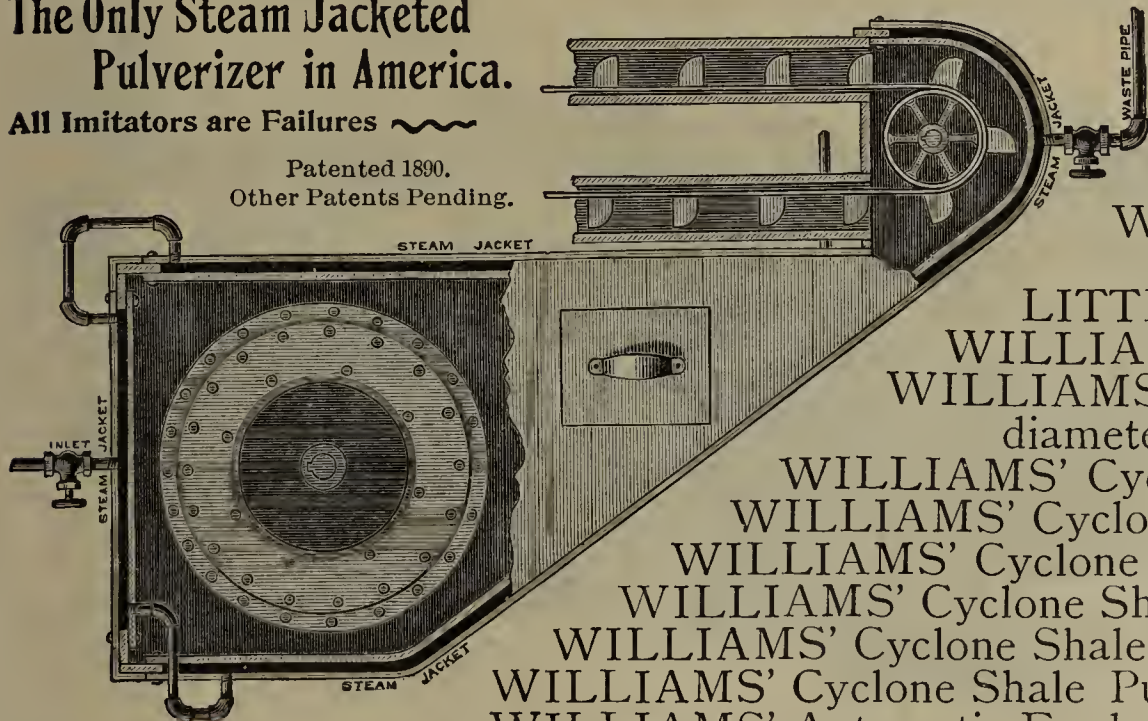
CHARLES ERITH & CO., No. 70 Grace Church St., London, E. C.

# WILLIAMS' CLAYWORKING MACHINERY.

The Only Steam Jacketed  
Pulverizer in America.

All Imitators are Failures

Patented 1890.  
Other Patents Pending.



WILLIAMS' Clay Elevators.  
WILLIAMS' Triple Roll Clay  
Crushers.  
WILLIAMS' Brick Trucks,  
Three sizes.  
WILLIAMS' Revolving Clay  
Screen.

LITTLE'S Steam Jacket for Pulverizers  
WILLIAMS' Clutch Pulleys and Couplings.  
WILLIAMS' Cyclone Clay Pulverizer 30 in.  
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.  
WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.  
WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.  
WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.  
WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.  
WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.  
WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.  
WILLIAMS' & LITTLE'S Patent Steam Clay Screen.  
WILLIAMS' Pony Pulverizer for Testing Clay and Shale.  
WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Clay Cultivators.  
WILLIAMS' Clay Bunchers.  
WILLIAMS' Brick Barrows.  
WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO., 2705 and 2707 N. Broadway. ST. LOUIS, MO.**



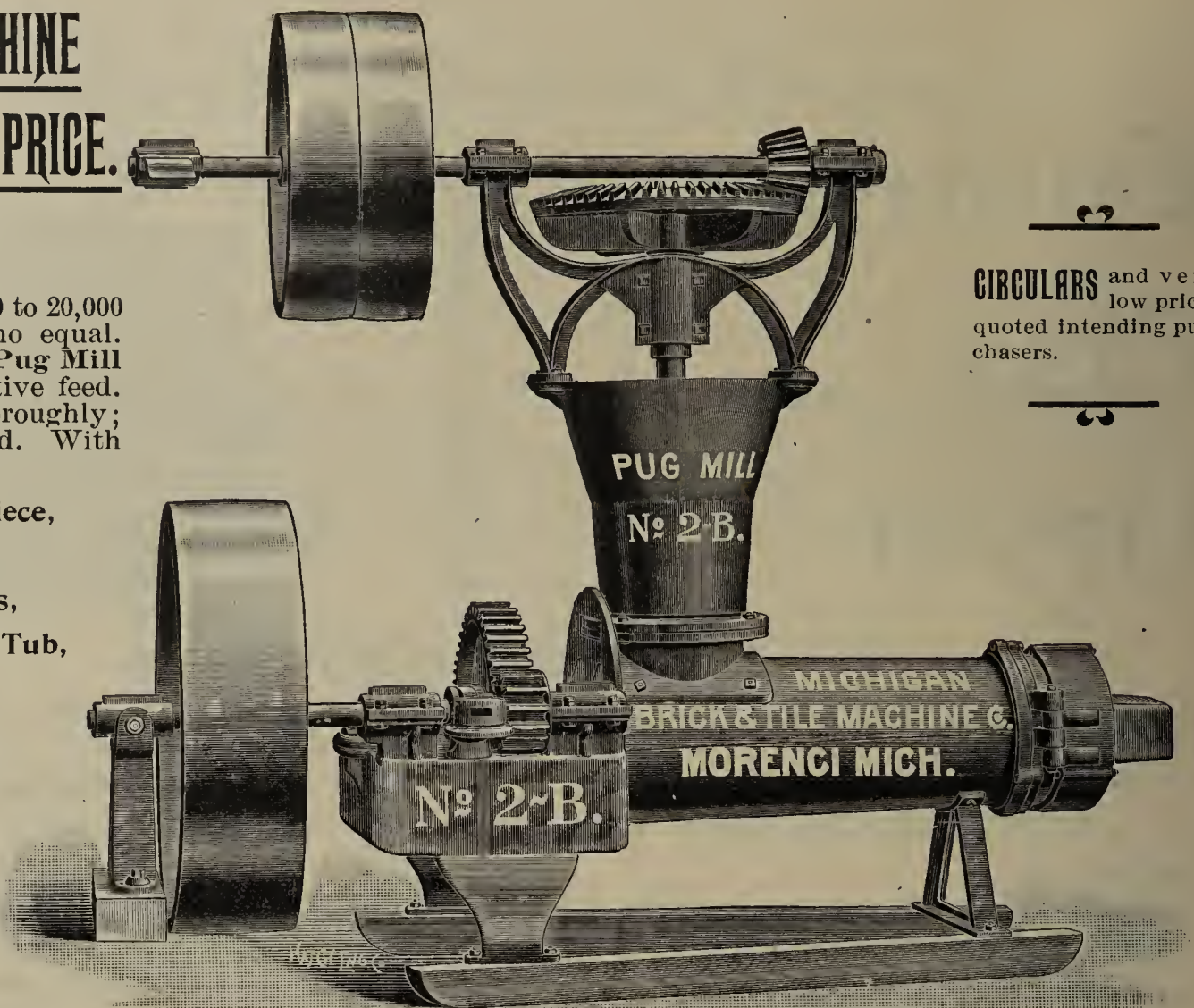
## A SMALL SIZED MACHINE AT A VERY LOW PRICE.

FOR a daily output of 12,000 to 20,000 first class brick it has no equal. For tile it is superior. With Pug Mill as shown in cut it has a positive feed. Mixes and pugs the clay thoroughly; making the output unexcelled. With

Safety Hinged Nose Piece,  
Steel Shafts,  
Extra Long Bearings,  
Solid Main Frame and Tub,

And many other important improvements; it is a very desirable machine to have. Address the Manufacturers,

MICHIGAN BRICK AND  
TILE MACHINE CO.,  
Morenci, Mich.



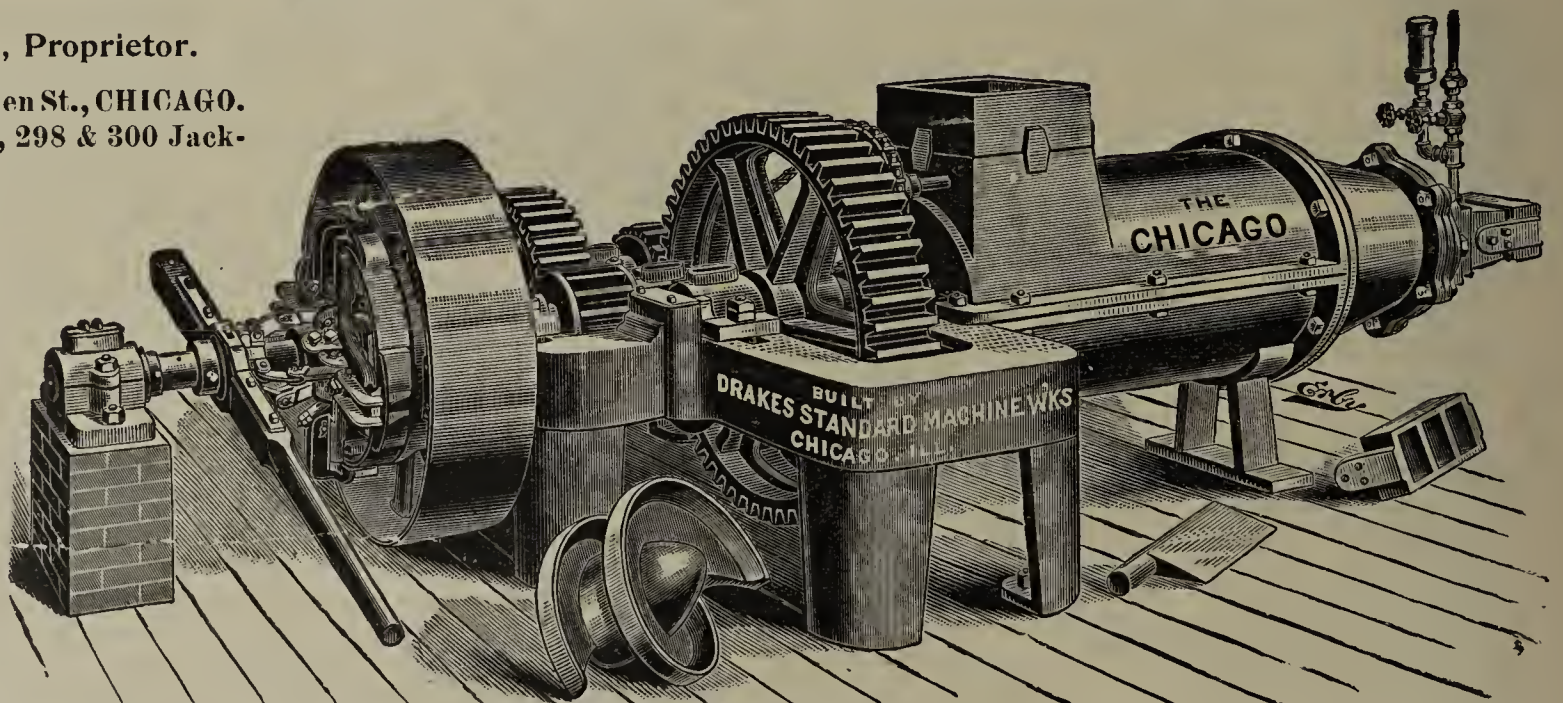
CIRCULARS and very low prices quoted intending purchasers.

# DRAKE'S STANDARD MACHINE WORKS,

MANUFACTURERS OF ALL KINDS OF BRICK MACHINERY.

C. T. DRAKE, Proprietor.

Factory, 7 & 9 Garden St., CHICAGO.  
Office & Salesroom, 298 & 300 Jackson Boulevard.



This cut represents our new Improved Brick and Tile Machine "CHICAGO No. 2." Capacity from 30,000 to 50,000 brick per day. Surpassed by none. References: Turner Brick Co., Turner, Ill.; John Mooney, Highland Park, Ill.; A. H. Maynard & Son, Waukegon, Ill.; Myers & Toll, Chicago, and others.

We also manufacture a New Improved Brick and Tile Machine (CHICAGO No. 3). Capacity from 10,000 to 15,000 bricks per day.

We also manufacture PUG MILLS, ELEVATORS, CLAY CRUSHERS, HAND REPRESSES, ETC., ETC.

Our "GRANULATORS" are the leaders in Chicago. So says Alsip Brick Co., who are running 11 Granulators; also Hayt & Alsip May, Purington & Bonner Brick Co.; Purington-Kimbell Brick Co.; Purington Brick Co., and many others.

**PRICES REASONABLE.**

**CORRESPONDENCE SOLICITED**



# ALSIP'S



## LATEST IMPROVED DOWN AND UP DRAFT KILN

It Has Been Thoroughly Tested, and Every Kiln is Giving Perfect Satisfaction.



Why take any chances when you can buy a kiln that will burn the ware uniform from top to bottom, from side to side, and from end to end? This is just what the Alsip Kiln does.

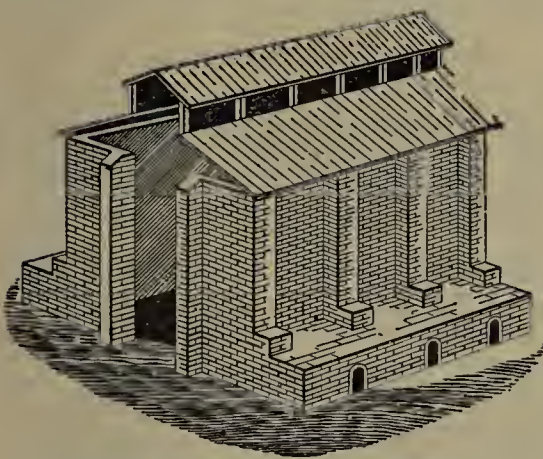
It will save **time, labor and money**, if you will thoroughly investigate our Latest Improved Kiln before deciding on any kiln.

For descriptive circular and further information, address

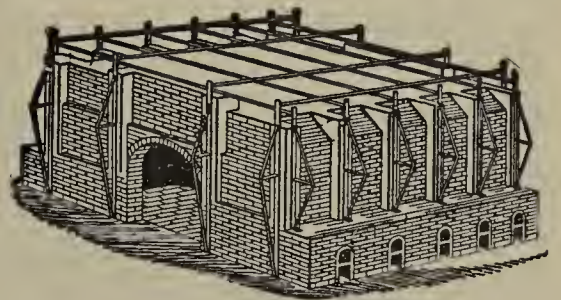
### Wm. & S. H. Alsip,

MENARD, ILL.

[Mention the CLAY-WORKER.]



### LOUIS H. REPELL'S IMPROVED - KILNS For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be THE BEST KILN IN THE MARKET.

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns.

I do not hesitate in offering it as the

**MOST DURABLE, COMPLETE AND EASILY MANAGED**

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

.. .. VITRIFIED PAVING BRICK. .. ..

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

### TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, Mo., July 17, 1892. }

H. REPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }  
ST. LOUIS, Mo., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,

COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

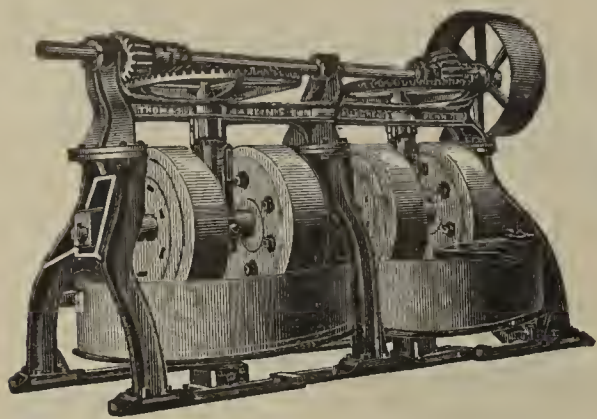
### LOUIS H. REPELL,

1,913 Indiana Ave.



KANSAS CITY, MO.





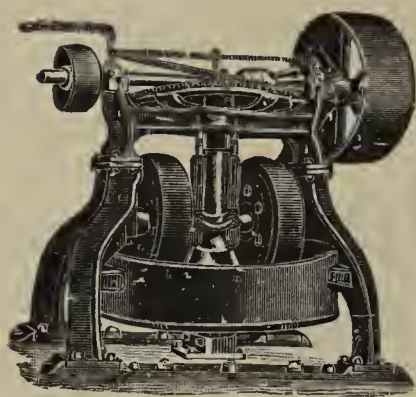
OUR SPECIALTY.

# GRINDING AND MIXING PANS

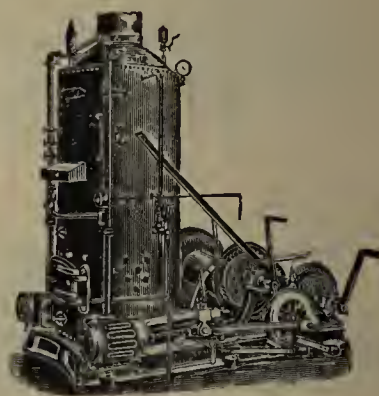
Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.



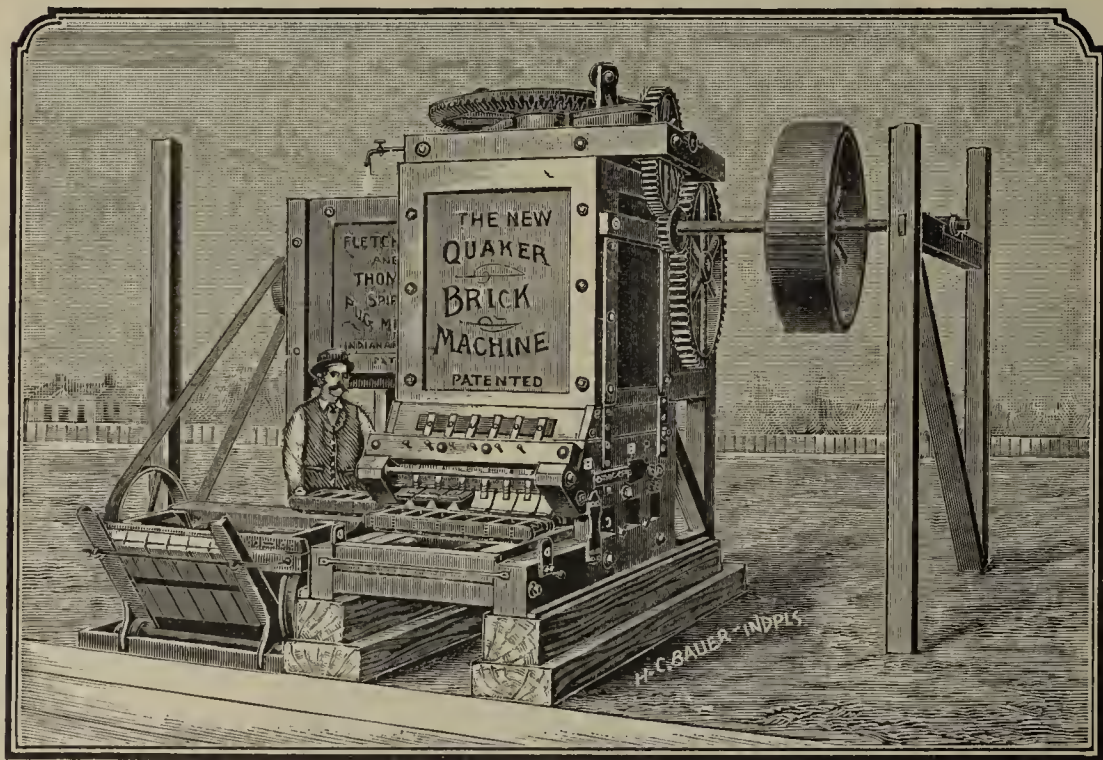
**Thomas Carlin's Sons,**  
 ALLEGHENY, PA.



One 1½ yard Marion Steam Shovel.  
 One 1½ yard Bucyrus " "  
 One ¾ yd. Little Giant " "

IN STOCK:

Twenty-one Dump Cars.  
 Seven Standard and Narrow Gauge  
 Locomotives.



EXTRA HEAVY, COMBINED OUTFIT CAPACITY 40,000 TO 50,000 PER DAY.

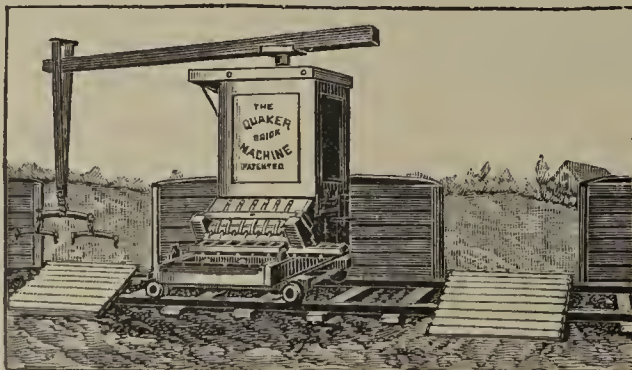
THE NEW MODEL

## QUAKER

HORSE POWER.

The best machine for  
 the man of moderate  
 means ever used.

Capacity 15,000 to  
 20,000 per day.



LATEST IMPROVED

## Brick Machinery and... Brickmakers' Supplies.

SPECIALTIES:

The NEW QUAKER and MONARCH

Tempered Mud Machines and

The NEW DAYTONIAN

Stiff Mud Brick and Tile Machines.

Paving Brick, Fire Brick, Building Brick,  
 Repress Machines, Disintegrators, Pug Mills, Mold  
 Sanding Machines, Molds, Barrows, Trucks, Engines,  
 Boilers, Shafting, Pulleys, Belting, etc., Dump Brick  
 Wagons, Clay Carts, Kiln Doors, Grate Bars, Steam  
 Pumps.

WE CONTRACT TO ERECT AND EQUIP

PLANTS COMPLETE IN EVERY DETAIL.

Send for Illustrated Catalogue and Special prices before placing  
 your order, as we can save you money.

**S. K. FLETCHER,** General  
 Agent,

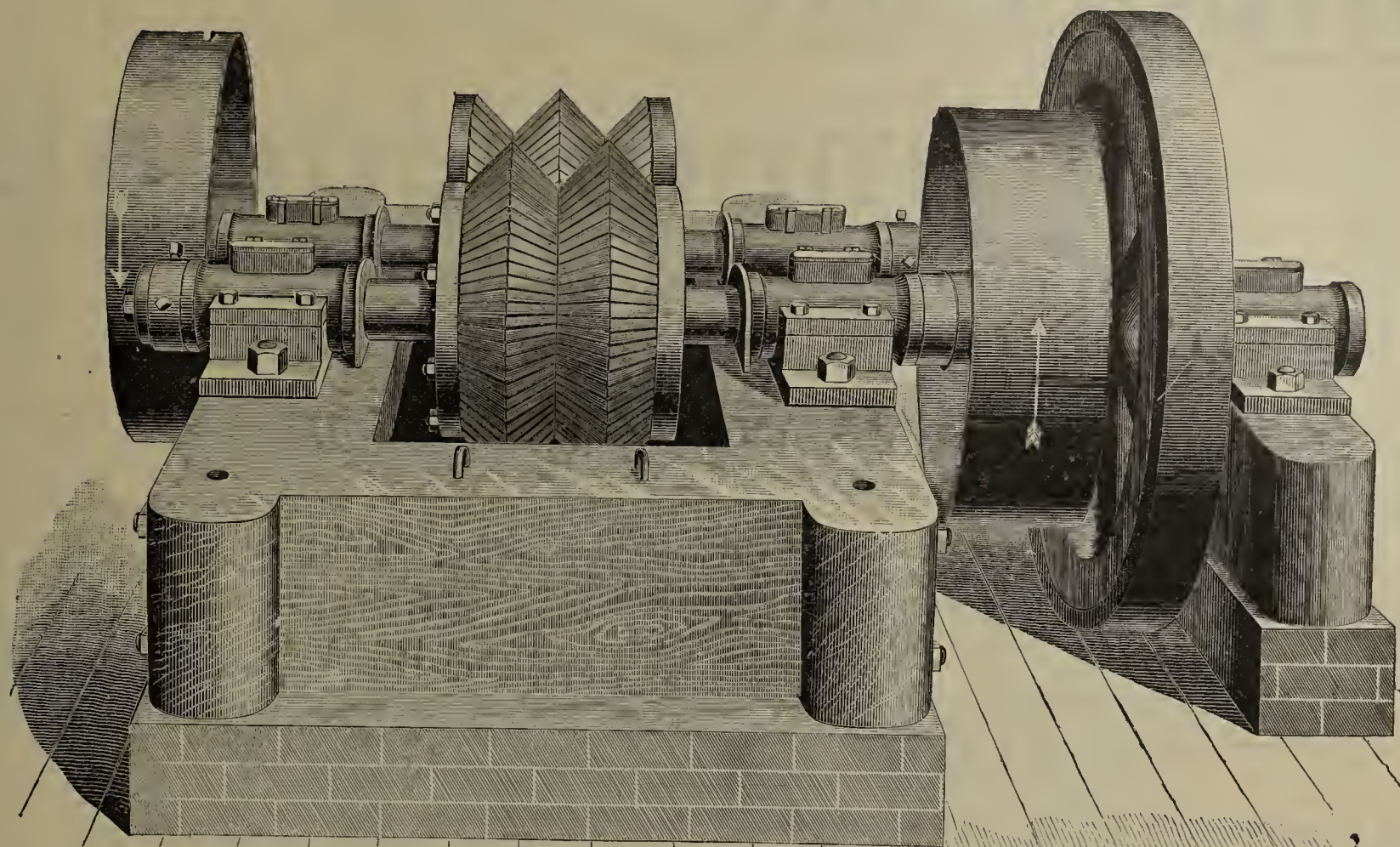
Successor to FLETCHER &amp; THOMAS,

INDIANAPOLIS, IND.



# NEWELL IMPROVED CLAY PULVERIZER

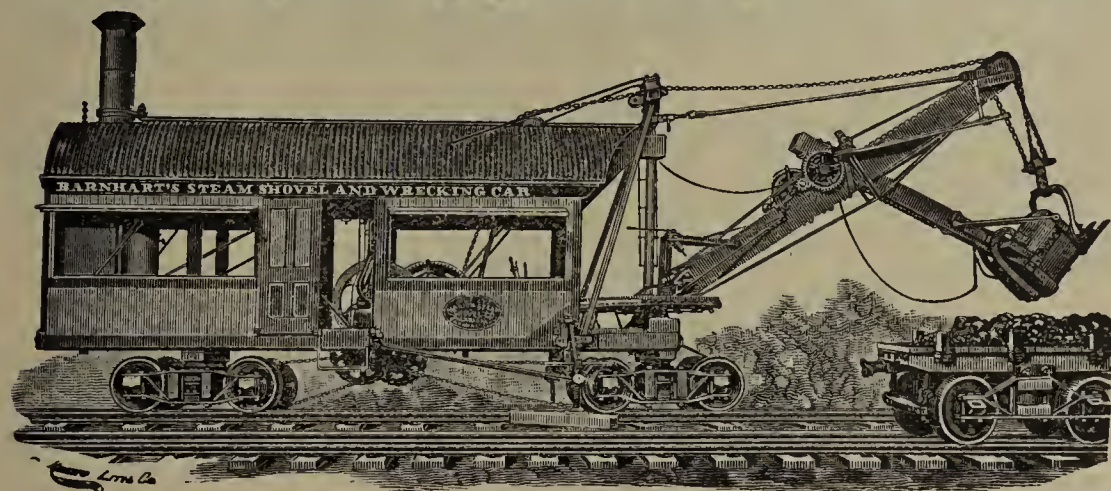
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeyer Building, New York, U.S.A.  
26 Cortland and 21 Dey Streets,

## STEAM SHOVELS FOR BRICKYARDS.

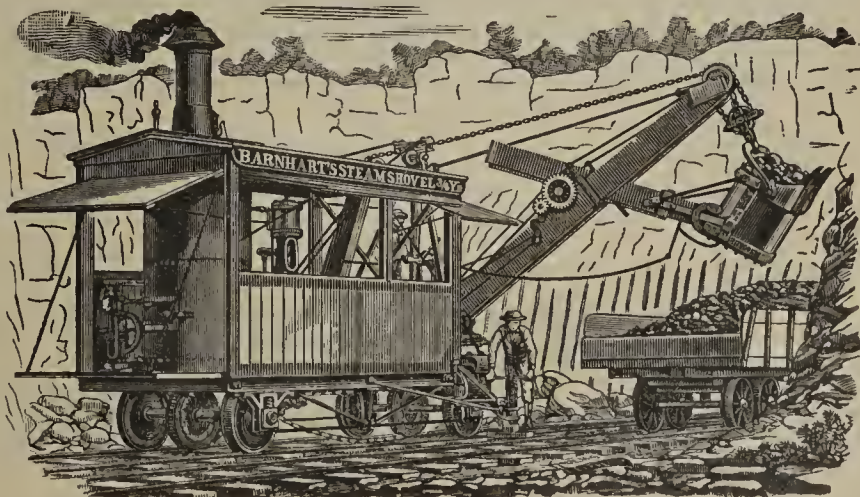


STYLE A-1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

**The Marion Steam Shovel Co.,**  
603 West Center Street,  
**MARION, OHIO.**

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick



STYLE C-¾ YD



# Important Improvements

IN BURNING ALL KINDS OF BRICK.

**B**RICKMAKERS before deciding upon putting in new kilns or altering old ones, should write to the following address for information. We control the Patents of the **W. A. WILFORD CONTINUOUS KILN**, which holds the lead, also, our Up and Down Draft to meet the requirements of all Brick and Tilemakers. They can be built for one half the cost of any other kiln of the same capacity, and, burns all of uniform hardness and color, and with from 50 to 75 per cent. less fuel. Easy and simple to handle, as every brick can be seen by the burner while burning, therefore, leaving no excuse for bad burns. Results are guaranteed or no money. The leading Brickmakers are using our Kilns with complete success. Our charges are low. We keep expert builders and burners for same.

OFFICE OF  
**BRUSH BROS.,**

MANUFACTURERS OF

**ALL KINDS OF BUILDING BRICK.**

OFFICE: No. 2 Builders' Exchange.

WORKS at East Buffalo.

BUFFALO, N. Y., July 7, 1894.

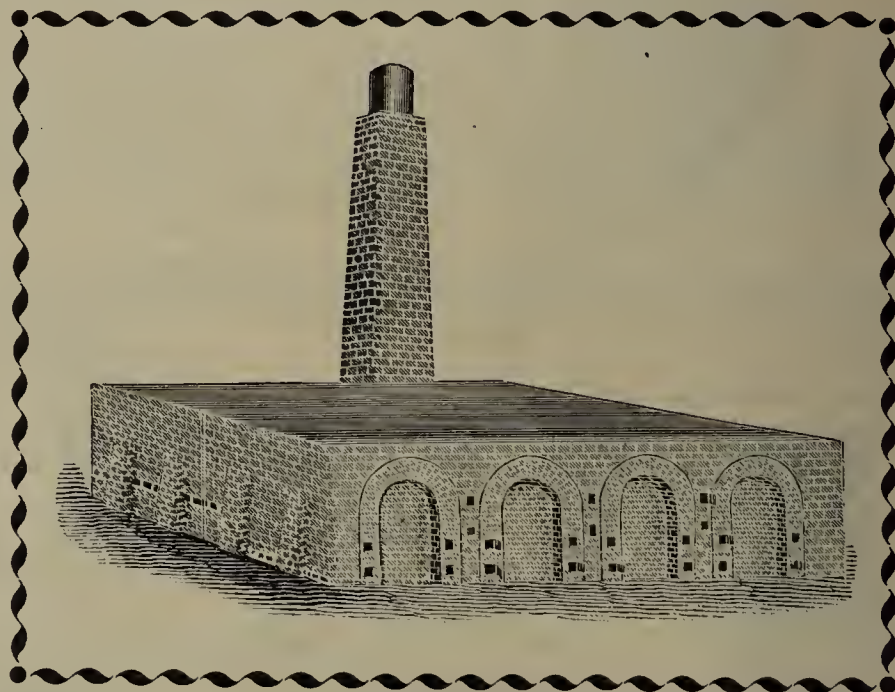
*Wilford Patent Kiln Co., Toronto.*

*W. A. Wilford, Man.*

DEAR SIR:—Having seen your Kilns in operation, which, in our opinion, meets the requirements of Brickmakers in bringing out uniform burns, with a small amount of fuel, we have decided to put in one of your large size kilns, and herewith enclose order for same, with the amount charged, and ask you to come on at once, and superintend erection of same.

Yours truly,

BRUSH BROS.



**Elmira Paving Brick Works.**

PHILIP WEYER & SON, Proprietors.

ELMIRA, N. Y., September 25, 1894.

*W. A. Wilford, Wilford Patent Kiln Co.,*

DEAR SIR—We have examined your continuous kiln as it is in operation at the works of Messrs. Brush Bros., at Buffalo, N. Y., and as a result we remit you the license fee and request that in response to the enclosed signed contract you will at once come on and erect a kiln for us.

For over a year we have been looking for the best kiln for our shale material and we believe we have found at last, what we have been looking for. Kindly use all expedition in getting it running for us.

Yours very truly,

PHILIP WEYER & SON.

•✠ Stengel & Cook, ✠•

WHOLESALE DEALERS IN

**LUMBER AND COAL.**

GEN'L SALES AGENTS  
FOR  
NATIONAL BRICK & TILE CO.'S  
PRESSED & ORNAMENTAL BRICK.

GENERAL OFFICE,  
NO. 9 BUILDERS' EXCHANGE,  
YARD AND TRESTLE,  
157 FILLMORE AVENUE.

BUFFALO, N. Y., October 3, 1894.

*W. A. Wilford, Esq., Toronto, Ont.*

DEAR SIR—Having investigated kilns for brick works on Grand Island, I have decided to put in yours, and herewith remit license fee with your contract signed and would request you to commence building as soon as possible.

Yours truly,

J. F. STENGEL.

Write us for Information and Testimonials.

**The Wilford Patent Kiln Co.,**  
*Correspondence Solicited.* **TORONTO, CANADA.**

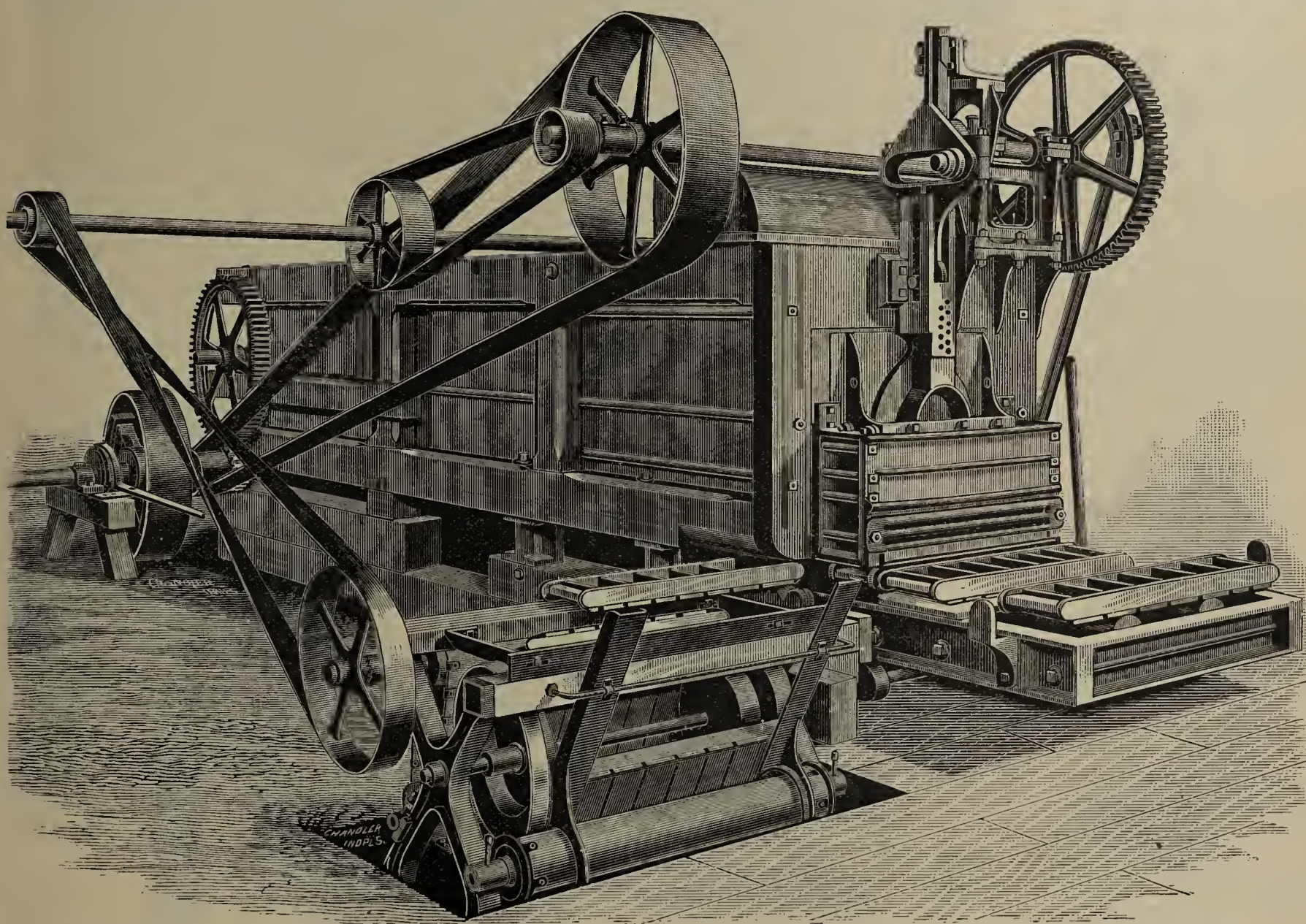


For Strength, Durability, Quality and Quantity  
OF BRICK MADE

The **POTTS**

HORIZONTAL STOCK BRICK MACHINE,  
DISINTEGRATOR and  
MOULD SANDER

**HAVE NO EQUAL.**



**W**E make two styles of Horizontal Machines, either of which are the **LEADERS** of this class of machinery. We pride ourselves upon the workmanship and material used in the construction of these machines, as well as the record made by them.

Prices quoted on application, to suit the times.

**C. & A. POTTS & CO.,**

**420 W. Washington St. - INDIANAPOLIS, IND.**





# Fisher Engine, Foundry and Machine Works.

WM. FISHER, PROP.

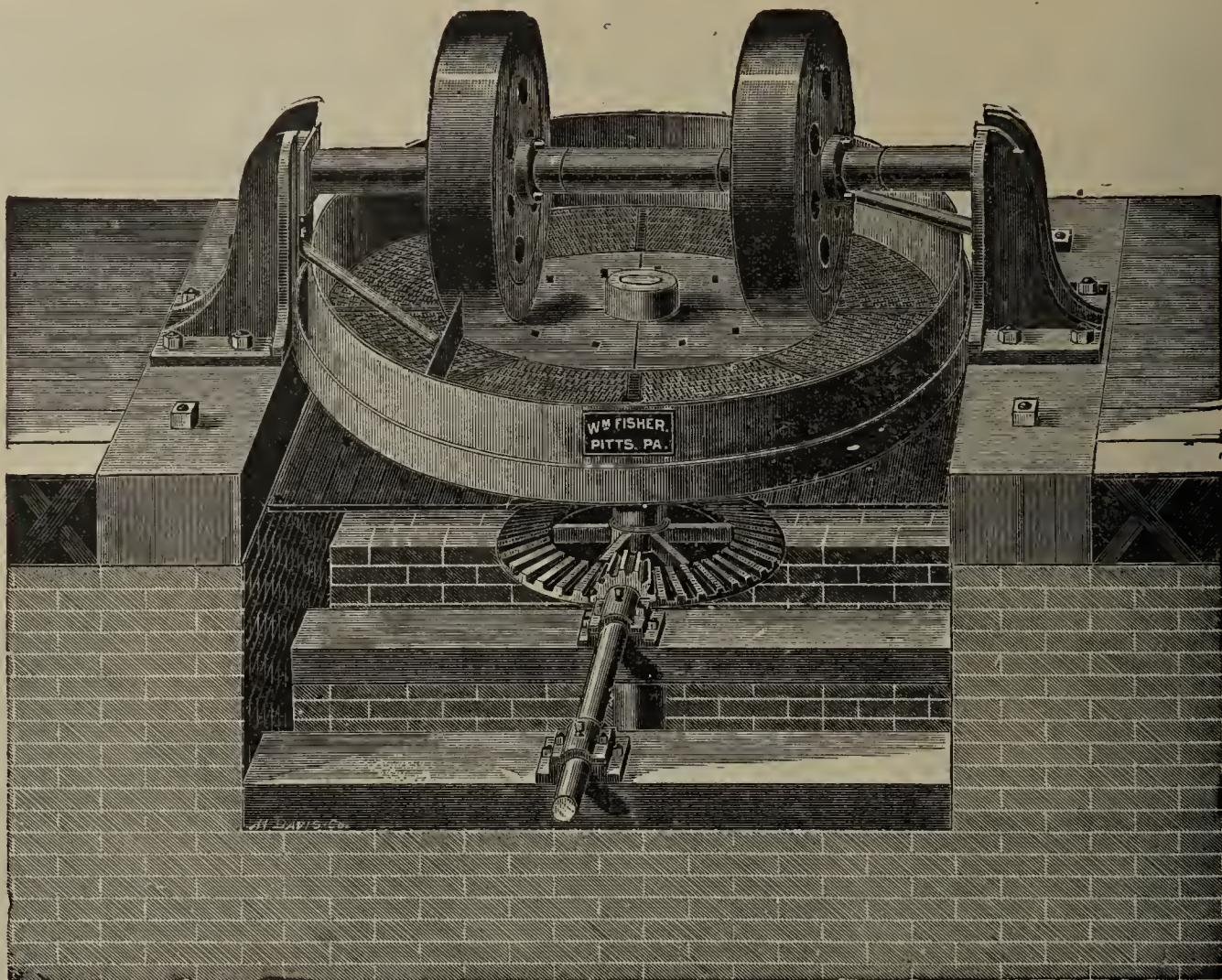
Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,

FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

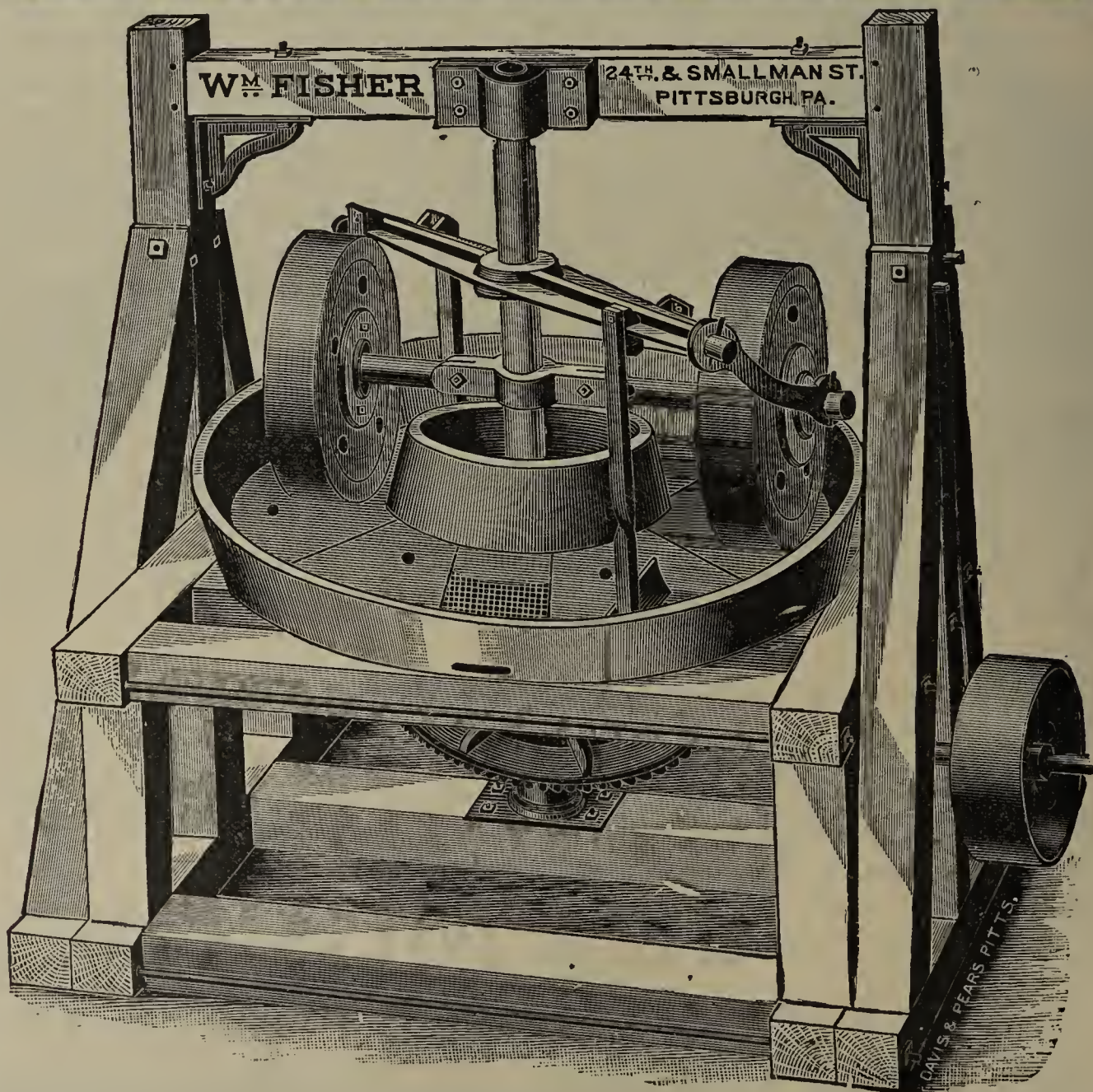
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.

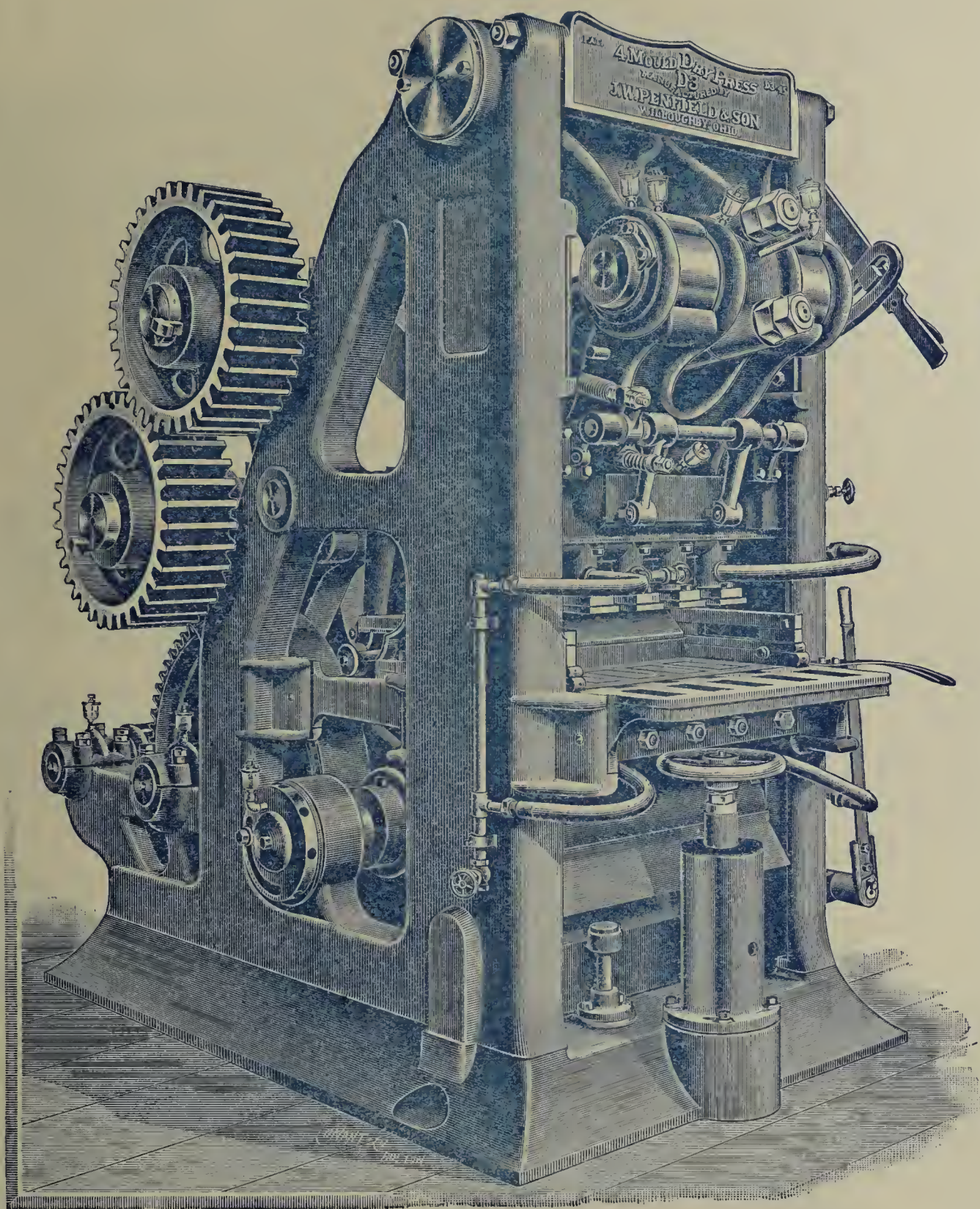


PUG MILLS,  
BLAKE CRUSHERS,  
'BRICK PRESSES.



☞ When writing for prices, state kind of material and capacity required.





Penfield 4-Mold Dry Press Brick Machine, D-3 Model.

## 'Tis The Repeated Pressure

That finally overcomes the elastic resistance of the clay, and compresses it far beyond the limit otherwise possible, thus pressing more clay into a brick of a given size and making the brick denser, stronger and more perfect in every way.



## 'Tis The Penfield

## Dry Press Brick Machine

That alone has this Pressure Repeating Attachment—the greatest improvement yet added to the dry press brick machine of to-day.

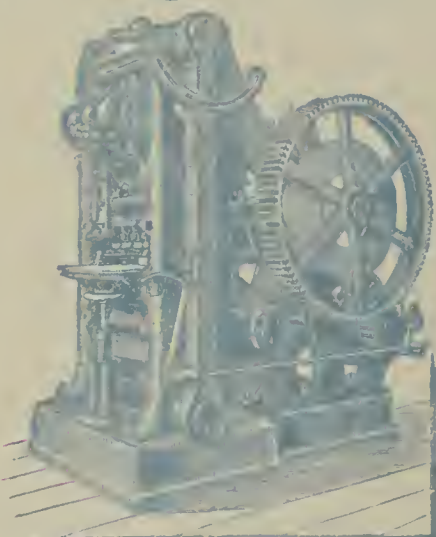
— WRITE OR COME AND SEE IT —

J. W. PENFIELD & SON, = Willoughby, Ohio, U. S. A.



# J. W. PENFIELD & SON, WILLOUGHBY, OHIO, U. S. A.

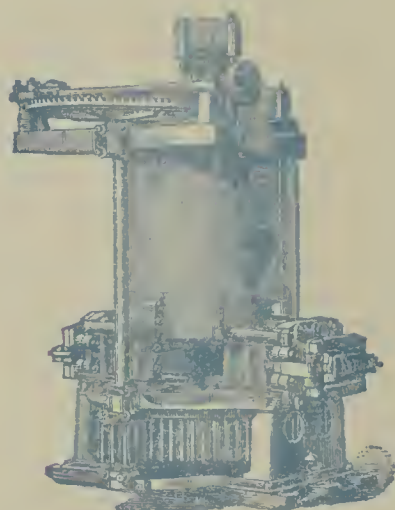
Some Things We Make:



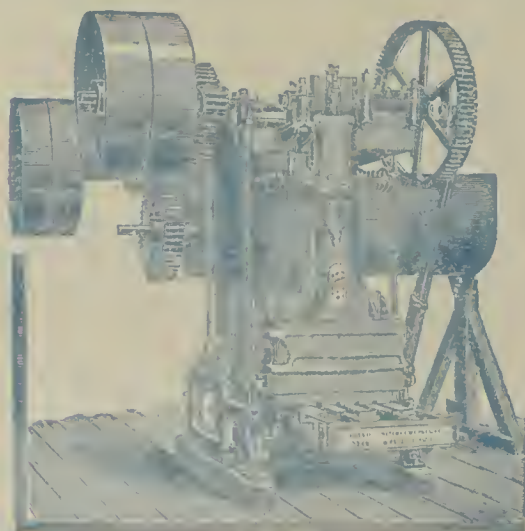
Dry Press Brick Machines.



Auger Brick Machines;  
Auger Tile Machines.



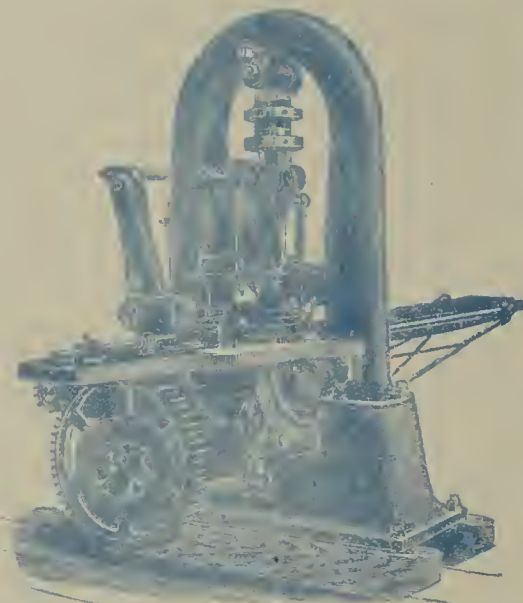
Plunger Brick Machines,  
Also suited for making Tile, Fireproofing, Etc.



Stock Brick Machines,  
For Sand-Mold Brick.



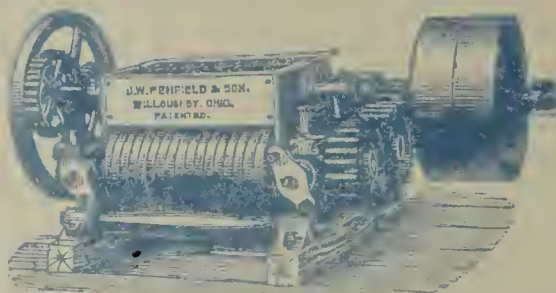
Board Delivery Brick Cutters.



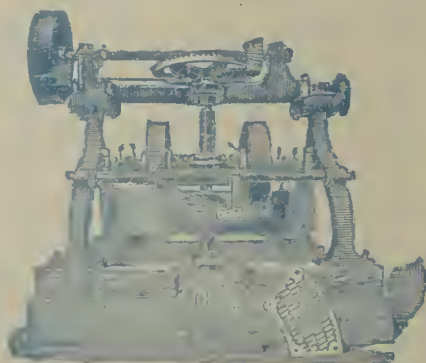
Brick Represses.



Disintegrators,  
Singly or combined with Crushers or Pug Mills.



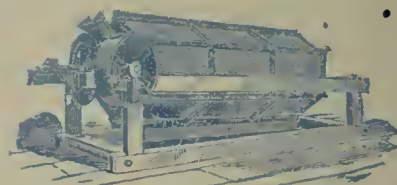
Clay Crushers; Stone Separators.



Dry Pans; Wet Pans.



Pug Mills; Granulators.



Screens.



Clay Elevators; Conveyors.

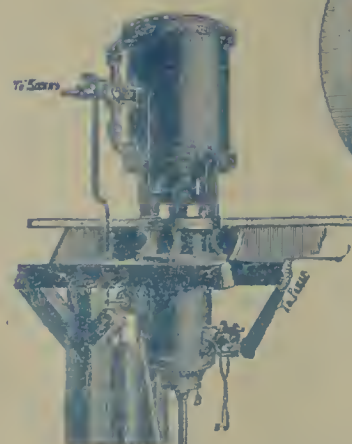


Clay Cars.



Winding Drums.

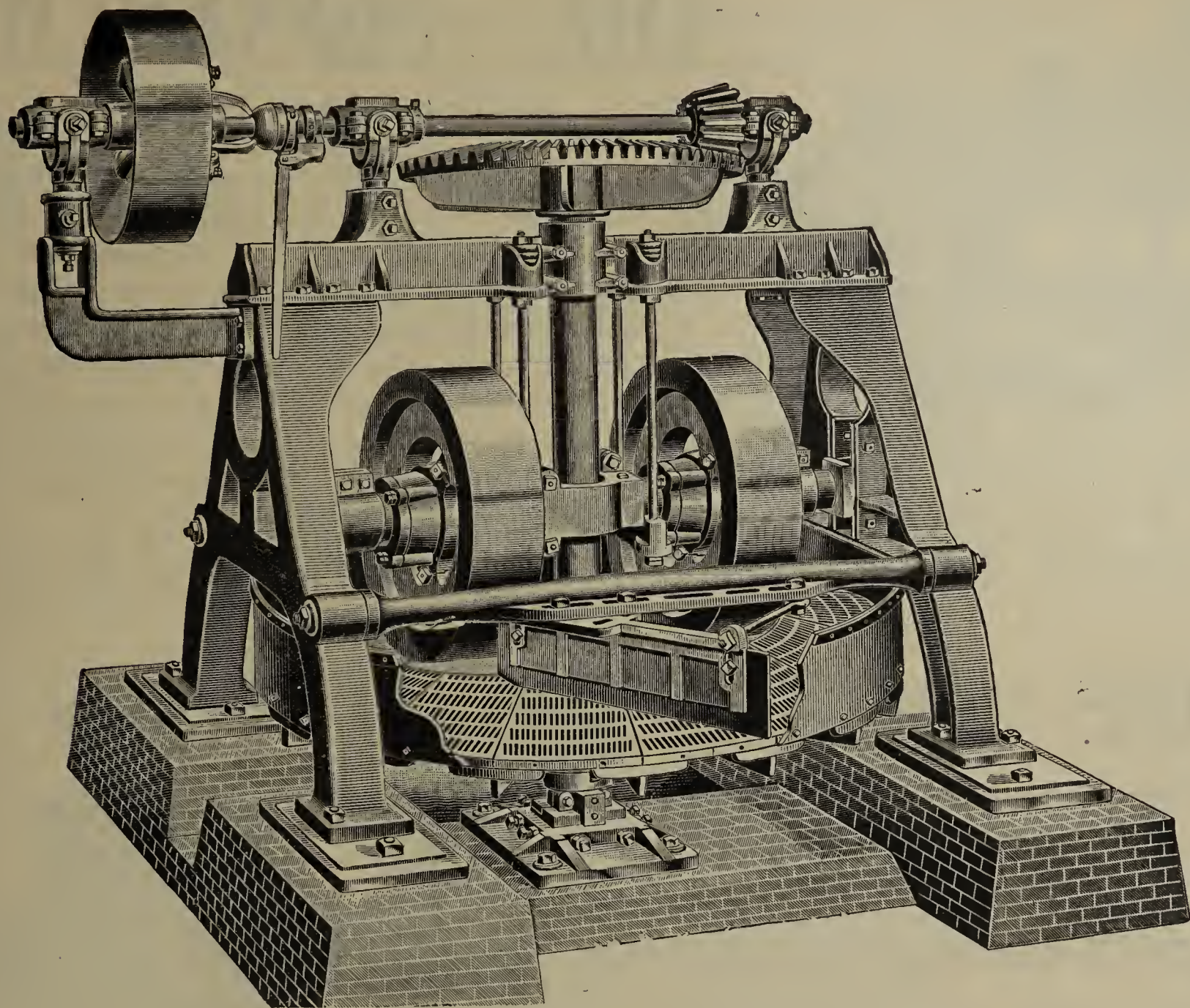
Barrows; Kiln Castings, Clutch Pulleys,  
Sewer Pipe Presses,  
Etc.



Send for Catalogue.

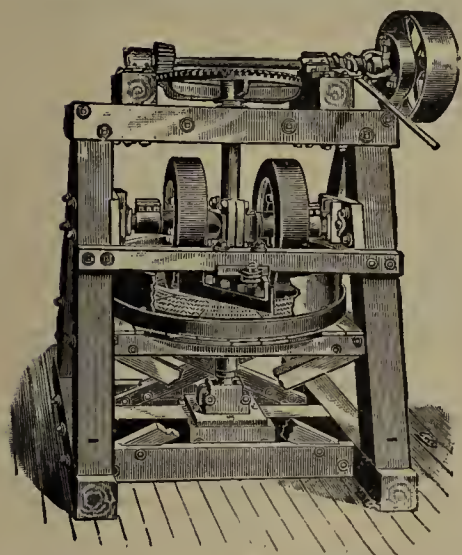
J. W. PENFIELD & SON, Willoughby, Ohio, U. S. A.





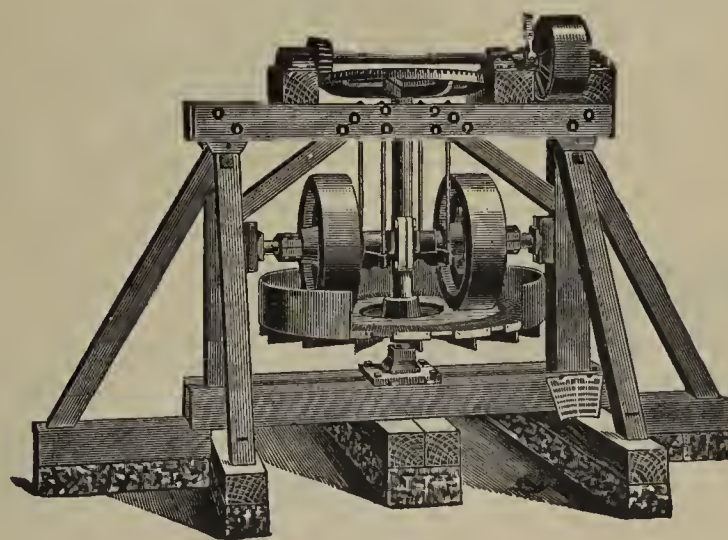
OUR SPECIALTY IS

DRY PANS.



IRON FRAMES,  
WOOD FRAMES.

~~~~~  
All Sizes and Price
to suit
Any Size Plant.
~~~~~



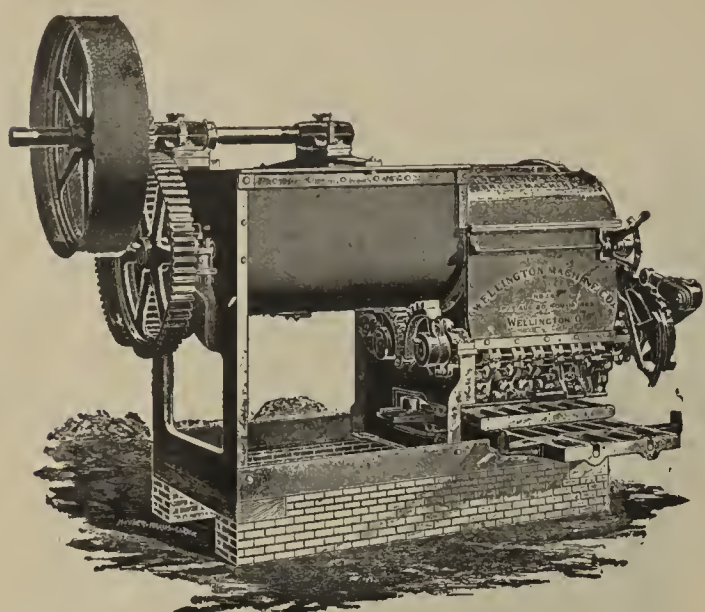
.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

FROST ENGINE CO., Galesburg, Ill.,  
U. S. A.



# THE "MONARCH"

## Brick Machine.



**A**LL iron and steel. Takes clay from the bank. Double pug mills. 14 feet. "Up one side and down the other." Most thorough tempering. Presses are entirely "in the mud;" this is the greatest idea of all, for all wear, leakage and friction in the press box is entirely done away with. All bearings outside and "stuffed." Only four gears and none bevel. The acme of simplicity. Runs with much less power than any other of its class. Four years in use and thoroughly proven. Used by 50 of the very best manufacturers. Send for list and "go and see."

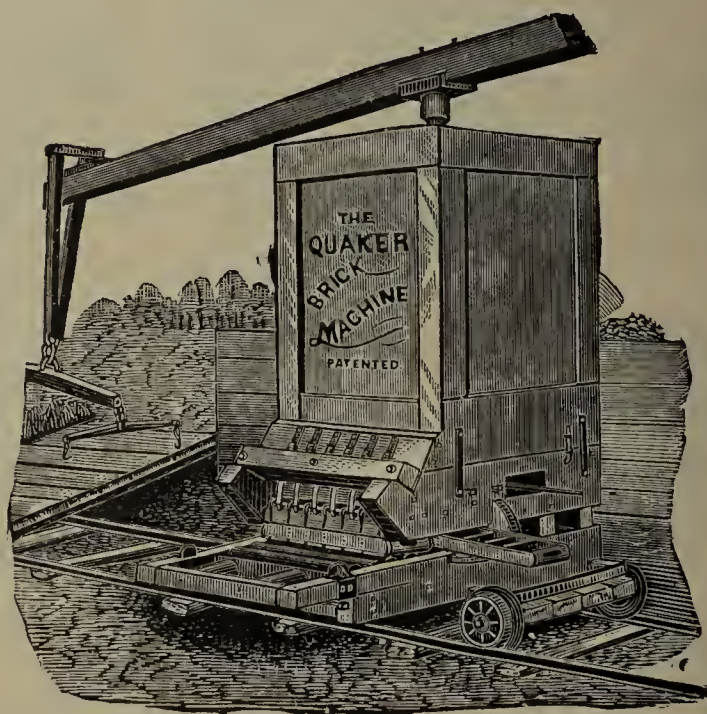
THE MOST ECONOMICAL and LONGEST LIVED MACHINE MADE.

# THE "QUAKER"

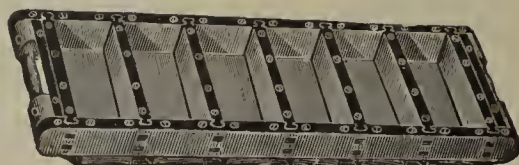
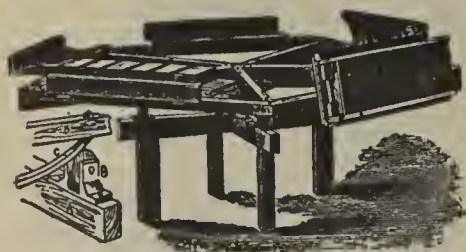
Family of Machines, are the Most Used of Any Single Make of Machine.

## The "New Model Quaker" Horse-Power Machine.

Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



## Two Sizes of Steam Power "Quaker" Machines.



FOUNDERS AND MACHINISTS.)

Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

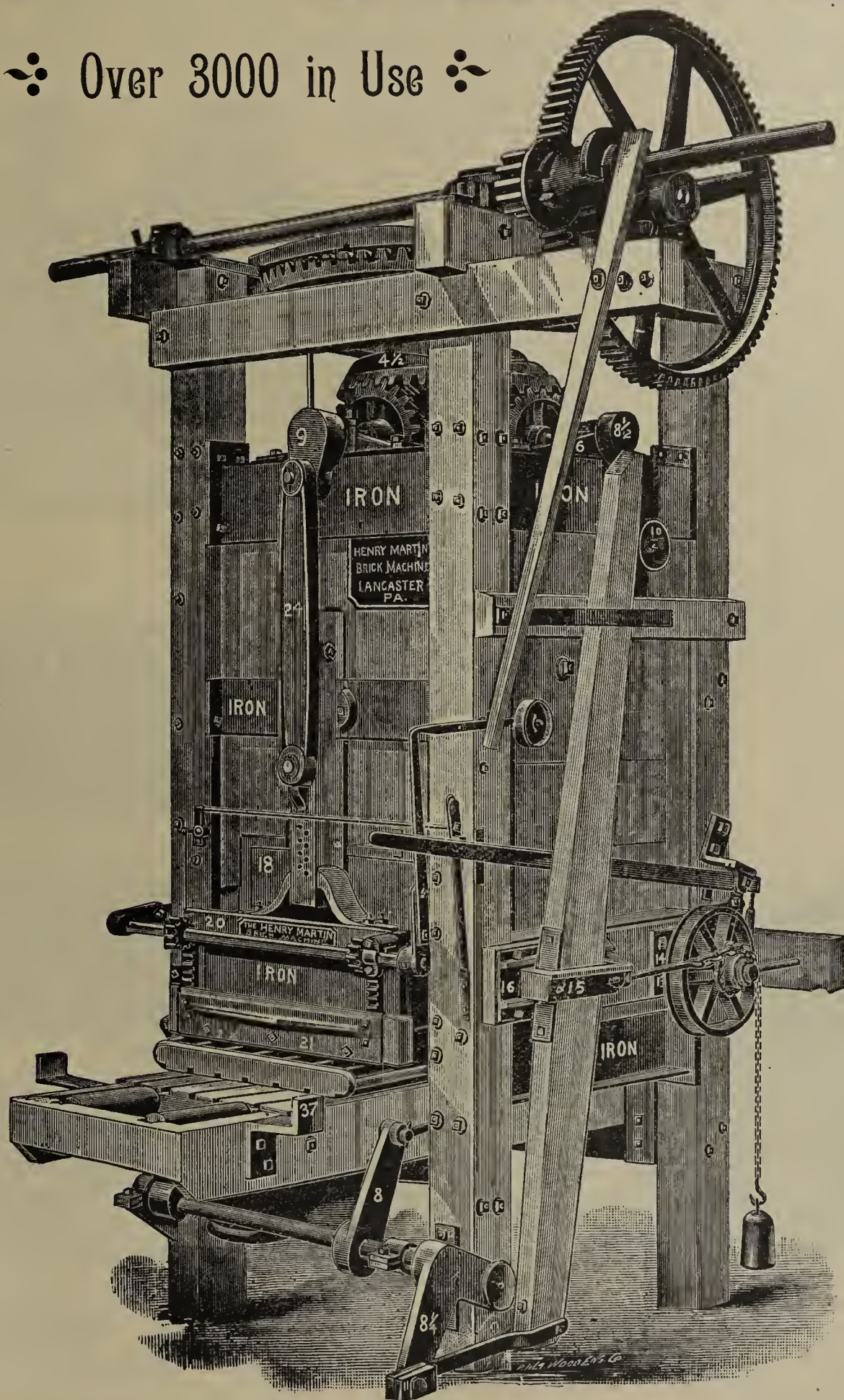
**The Wellington Machine Co.**  
Wellington, Ohio.



# The PRACTICAL BRICKMAKER'S FAVORITE

❖ Over 3000 in Use ❖

It will work successfully where others have failed.



Reliable Estimates and Plans of Complete Plants furnished on application.

WEIGHT, 8000 Pounds.

Send For Catalogue. ~~~~~

THE HENRY MARTIN BRICK MACHINE MFG. CO., Lancaster, Pa.



# A New Departure in Brick Machinery

## THE HORIZONTAL ANDERSON

OUR latest and most complete combination of Brick Machine, Pug Mill and Disintegrator for the price of one Machine. No out side Plunger with bothersome Gibs and Plates. A Machine that will run for years without requiring any adjustment and never leak. **UNEXCELLED** for **GRINDING** and **PUGGING CAPACITY**; simple in construction and durable.

This Machine is self-contained and requires no other Shafting, Pulleys, Hangers or even Foundation, other than that shown in cut. Manufacturers of Brick by the soft mud process will find it to their interest to investigate this Machine before making their contracts for new Machinery. Write for descriptive circular, prices, etc. We can save you money in the beginning, and make you happy in the end. Capacity equal to any other Machine on the market. We extend a cordial invitation to all prospective purchasers to pay us a visit and allow us to show them the Machine in operation.

INDIANAPOLIS, IND., March 20, 1894.

ANDERSON FOUNDRY AND MACHINE WORKS,

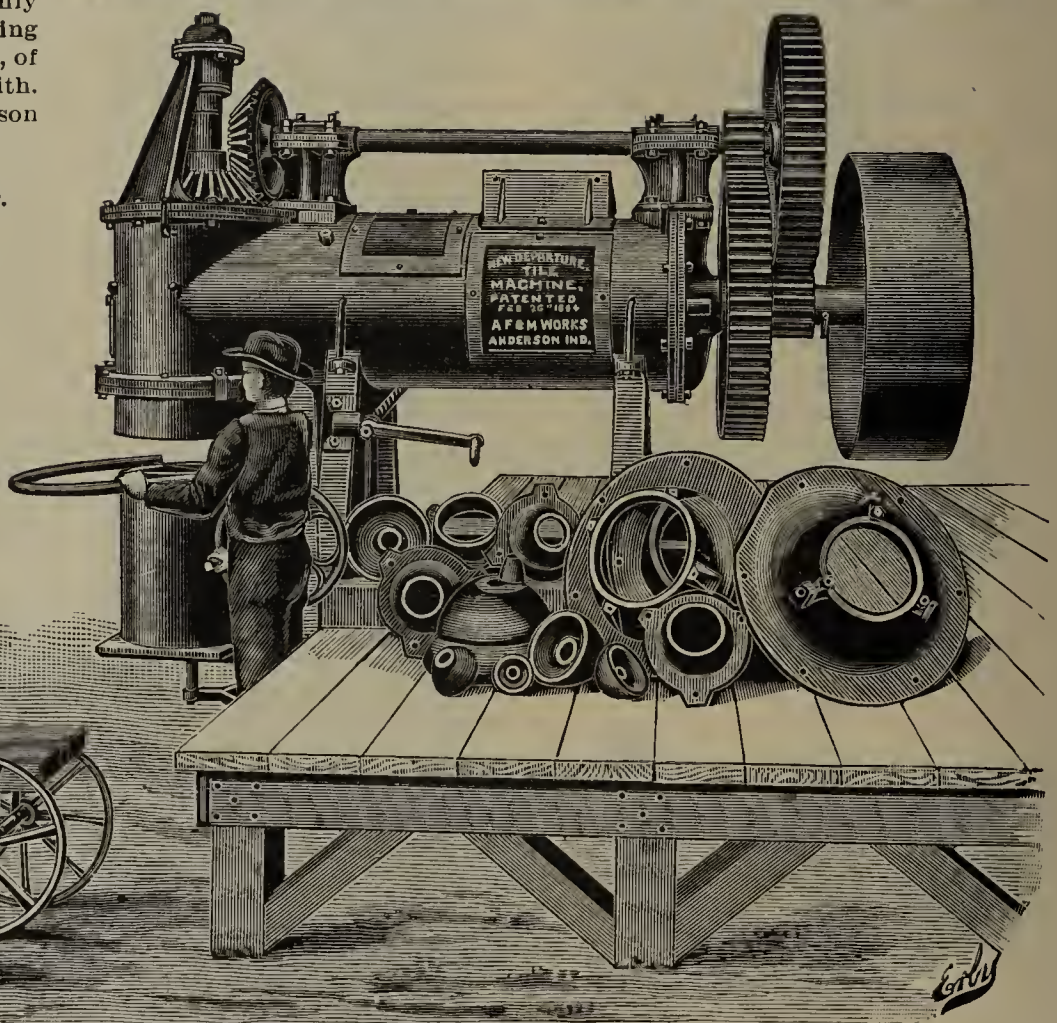
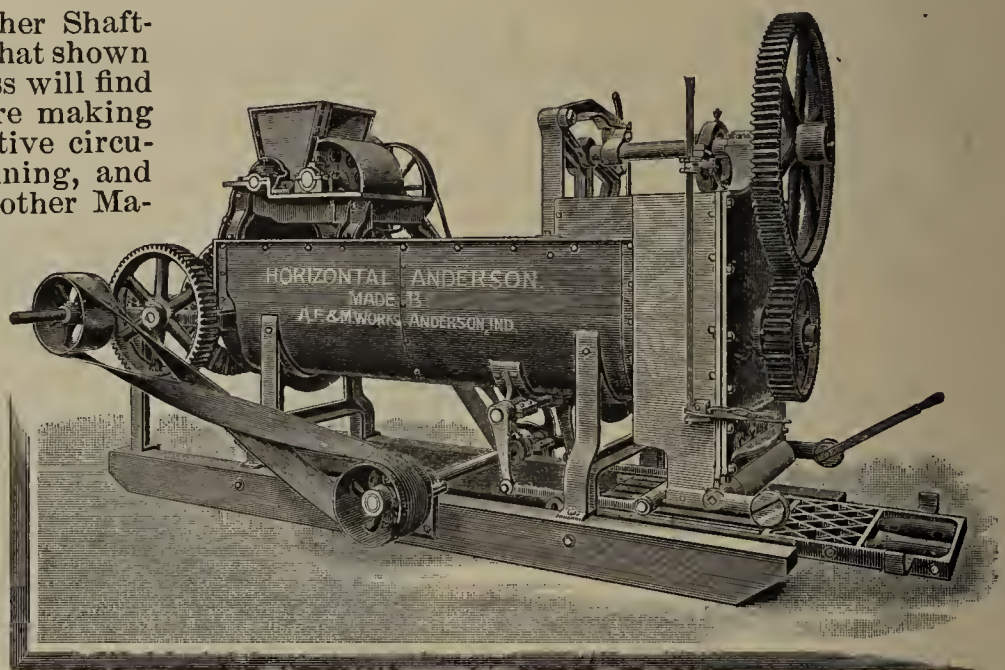
Anderson, Ind.

GENTLEMEN:—It affords us much pleasure to state that the Horizontal Anderson Brick Machine purchased of you last season has given us the best of satisfaction. We have owned and operated eight different Brick Machines previous to this one, and we do not hesitate to pronounce the Horizontal Anderson superior to any and all of them.

We operated the machine during the extremely dry weather of last season and found that no matter how dry and hard the clay was when taken from the bank, the machine thoroughly pulverized and pugged it to the proper consistency for making first-class brick, and at the same time dispose of all stones, of which, unfortunately for us, we have a great many to contend with.

We are willing at all times to show the Horizontal Anderson to our competitors who are in the market for new machinery.

A. BRUNER & CO.,  
Willis Privett, Manager.



## THE GREATEST ON EARTH

We have imitators but no competitors. The **NEW DEPARTURE** makes all sizes of tile from 3 inches to 24 inches in diameter in a manner that defies competition.

DOWN DELIVERY FOR LARGE TILE.

SIDE DELIVERY FOR SMALL TILE.

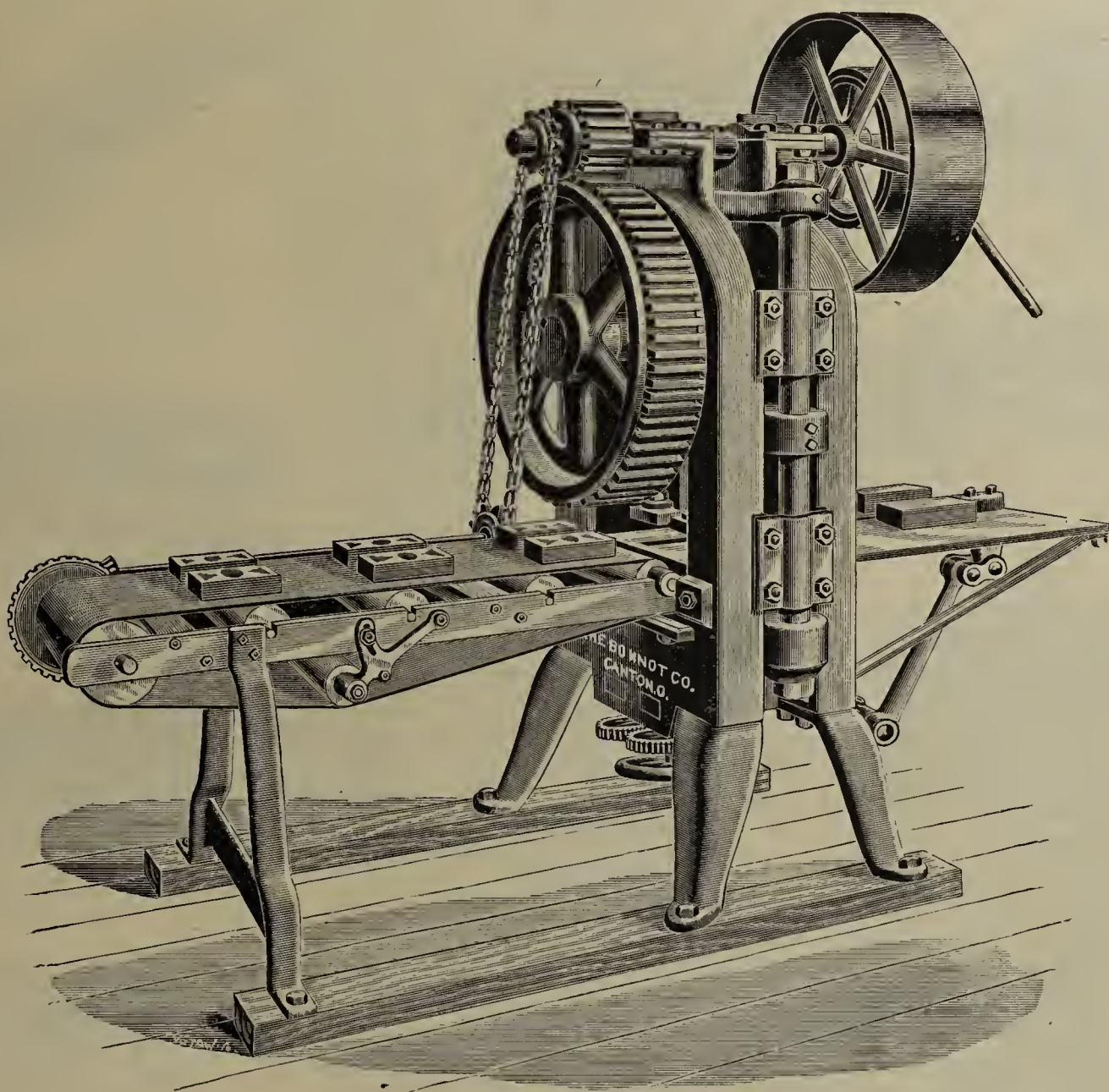
THE ANDERSON FOUNDRY & MACHINE WORKS, - - Anderson, Indiana.



# A Re-press Simple in Mechanism.

**POWERFUL THE LATEST AND BEST DURABLE**

*Possesses The Greatest Convenience.*



**T**HIS Machine will do what no other Re-press has been able to accomplish. It will **ACTUALLY REPRESS THE SIGH** that rises in the bosom of weary brickmakers, caused by inferior machinery. These machines are fully guaranteed. Address,

**THE BONNOT CO.,**

*Canton, Ohio.*

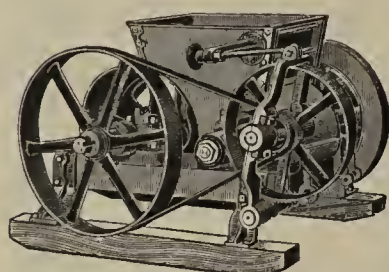
[Mention the CLAY-WORKER.]



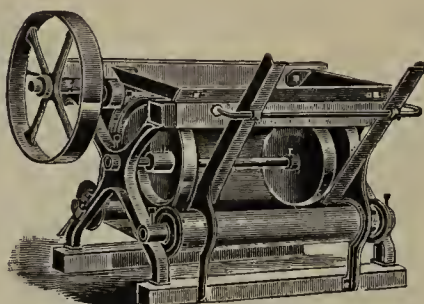
# DON'T FAIL

To Write For Prices When In Need  
Of Machinery or Supplies.

*We make Everything from a Brick Mould to Erecting  
Complete Plants of Any Desired Capacity.*



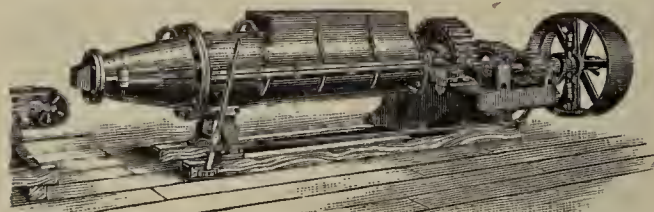
DISINTEGRATORS and STONE  
SEPARATORS. 12 Sizes.



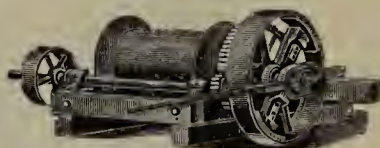
MOULD SANDERS.



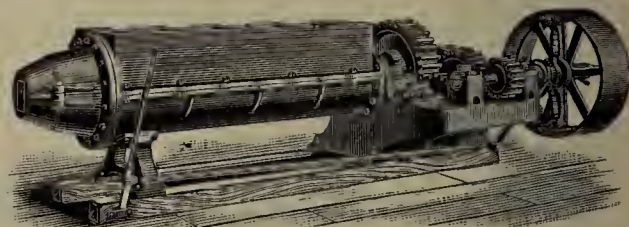
ELEVATORS and CONVEYORS.



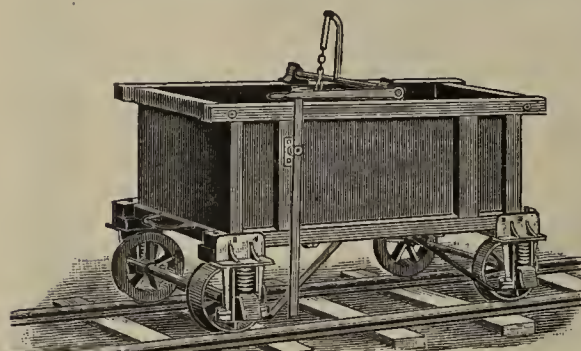
AUGER BRICK and TILE MACHINES.



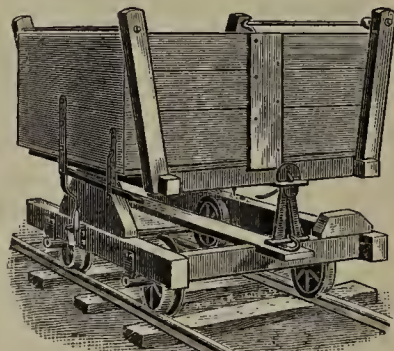
WINDING DRUMS.



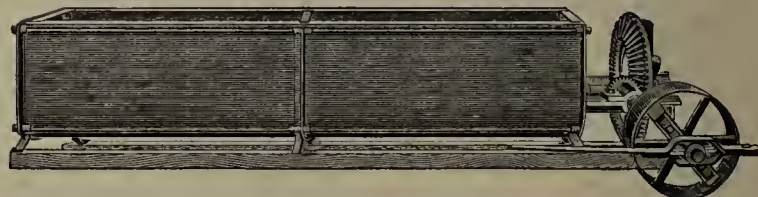
EXTRA HEAVY PUG MILLS and GRANULATORS.  
Capacity 50,000 to 125,000 Brick.



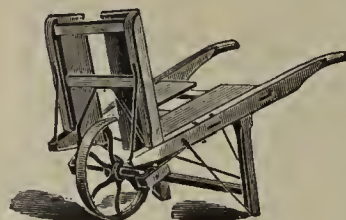
AUTOMATIC BOTTOM DUMP CARS.  
Having Chilled Wheels.



SIDE DUMP CAR.  
Having Chilled Wheels.



PUG MILLS For Soft Clay.



BARROWS For Brick or Tile.



BRICK MOULDS,  
For Either Machine or Hand.



TRUCKS, One or Two Wheels,  
For Brick or Tile.

*Pulleys, Shafting, Hangers, Etc.*

## C. & A. Potts & Co.,

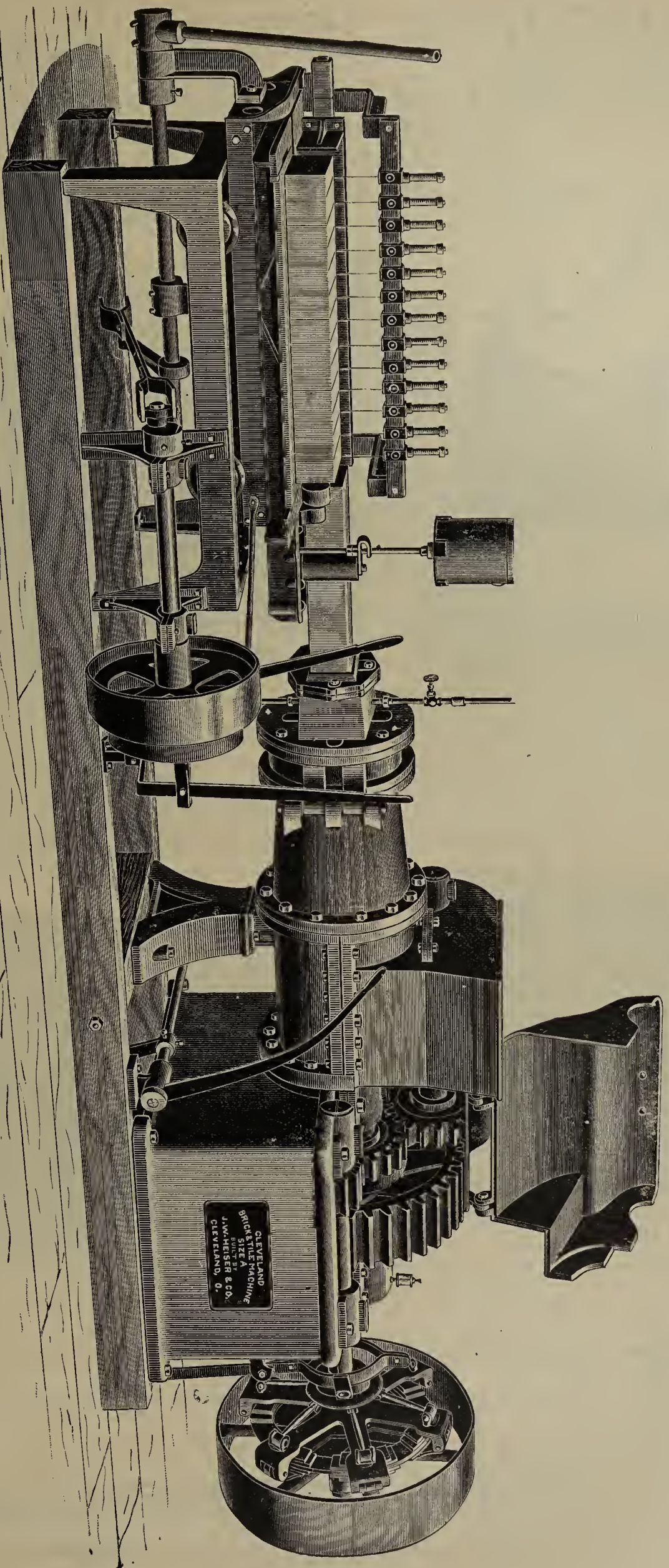
420 W. Washington St.,

= =

INDIANAPOLIS, IND.



# The "CLEVELAND" CLAY WORKING MACHINERY.



Size "A" Machine with Patent Board Delivery Power Cutting Table. Capacity from 25,000 to 40,000 Brick per day.

ALL OF OUR MACHINERY IS BALL AND PIN BEARING AND....  
GUARANTEED FOR ONE YEAR AGAINST WEAR OR BREAKAGE.

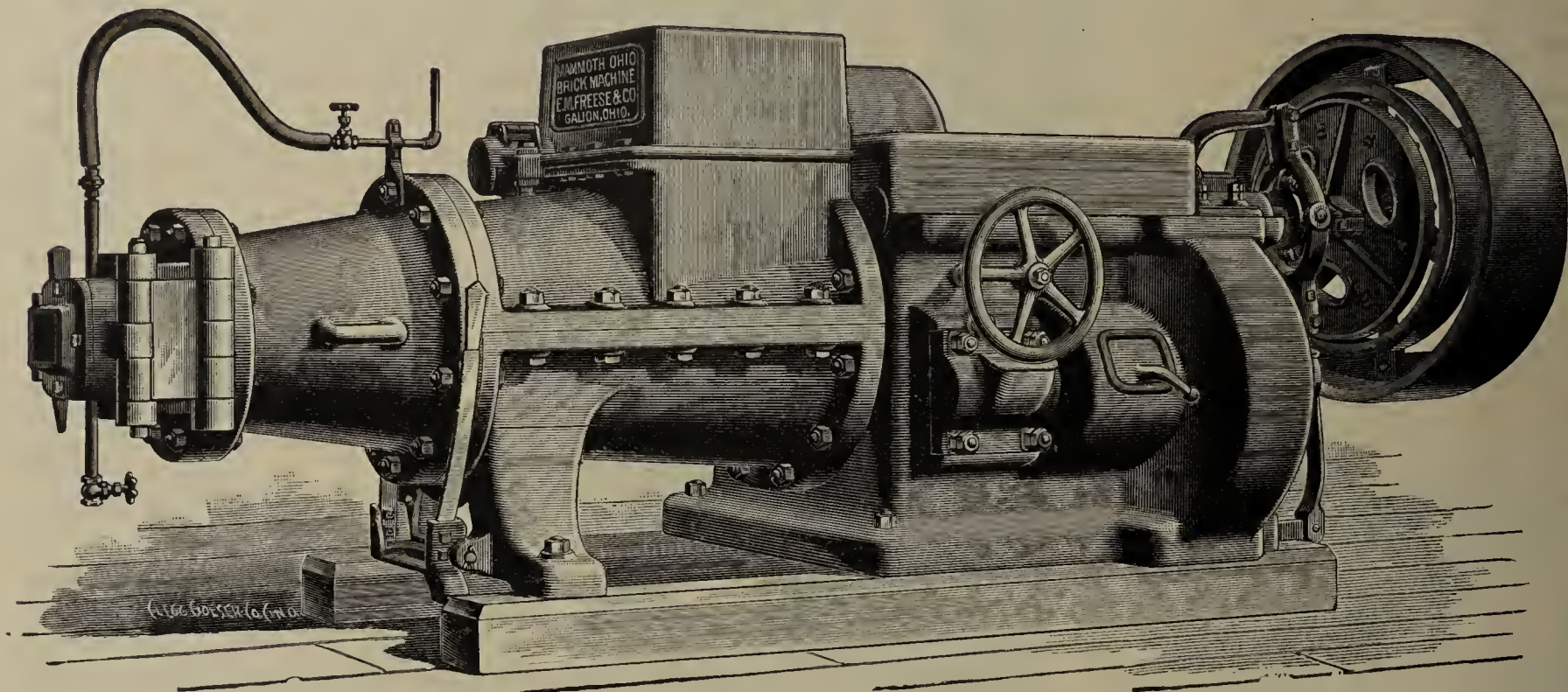
If you want superior machinery, improve your product, save money and have a balance on the right hand side of your Ledger, write to us for Catalogue and description of our machinery.

J. W. HEISER & CO., Manufacturers of CLAYWORKING MACHINERY, Cleveland, Ohio.



# SUPERIOR BRICK MACHINERY.

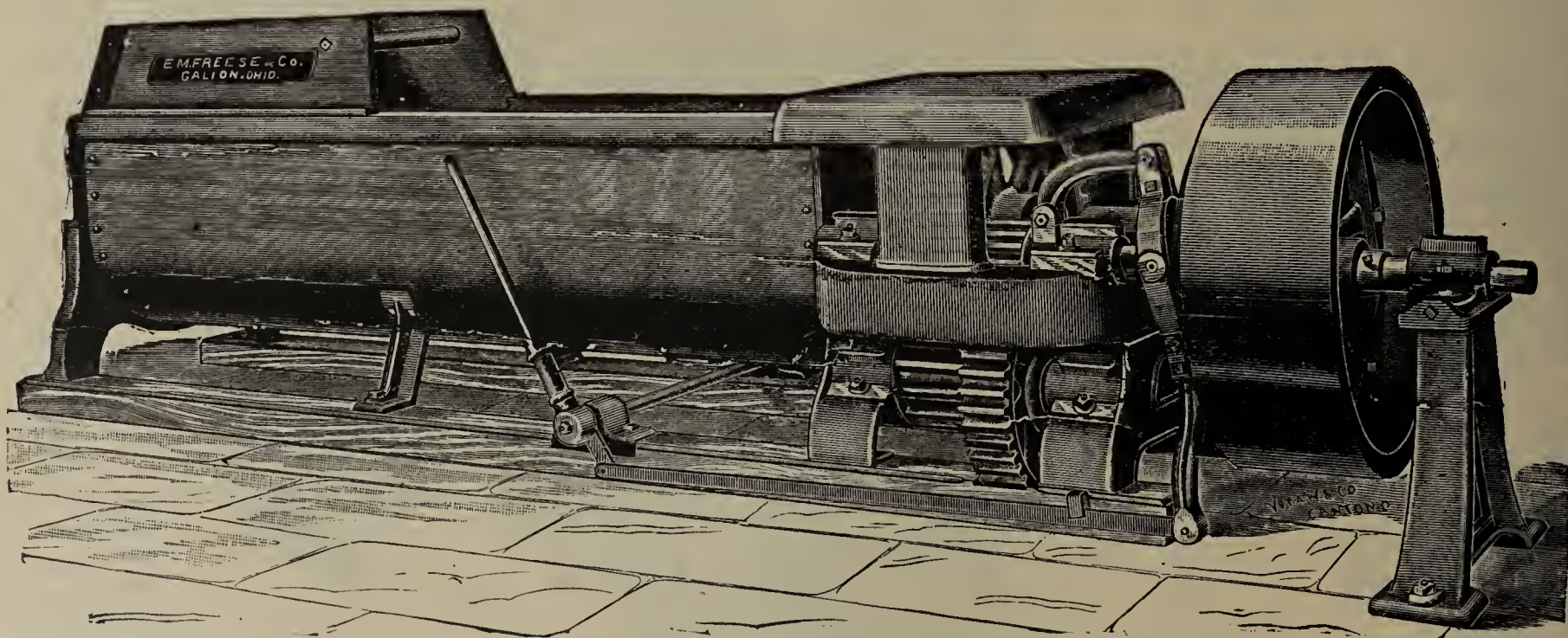
*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

## *PUG MILLS THAT PUG THE CLAY.*



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

IT WILL PAY~~~~~

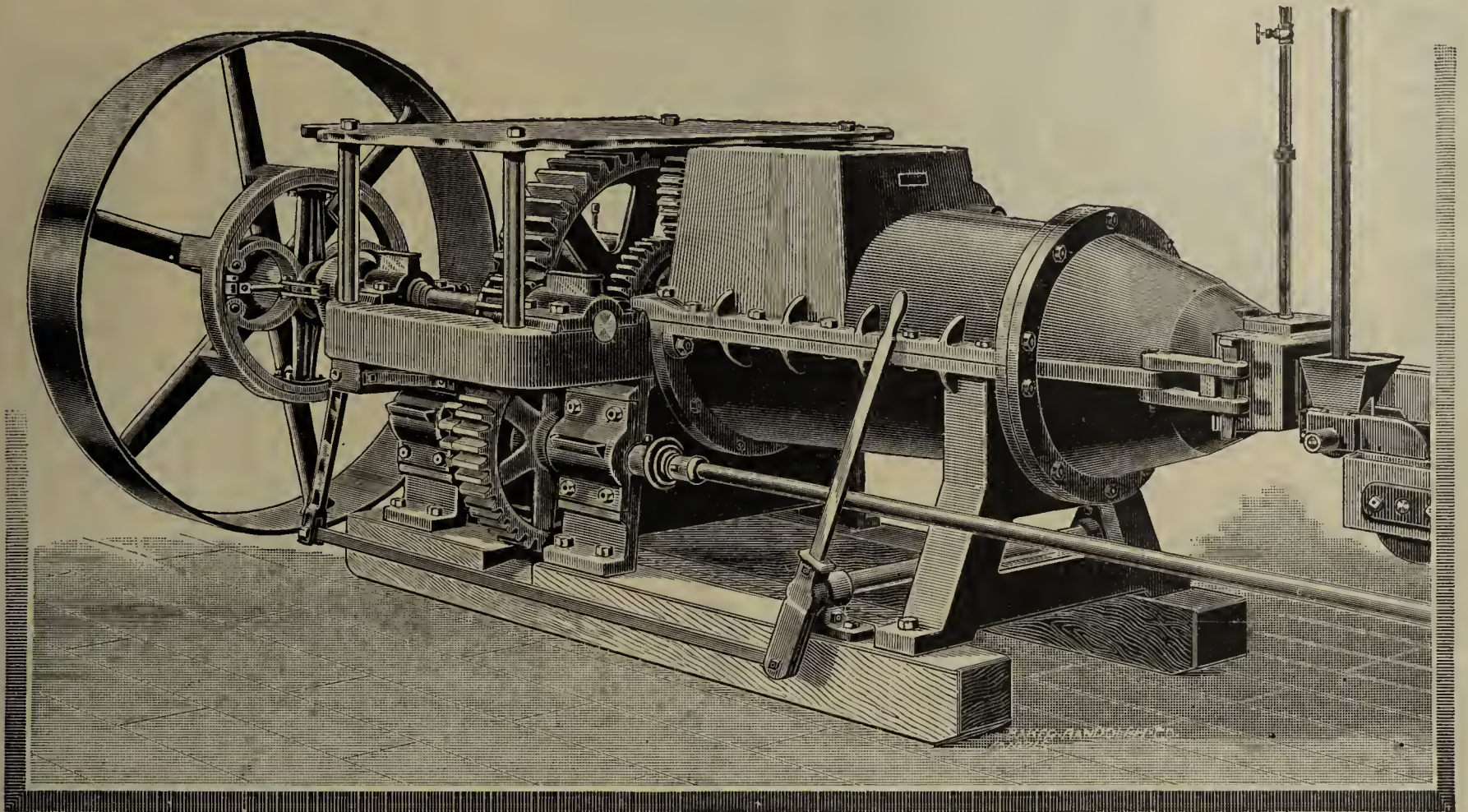
ADDRESS E. M. FREESE & CO.,

~~~~~ GALION, OHIO.


IMPROVED BRICK AND TILE MACHINERY,

MANUFACTURED BY

THE DECATUR LEADER MFG. CO.



Auger Brick Machine.

WHAT THEY THINK OF US AT HOME. . . .

—OFFICE OF—

The Tuttle Brick Company.

DECATUR, ILL., March 26, 1894.

THE DECATUR LEADER MFG. CO., City:

GENTLEMEN—The outfit of Brick machinery made by you for us gives entire satisfaction. We understand your automatic cutter is a recent design, and we would say that it deserves especial mention for its simplicity and perfect working.

Yours truly,

THE TUTTLE BRICK CO.,
JOHN DILLER, Manager.

Our line is complete. Send for printed matter.

THE DECATUR LEADER MFG. CO.,

Decatur, Ill., U. S. A.

[Mention the Clay-Worker.]

NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER,

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

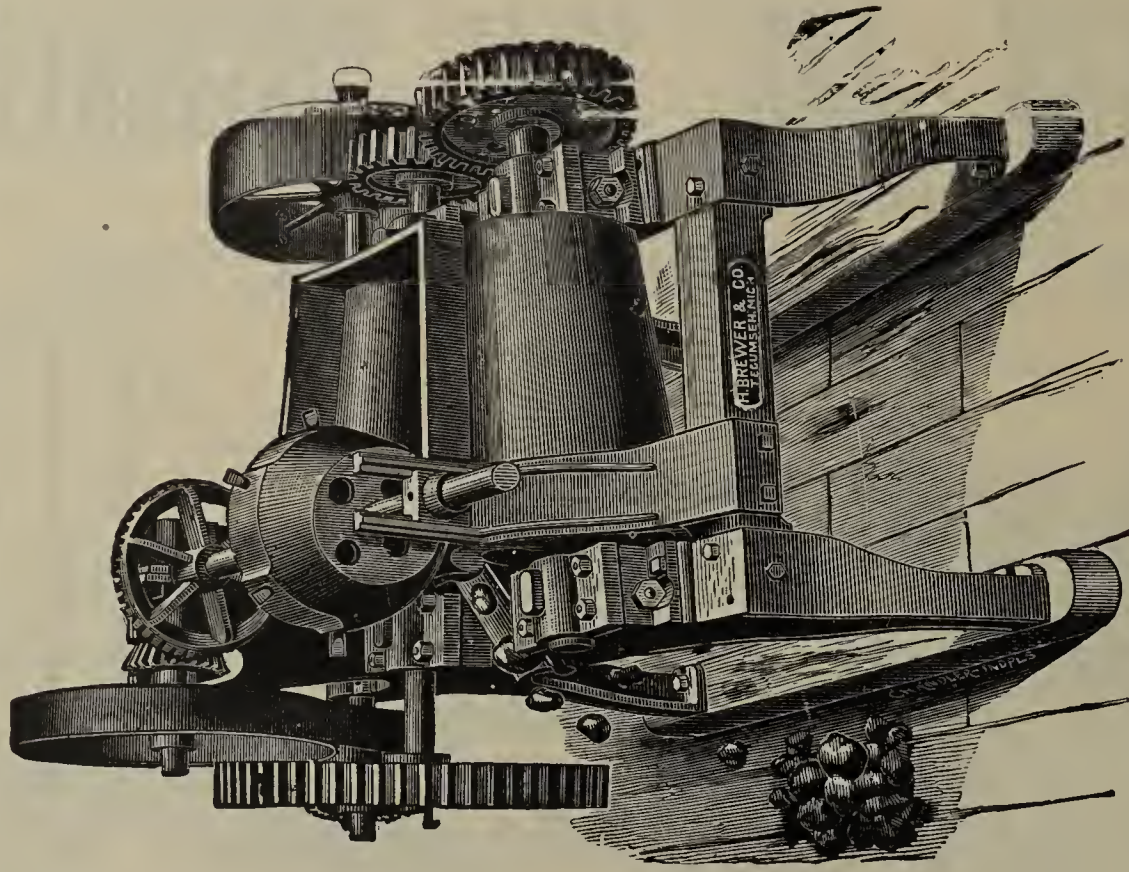
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

H. BREWER & CO.,

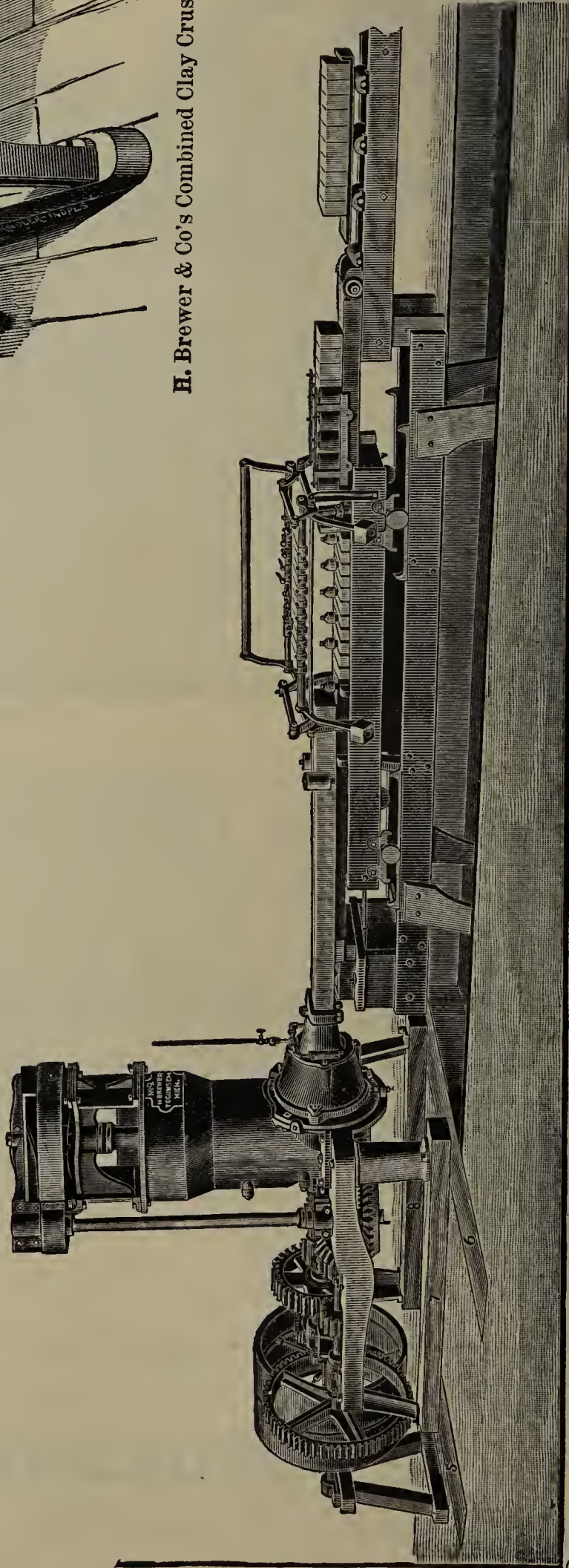
Tecumseh, Mich.

[Mention the Clay-Worker.]



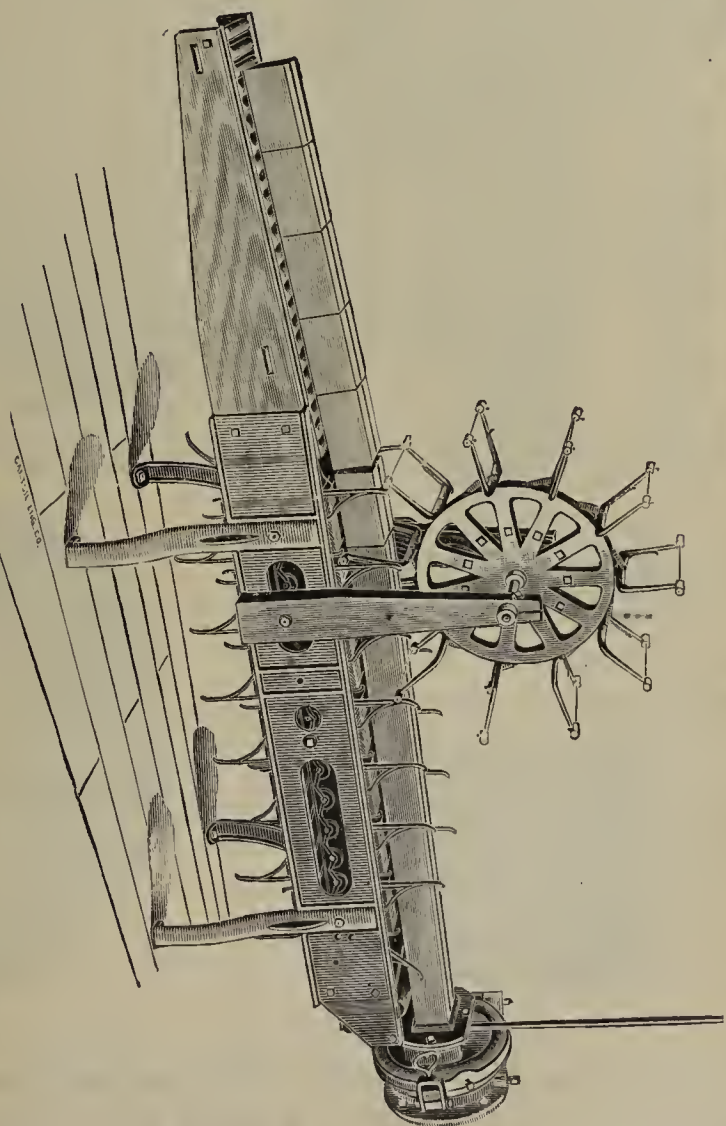
H. Brewer & Co's Combined Clay Crusher and Stone Separator

The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in combination with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



“PLYMOUTH”

Look at it!
 You can rely on it!
 Many have tried it!
 Operates perfectly!
 Until worn out!
 Try one yourself!
 How soon shall we ship?



New Automatic End Cut Brick Table.

• • **SUCCESS** • •

“Nothing Succeeds Like Success.”

Correct in principle
 Strong in construction
 Easy of Operation

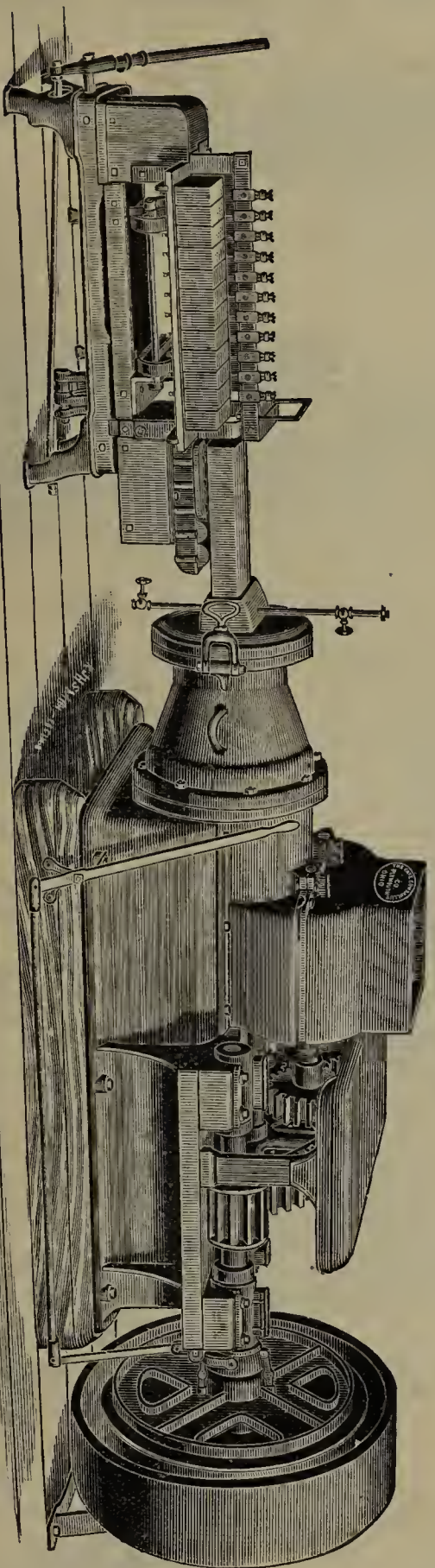
Let us hear from you.

THE FATE=
 GUNSAULLUS
 COMPANY,

Plymouth,

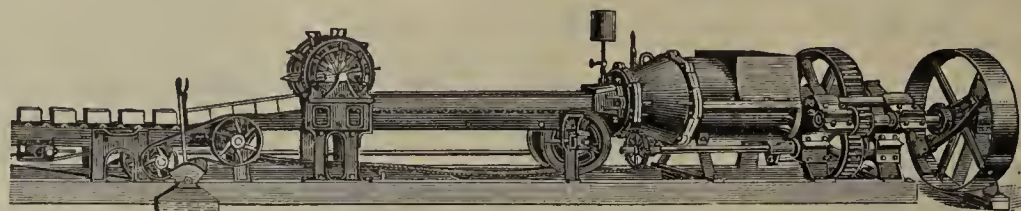
Richland Co., Ohio.

“A” size Brick Machine, with Board Delivery Cutting Table.



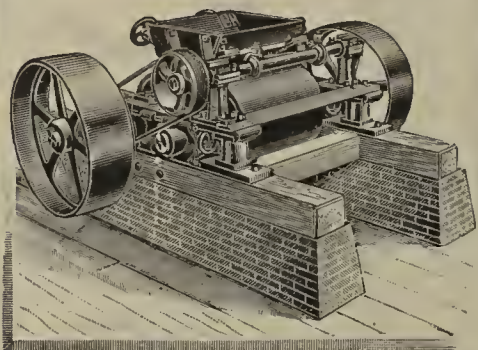
WE STUDY TO PLEASE.

A FEW SAMPLES

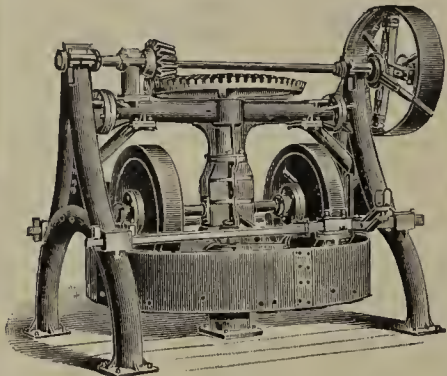


No. 1 Giant Machine and Automatic Table.

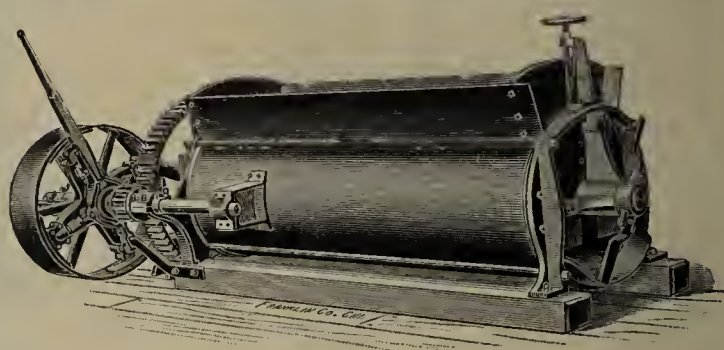
Just to give you
an idea. That's
All.



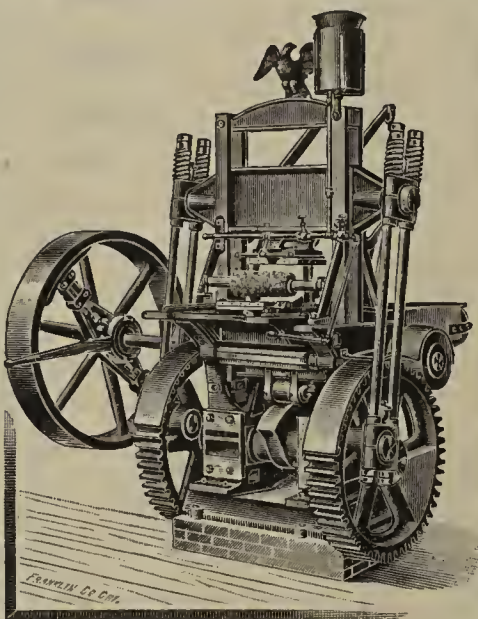
Improved Tailings Crusher.



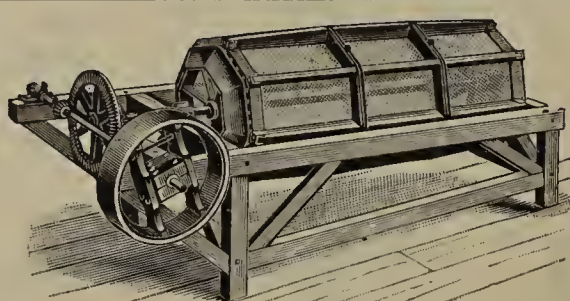
Dry and Wet Pans.



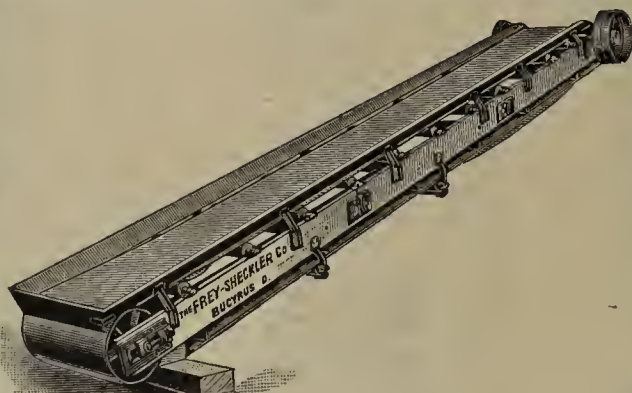
Pug Mills and Granulators.



Eagle Steam Power Re-Press.



Octagon Revolving Clay Screens.



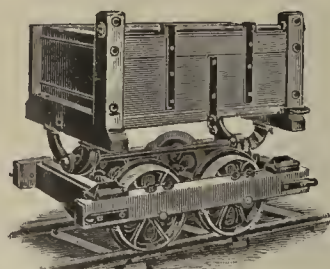
Clay Conveyors.



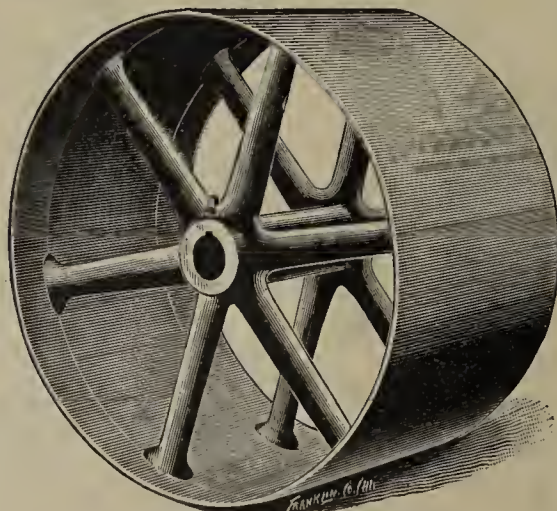
Clay Elevators.



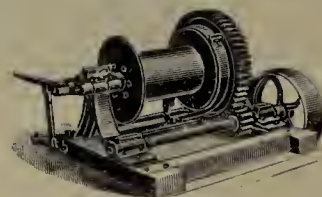
Reduction Mill.



Dump Cars.



Pulleys, Shafting and Belting.



Winding Drums.



Couplings, Hangers, Etc.

The FREY-SHECKLER CO., - Bucyrus, Ohio, U. S. A.

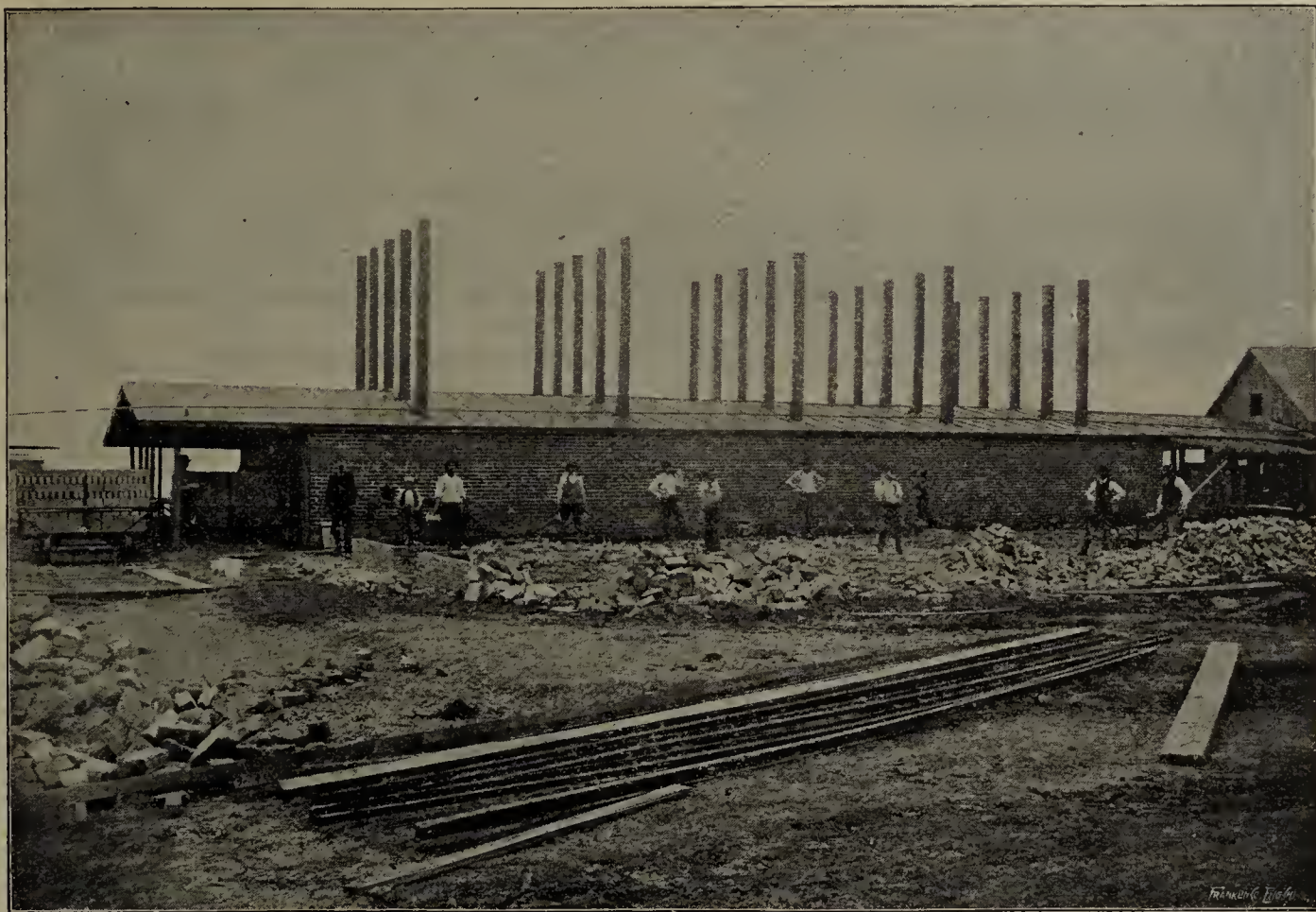
Manufacturers of a Complete Line of Clayworking Machinery. Also builders of the Celebrated Bucyrus Steam Tunnel Dryer.

Send for Catalogues.

The BUCYRUS STEAM TUNNEL DRIER

It Has Never Failed, Nor Never Will!

WHY? Because it distributes its radiation with the same uniformity as the sun's rays. It only differs from the heat of the solar body in its intensity. This is the principle upon which we construct the Bucyrus Steam Tunnel Drier, and it is useless to argue that it is not the correct principle, for no experienced clayworker can or will deny that the sun's rays, direct or indirect, is not the best mode of drying clays. Its only weakness is its inability to do the work rapidly. We substitute the Bucyrus Steam Tunnel Drier, using natural principles only, adding thereto sufficient heat to do the work in the minimum amount of time.



THE FREY-SHECKLER CO., BUCYRUS, OHIO.

NEW CASTLE, PA., December 26, 1893.

GENTLEMEN:—I have been endeavoring to write you for some time as to the satisfactory results of the Tunnel Dryer you put in for me about two years ago. It does all I could expect of it. It makes 15,000 brick per day (that is the capacity of my dryer). I have not stopped one hour on account of my brick not being dry. I think the cost of drying by it is cheaper than any other process I have seen.

Yours truly,

M. S. MARQUIS.

THE FREY-SHECKLER CO., BUCYRUS, OHIO.

GALESBURG, ILL., January 10, 1894.

GENTLEMEN:—The Dry House at our works, put up for us last June, has been another of those perfect things constructed by the Frey-Sheckler Co. Constructed and adapted to the use of our exhaust steam during the day time and live steam during the night, it has been a perfect dryer. Contemplated to hold our brick forty-eight hours, it has been the very best dryer in the country, and made a saving in cost of fuel to us of 50 cents to 60 cents per 1,000, paying the cost of Dryer in one year. With addition of extra steam for daytime we can dry 125,000 in twenty-four hours. We take pleasure in testifying to the virtues of the Dryer.

With respect,

GALESBURG BRICK & TERRA COTTA CO

Per Albert Warren, Sup't.

We Solicit Correspondence From All Brickmakers

THE FREY-SHECKLER CO.,

— BUILDERS —

Send for Catalogue.....



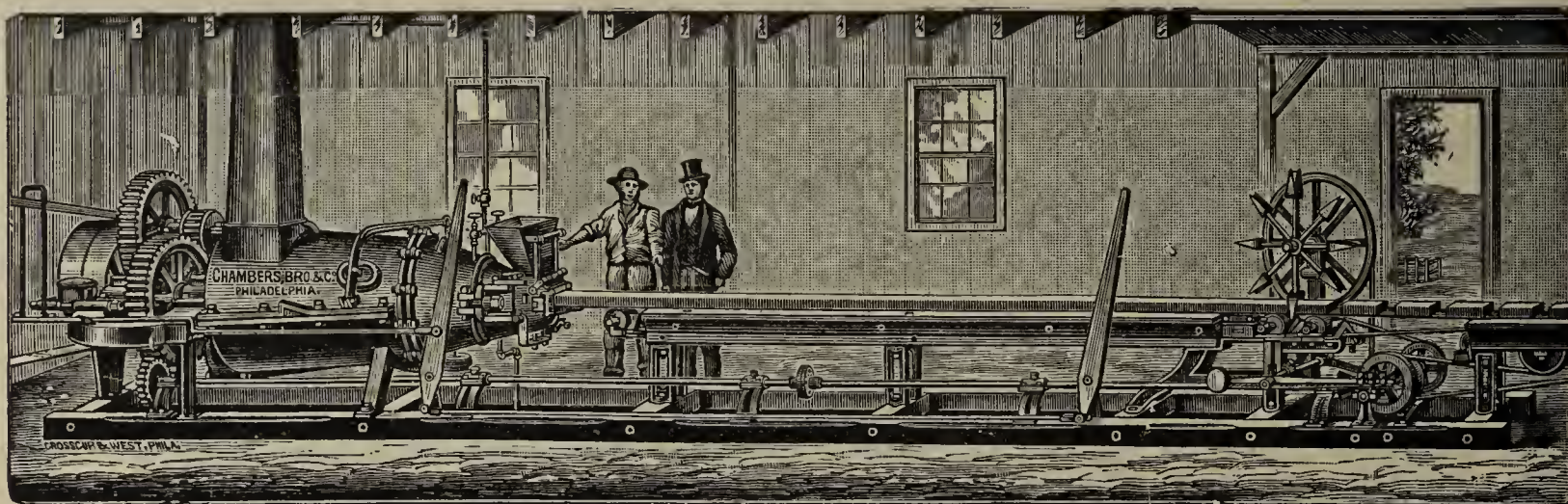
Bucyrus, Ohio, U. S. A.

CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

IMPROVED BRICKMAKING MACHINERY.



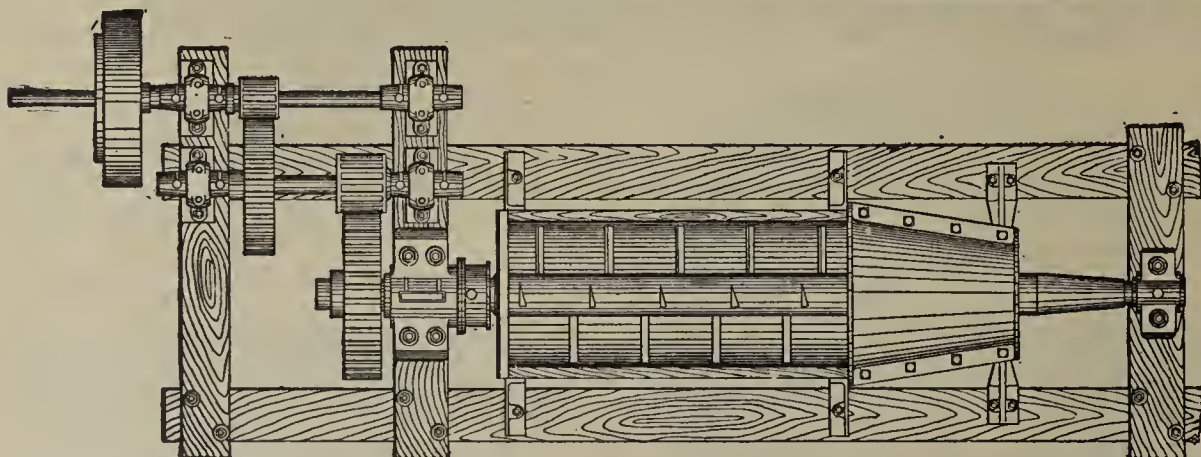
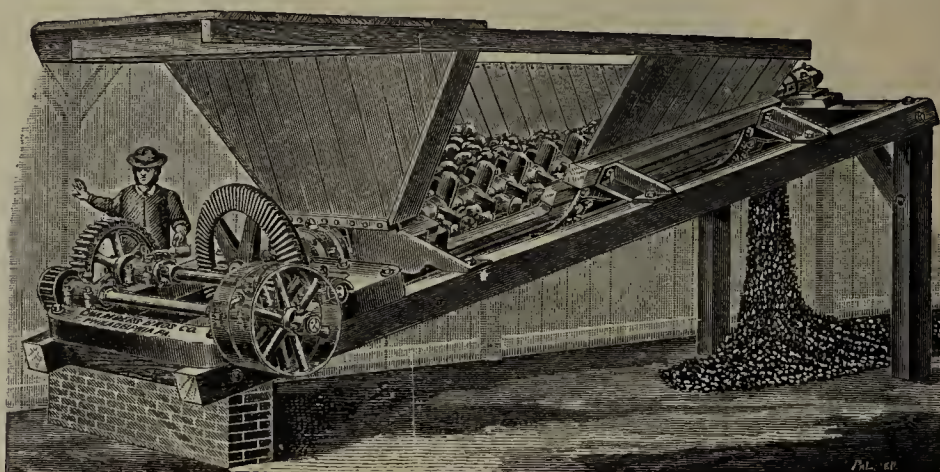
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL
PUG MILLS

Of Six Sizes and Styles.

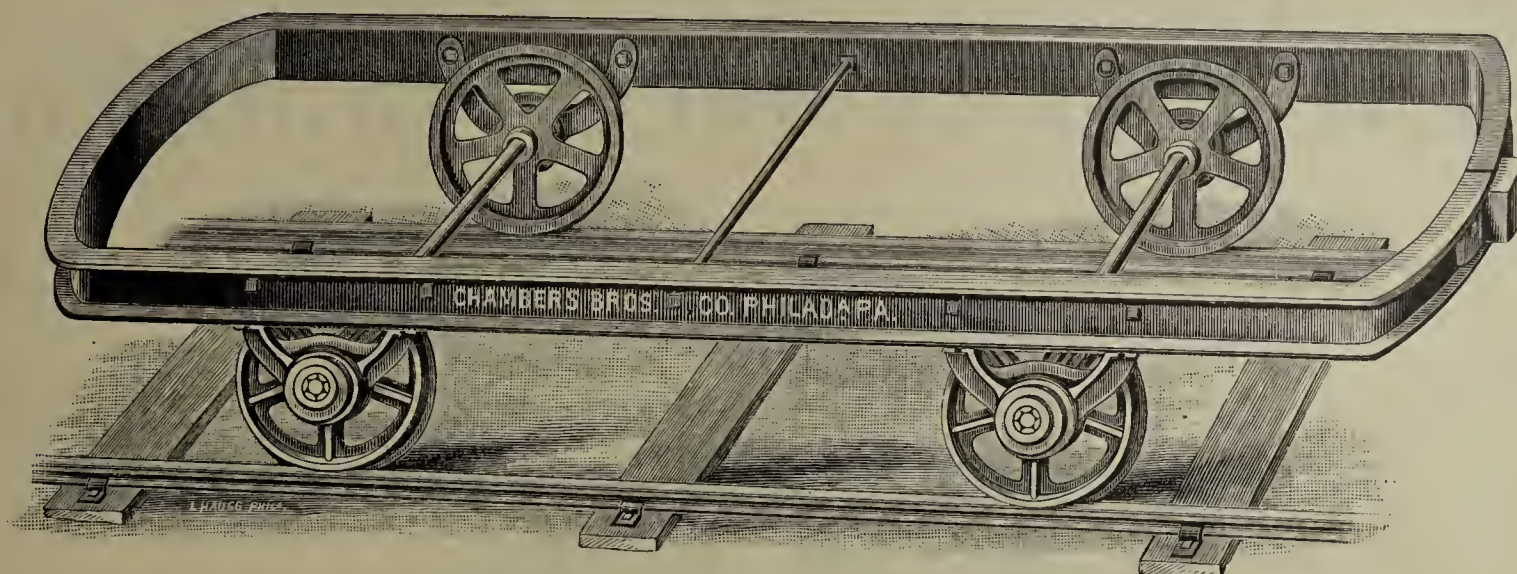
VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]

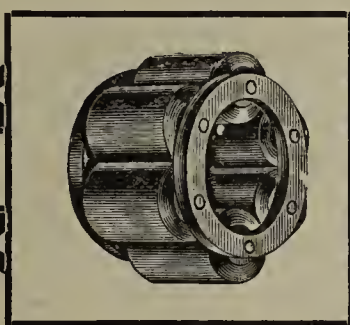
❖ DRYER CARS. ❖



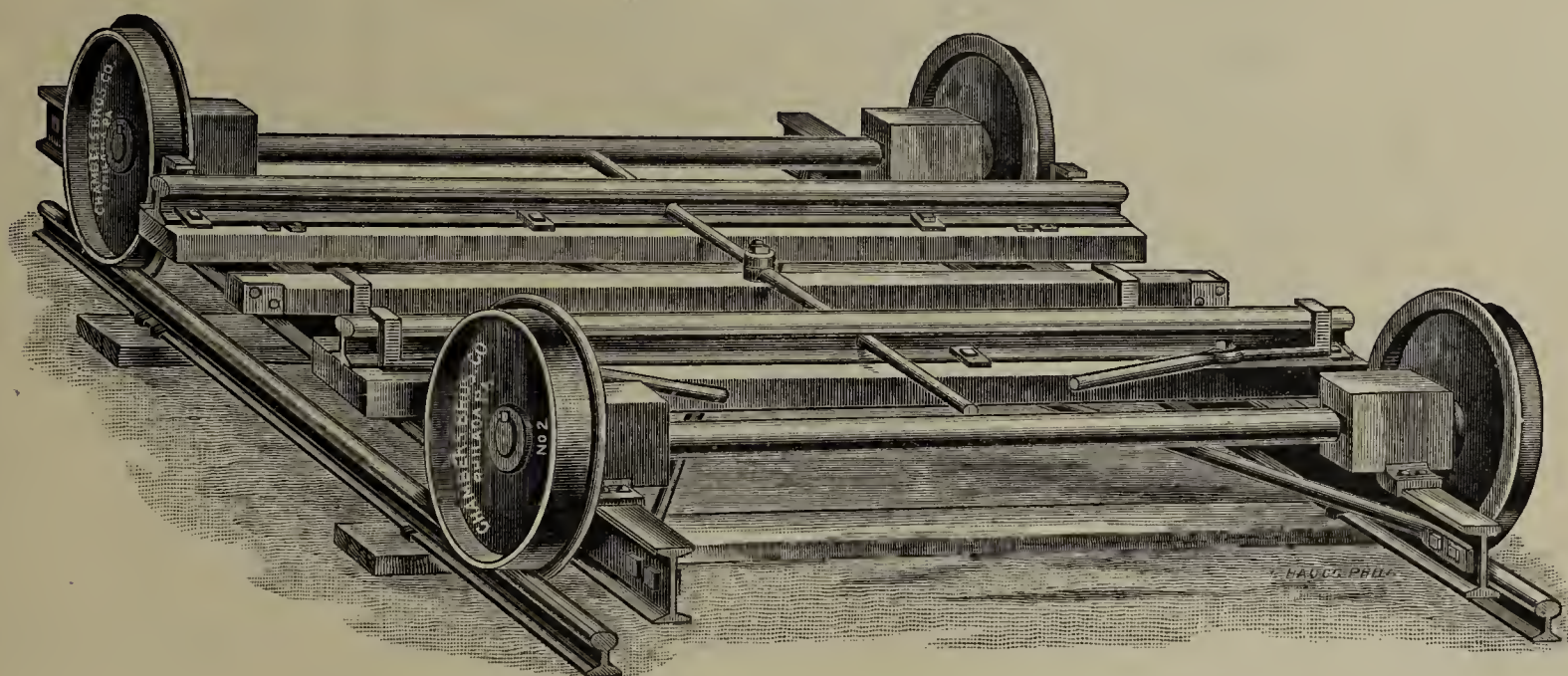
This STEEL CHANNEL FRAME CAR is Without an Equal.

We are prepared to make it of different dimensions, and of gauge to suit customers requirements. The channel section is much stiffer than angle, and being in one piece there are no weakening joints as where cross rails and bumpers are bolted to side frames.

The Anti-friction Cage Roller



Bearing used on our Cars.



WROUGHT IRON BEAM TRANSFER CARS.

We guarantee these to give satisfaction.

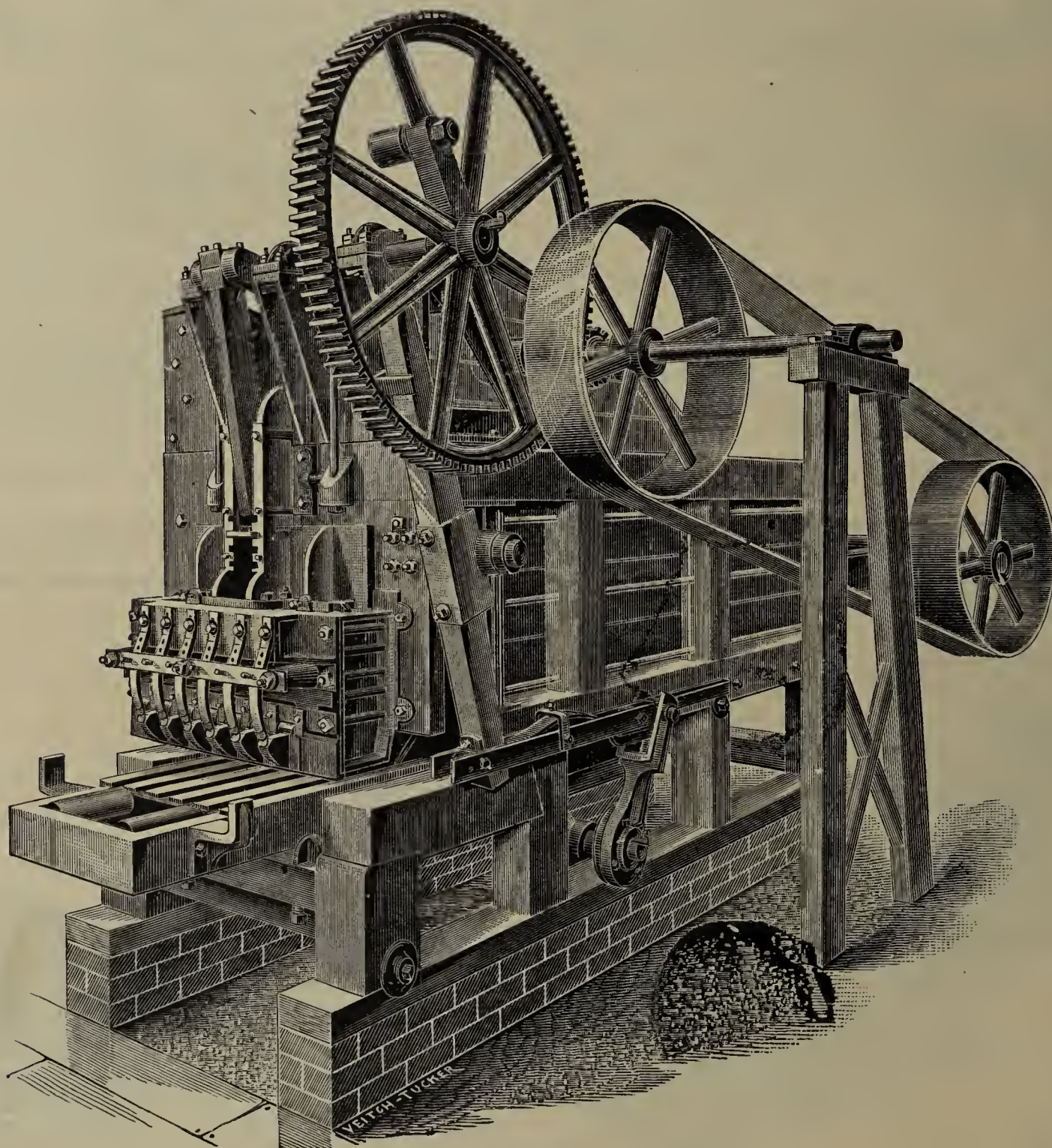
CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

❖ PHILADELPHIA, PENN. ❖

The True Test of a Machine Is

THE WAY IT DOES ITS WORK



RESULTS DETERMINE the ECONOMY of a MACHINE. ~~~~~

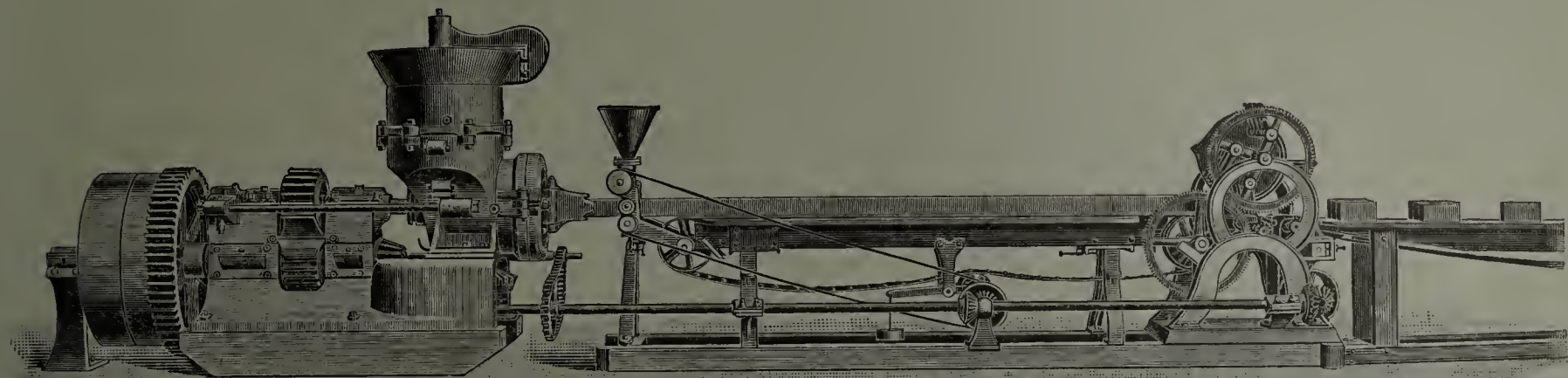
On this basis the "NEW HAVEN" MACHINE is the Cheapest in this Country.
This statement is backed up by the testimony of satisfied customers.
With it Results are sure—No Guess Work.

~~~~~ INQUIRE OF ~~~~~

The McLAGON FOUNDRY CO., New Haven, Conn.

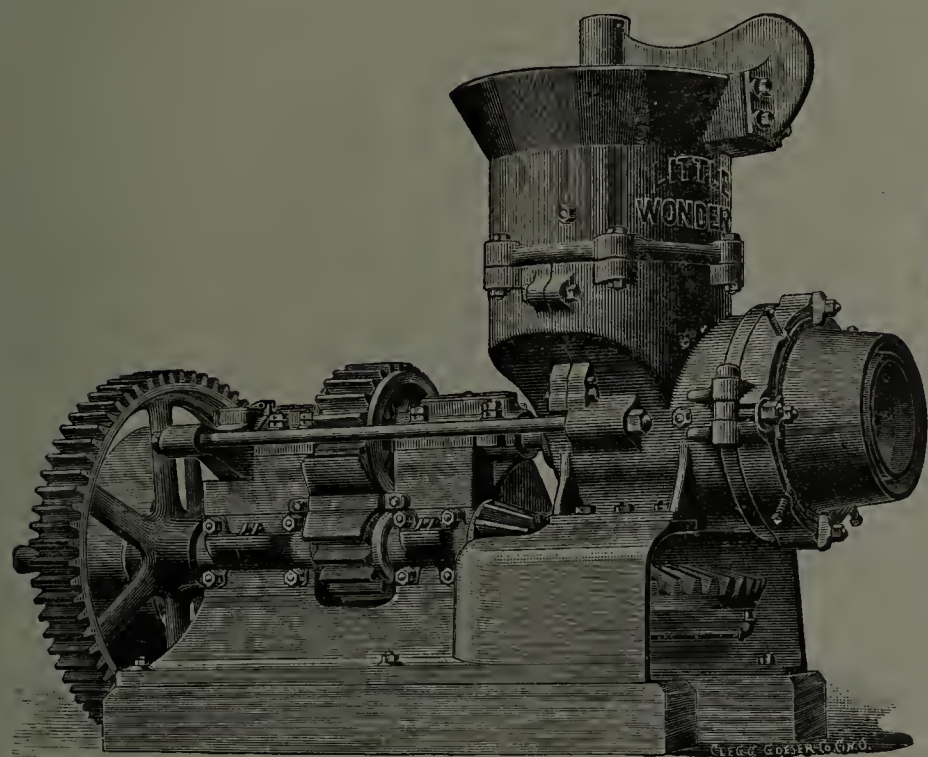


# Wonder Machinery.

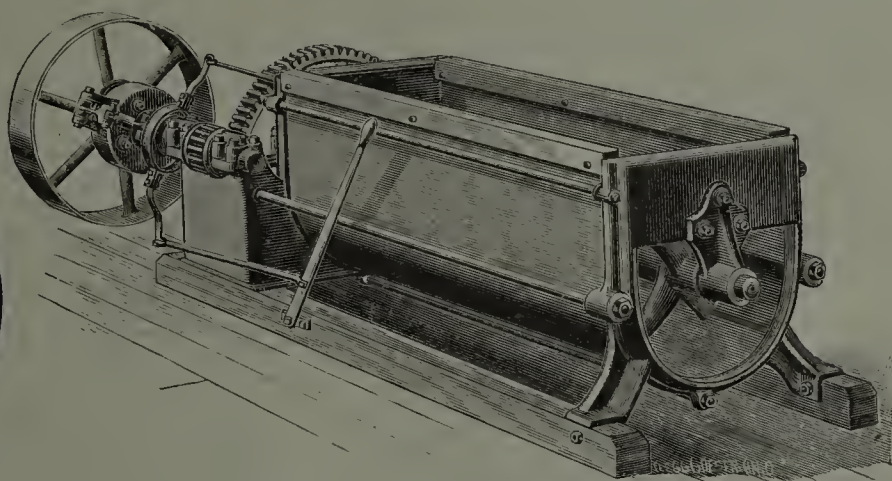


NICHOLS-IND.

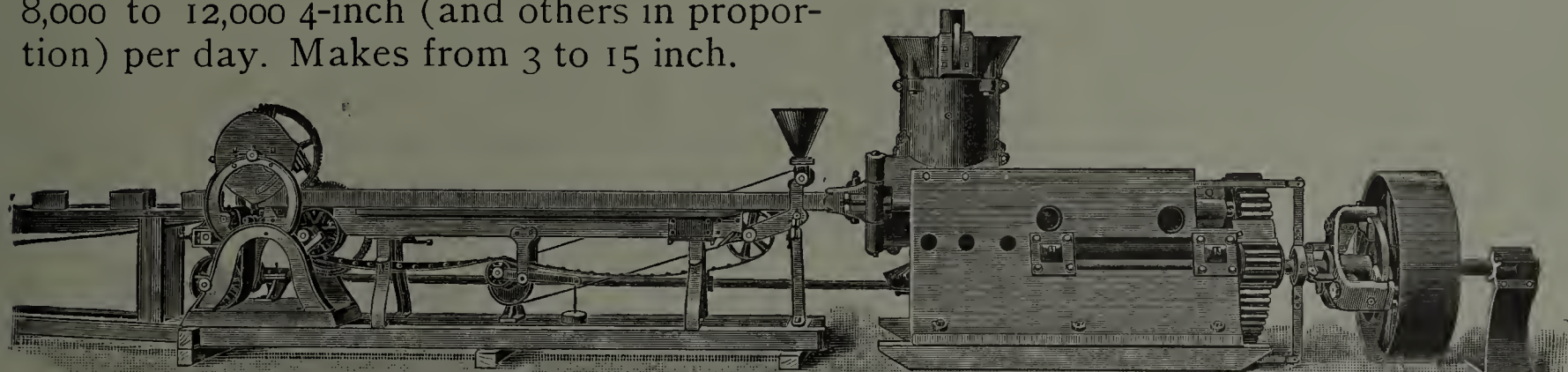
Little Wonder Brick Machine, with Cunningham Automatic Brick Cutter and Sander ; capacity, 25,000 Brick Per Day.



Little Wonder Drain Tile Machine ; capacity 8,000 to 12,000 4-inch (and others in proportion) per day. Makes from 3 to 15 inch.



No. 1 Open Top Pug Mill, Single Geared, 25,000 to 35,000 Brick Daily Capacity.



Big Wonder Brick Machine with Cunningham Automatic Brick Cutter and Sander ; capacity 60,000 to 75,000 Brick Per Day.

AS MANUFACTURED BY ~~~

## The Wallace Manufacturing Co.,

Send for No. 14 Catalogue for further particulars.

FRANKFORT, IND.



The LATEST IMPROVED



Brick Dryer.

ADAM J. WECKLER,  
TELEPHONE. DIVERSY AND CLYBOURN AVES.

WECKLER BRICK CO.,

TELEPHONE. WESTERN AND ADDISON AVES.

WECKLER-PRUSSING BRICK CO.,

TELEPHONE. BLUE ISLAND, ILL.

MAIN OFFICE:  
517 OGDEN BUILDING, 34 CLARK ST.  
TELEPHONE 5044.

Chicago, July 18, 1894.

WOLFF DRYER CO., Chicago,

Gentlemen:—We have had one of your twelve track dryers in use for nearly two years and two six track dryers for more than one year. Since you have improved these dryers by means of the receiving tank and pump system, we are drying 175 to 180 M bricks per day, with a saving of 20 to 25 per cent. of steam used under the old system. It is possible to dry up to 200 M brick every 24 hours, without injury to the ware, and we have done this on several occasions when we were compelled to run over time.

Our experience with other dryers formerly used on our plant and the results obtained by other manufacturers in this neighborhood with hot air and fire dryers, compels us to say that in our estimation your dryers are more economical and show better results than any we have seen. We use two boilers 5x18 feet for these dryers and at times have to reduce the quantity of steam used to prevent getting the bricks too dry. Pressure carried 85 pounds.

Yours respectfully,  
WECKLER-PRUSSING BRICK CO.,  
Alexander Prussing, Secretary.

## TENNESSEE PAVING BRICK CO.,

GENERAL OFFICES:—MONTAGUE BLOCK,

W. M. LASLEY, GENERAL MANAGER.

ROOMS 1 &amp; 3.

Chattanooga, Tenn., September 3, 1894.

The WOLFF DRYER COMPANY, Chicago, Ills.,

Gentlemen:—We have thoroughly tested your Iron Clad Dryer put in for us recently, consisting of three (3) tunnels of three (3) tracks each; tunnels being eight-three (83) feet long, and it is giving us entire satisfaction. We are drying forty thousand (40,000) paving blocks per day, in size  $2\frac{3}{4} \times 4\frac{1}{2} \times 9\frac{1}{4}$ . Our brick come from the dryer perfectly dry, without checks, warp or twist.

It is a decided improvement over our old method of direct heat flue dryer and we are drying more and better brick with it than we did with our old system, nine (9) tunnels, three (3) tracks in each tunnel.

We adopted your system after investigating others and can recommend it.

Yours truly,  
TENNESSEE PAVING BRICK COMPANY,  
W. M. Lasley, Gen. Man.

## DRYING SAND MOLD BRICK.

C. HENNEKE, PRESIDENT.  
F. VOGT, SECRETARY

TELEPHONE 737-2.

## STANDARD BRICK CO.,

MANUFACTURERS OF THE CELEBRATED

Milwaukee Cream Colored Brick.

OFFICE AND YARDS: 496-510 Clement Ave., 17th Ward.

Milwaukee, Wis., Sept. 30, 1893.

WOLFF DRYER CO., Chicago, Ill.

Gentlemen:—In regard to your inquiry, how we like the exhaust pump put in for our dryer last Spring, we are glad to say, that same works to our entire satisfaction; in fact could work no better and what is more, has saved us a great deal of fuel. It gives us also great satisfaction to say on this occasion, that your dryer, after using same three seasons, works as nicely as ever and we are fully convinced that we have the best dryer in the market to-day. Last year we felt a little doubtful as to whether we really had the best dryer, for other parties, who tried to sell their dryers here, made such high claims for same in every respect, that, if realized, they would put your dryer in the shade. Since then two dryers of different makes, were put in different yards here, just those dryers, for which these claims were made. One of them proved a complete failure, drying about 20,000 brick per day, instead of 60,000, and it will have to be torn down to make room for some other dryer, and the second did not work until same was materially changed, and we have all reasons to congratulate ourselves to have hit on the right dryer in the first place. We shall be glad to show your dryer to any interested parties who may visit our yards.

Yours very truly,  
STANDARD BRICK CO.,  
F. Vogt, Sec'y.

## Labahn Brick Company,

MANUFACTURERS OF

## BUILDING BRICK.

YARD:—LANSING, ILL., PANHANDLER R

TELEPHONE:—MAIN 4132.

OFFICE:—159 LA SALLE ST., ROOM 97.

BOX 408, BUILDERS' AND TRADERS' EXCHANGE.

Chicago, Ill., September 7, 1894.

WOLFF DRYER CO., Chicago, Ill.,

Gentlemen:—The four tunnel dryer, sixteen tracks, which you built for us to dry 90 M bricks daily, did the work in a very satisfactory manner. Recently we concluded to increase our capacity which we could do with very little expense, providing we could dry the extra quantity.

We are pleased to state that you mastered the situation by adding your late improvements which cost very little extra, and we are now enabled to dry 112 M bricks as easily and with no more expense than the cost of drying 90 M, and we feel confident that if we were to run 10 hours daily, instead of eight as we are now doing, that the drying capacity is ample to thoroughly dry the entire output. We therefore take pleasure in commending your dryer to all brick manufacturers in need of an economical system of drying their clay product.

Yours respectfully

LABAHN BRICK CO.,  
John F. Labahn, Pres.

Information, Estimates, Catalogues fully furnished.

WOLFF DRYER CO., 358 Dearborn St. Chicago, Ill.  
Room 304,





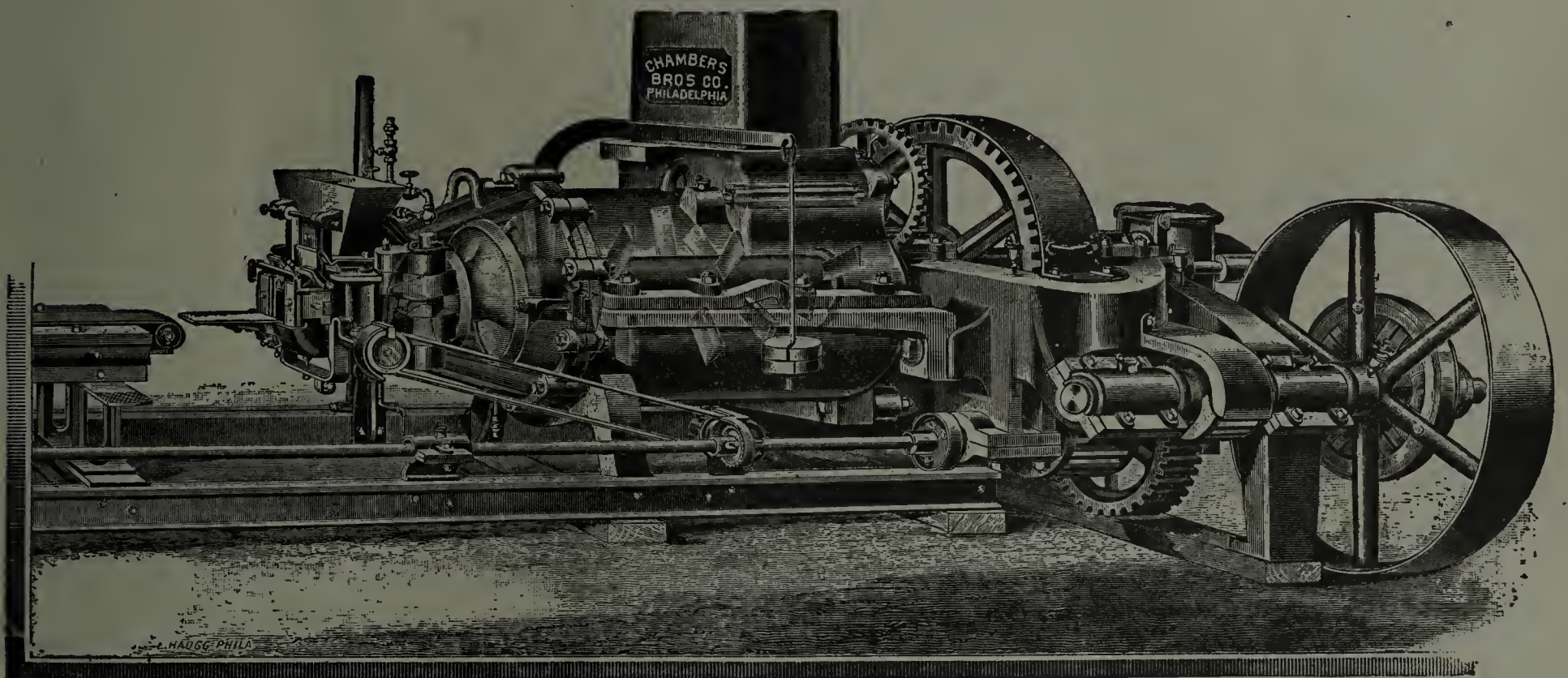
THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXII, No. 5.

INDIANAPOLIS, IND., NOVEMBER, 1894.

\$2.00 a Year in Advance.

# Brick Making Machinery,



## Chambers Brothers Company,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,

J. E. EASTES, Chicago Agent,  
203 South Canal Street.

PHILADELPHIA, PA.

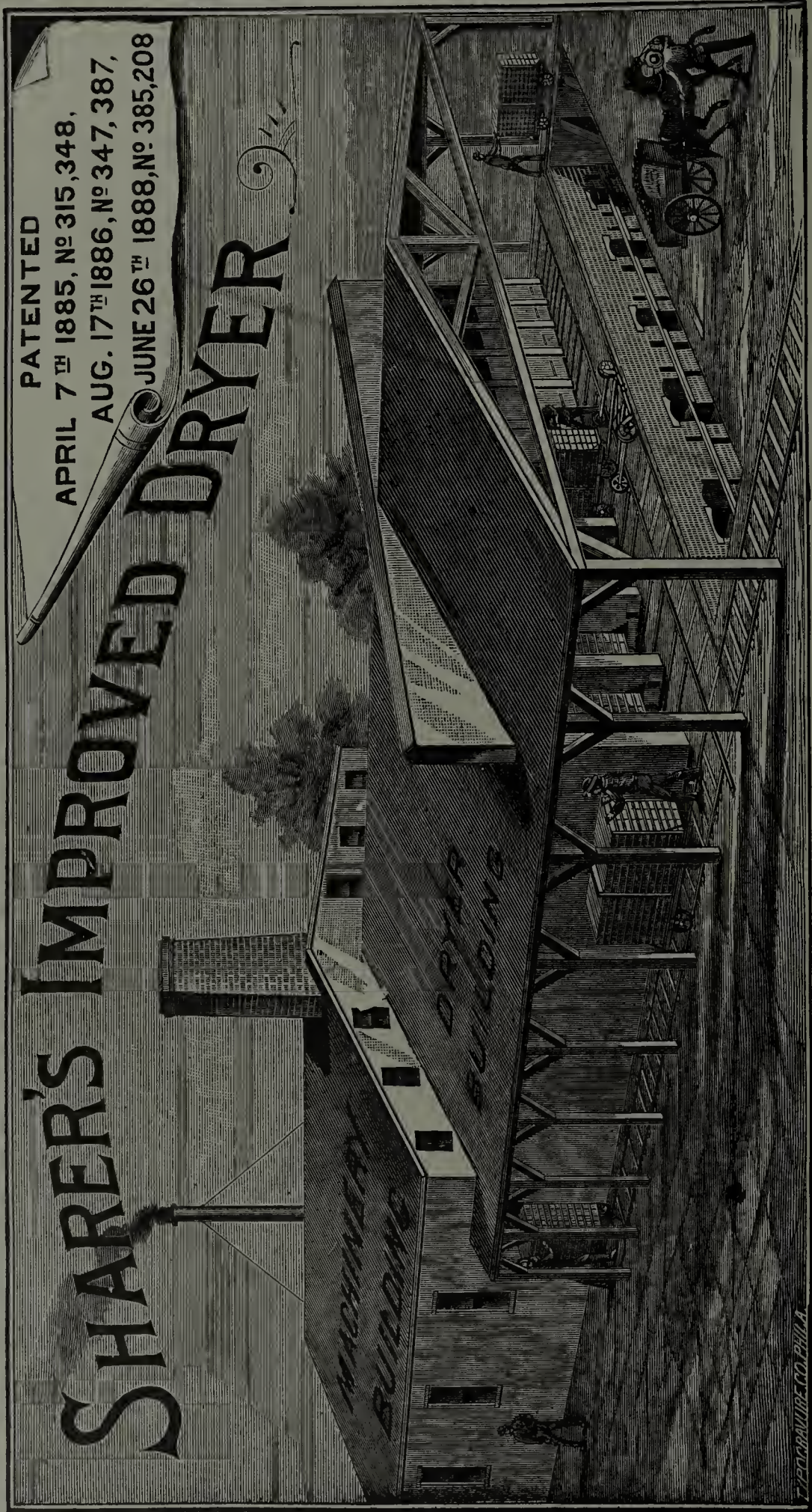
See ads. on pages 491 and 492.



# THE SHARER DRYER AND CONSTRUCTION CO.,

BRICK MANUFACTURING EXPERTS.  
CONSTRUCTING ENGINEERS. ♦ CONTRACTORS AND BUILDERS.  
COMPLETE PLANTS A SPECIALTY.

Owners of SHARER'S IMPROVED DRYER;  
SHARER'S IMPROVED CALORIFIC KILN.



Builders of All Kinds of Dryers and Kilns for Drying and  
Burning any and all Kinds of Clay Products.

PATENTED  
APRIL 7<sup>TH</sup> 1885, No 315,348,  
AUG. 17<sup>TH</sup> 1886, No 347,387,  
JUNE 26<sup>TH</sup> 1888, No 385,208

## SHARER'S IMPROVED DRYER

Manufacturers of Cars, Transfer Cars, Turn Tables, Furnace Castings and Complete Dryer and Kiln Equipments.  
.....Dealers in All Kinds of Clayworking Machinery, Engines, Boilers, Shafting, Pulleys, Etc.  
New plants built and equipped complete in every particular. Old plants remodeled and modernized. Clays tested and analyzed. Plans and estimates furnished.  
Information costs you nothing. Send for Catalogue "C."

### SHARER DRYER & CONSTRUCTION CO.,

TORONTO OFFICE: 71 Adelaide, East, Toronto, Ont., Canada,  
HUGH CAMERON, Manager.  
Rooms 506 and 507, The Mutual Life Building,  
N. W. Cor. 10th and Chestnut Streets,  
PHILADELPHIA, PA.



## For Clay Screens

..USED...

In Making Brick,  
Tile, Terra Cotta,  
etc., etc.

Also for Dry Pan,  
Pulverizer, Chute,  
Shaking and Re-  
volving Screens.



## Heavy Iron and Steel Plates

Punched for sizing  
Coal, Coke and  
Ores; Macadam,  
Concrete, Railroad  
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS

—USED FOR—

# CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

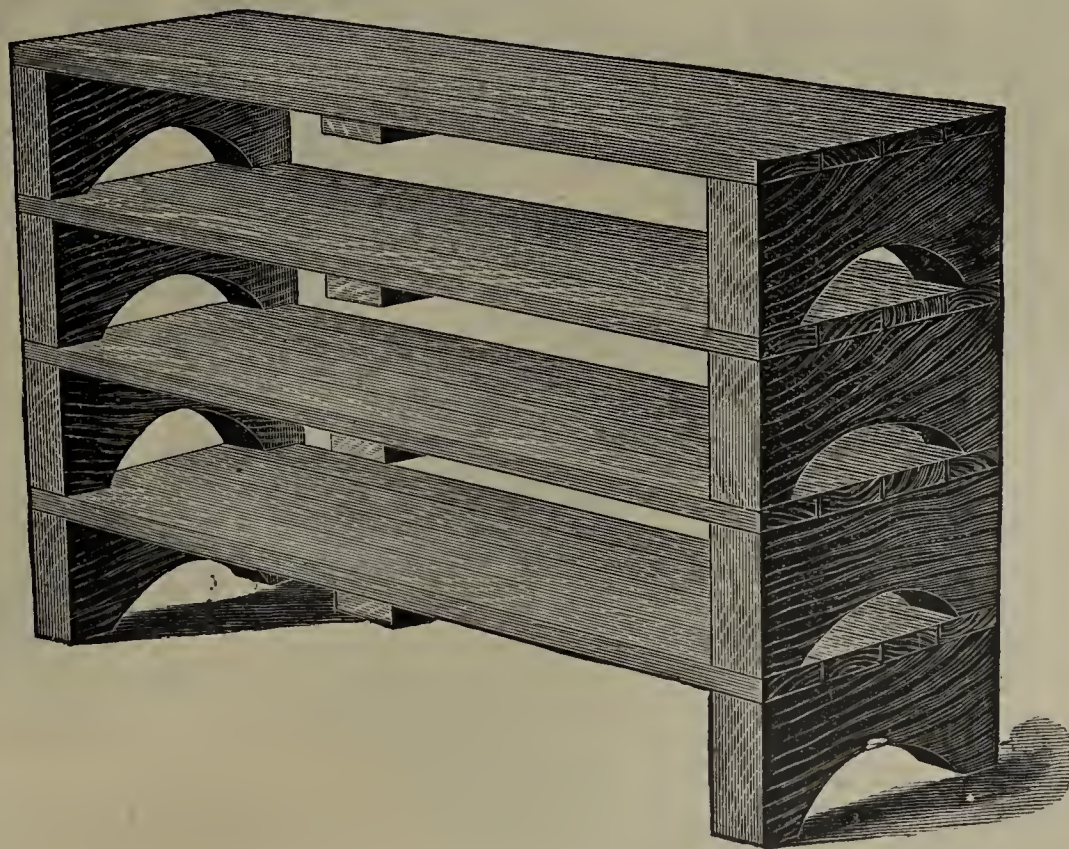
**THE HARRINGTON & KING PERFORATING CO.,**

EASTERN OFFICE:  
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,  
CHICAGO, ILL.

## WOODEN BRICK PALLETS

WOODEN  
BRICK  
PALLETS



STYLE C.

WOODEN  
BRICK  
PALLETS

We manufacture all styles and sizes. Write to us direct for descriptive circulars and prices.

**WM. B. MERSHON & CO.,** - Saginaw, East Side, Mich.



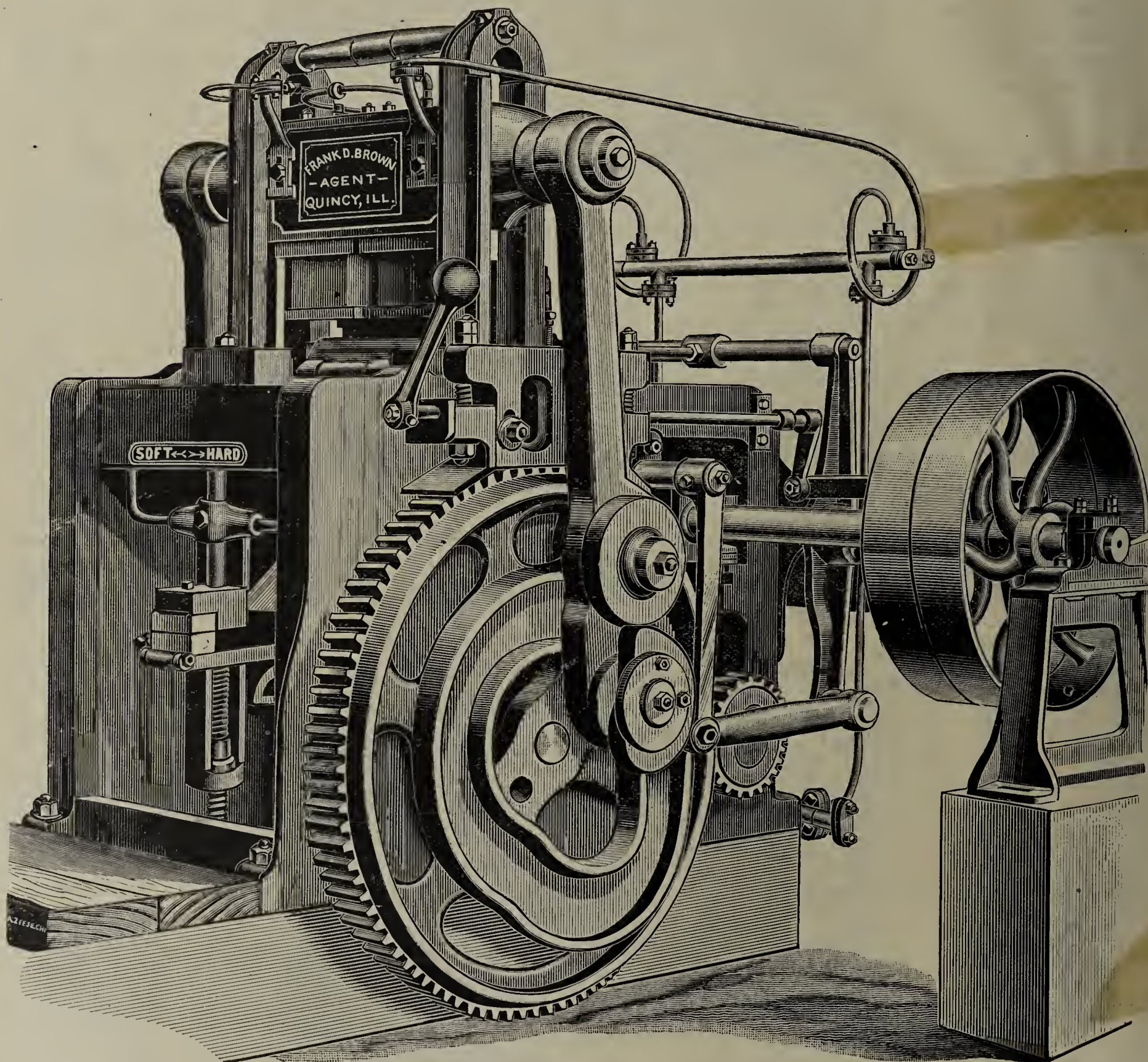
# WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

•✦ HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. ✦•

Best, Cheapest and Most Durable Press in the World.

\* ————— One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

**FRANK D. BROWN,** Room 817 Continental Bank Bldg.  
Cor. La Salle & Adams Sts. **Chicago.**



# The Ross-Keller Brick Machine.

## (Triple Pressure)

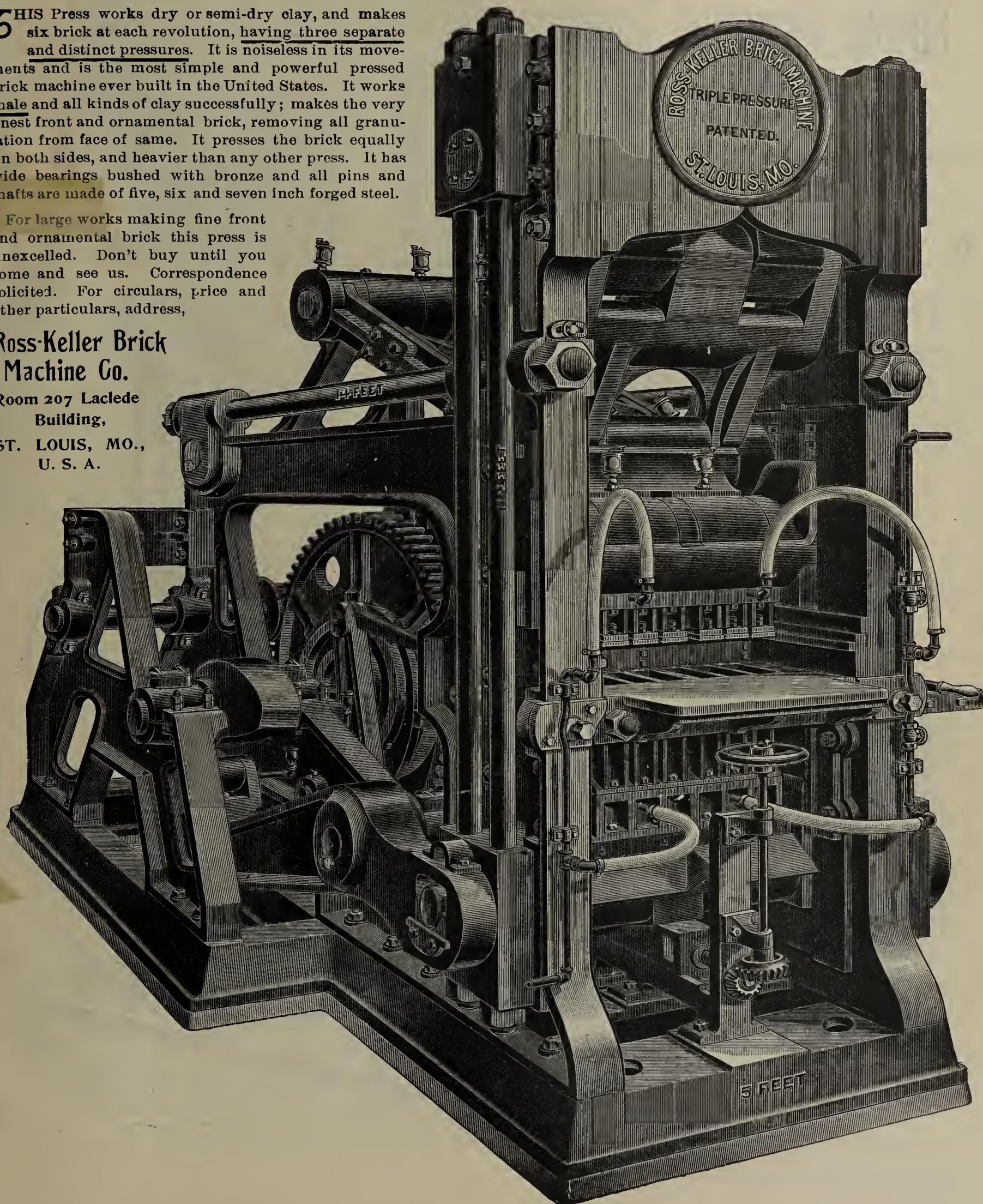
Weight 75,000 Pounds, Capacity 35,000 to 40,000 Brick Per Day.

**T**HIS Press works dry or semi-dry clay, and makes six brick at each revolution, having three separate and distinct pressures. It is noiseless in its movements and is the most simple and powerful pressed brick machine ever built in the United States. It works shale and all kinds of clay successfully; makes the very finest front and ornamental brick, removing all granulation from face of same. It presses the brick equally on both sides, and heavier than any other press. It has wide bearings bushed with bronze and all pins and shafts are made of five, six and seven inch forged steel.

For large works making fine front and ornamental brick this press is unexcelled. Don't buy until you come and see us. Correspondence solicited. For circulars, price and other particulars, address,

**Ross-Keller Brick  
Machine Co.**

Room 207 Laclede  
Building,  
ST. LOUIS, MO.,  
U. S. A.





# THE ANDRUS 4-Mold DOUBLE PRESSURE BRICK PRESS.



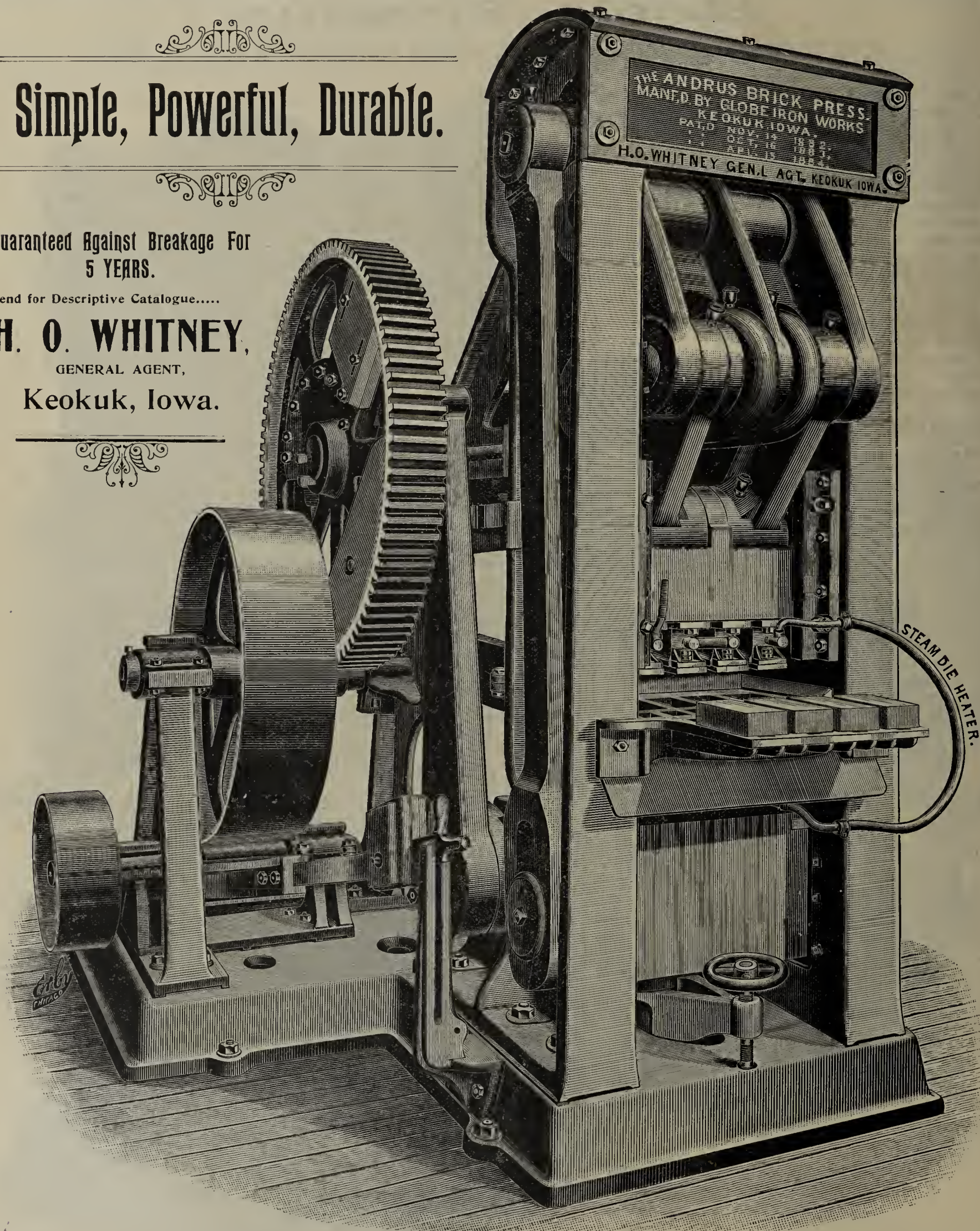
Simple, Powerful, Durable.



Guaranteed Against Breakage For  
5 YEARS.

Send for Descriptive Catalogue.....

**H. O. WHITNEY,**  
GENERAL AGENT,  
Keokuk, Iowa.





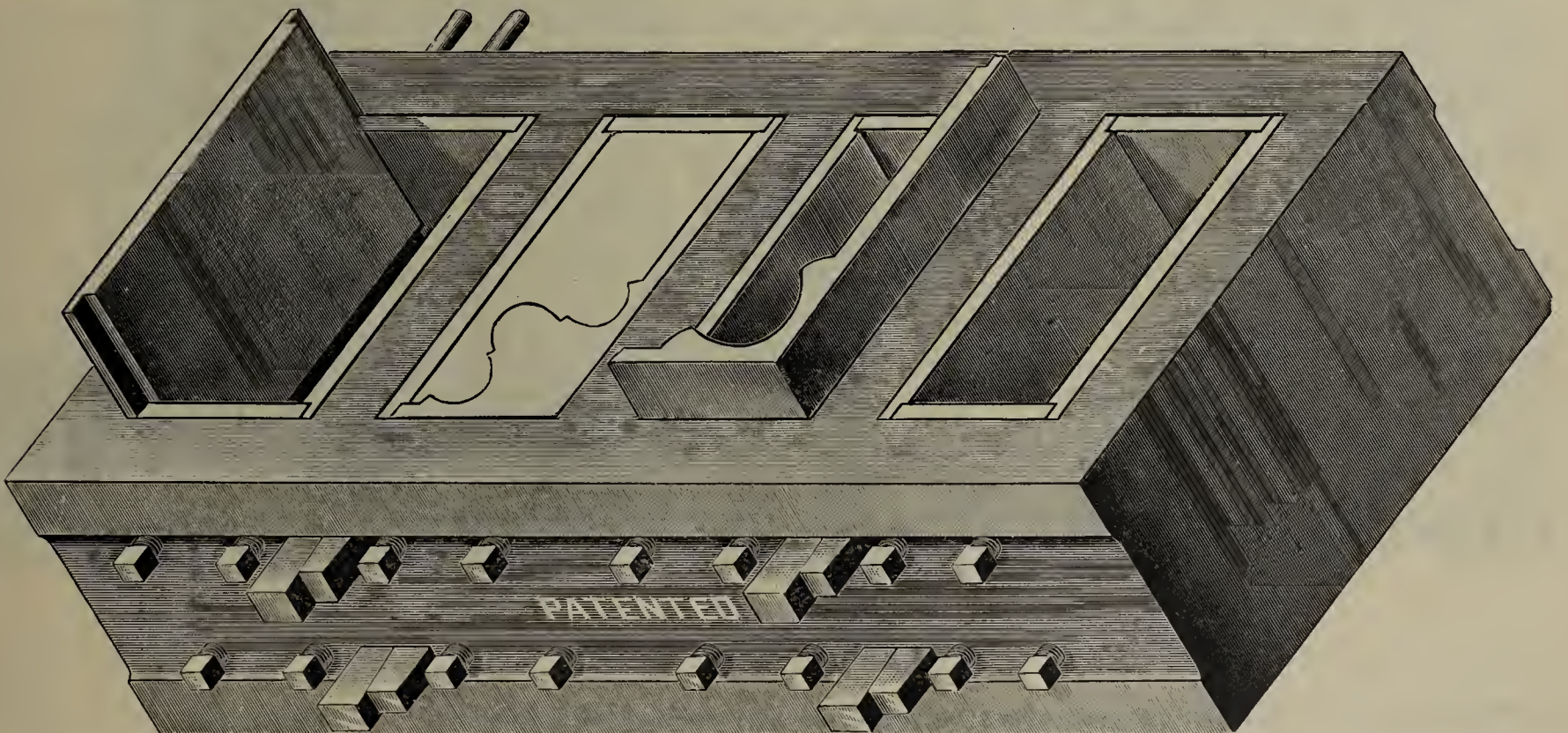
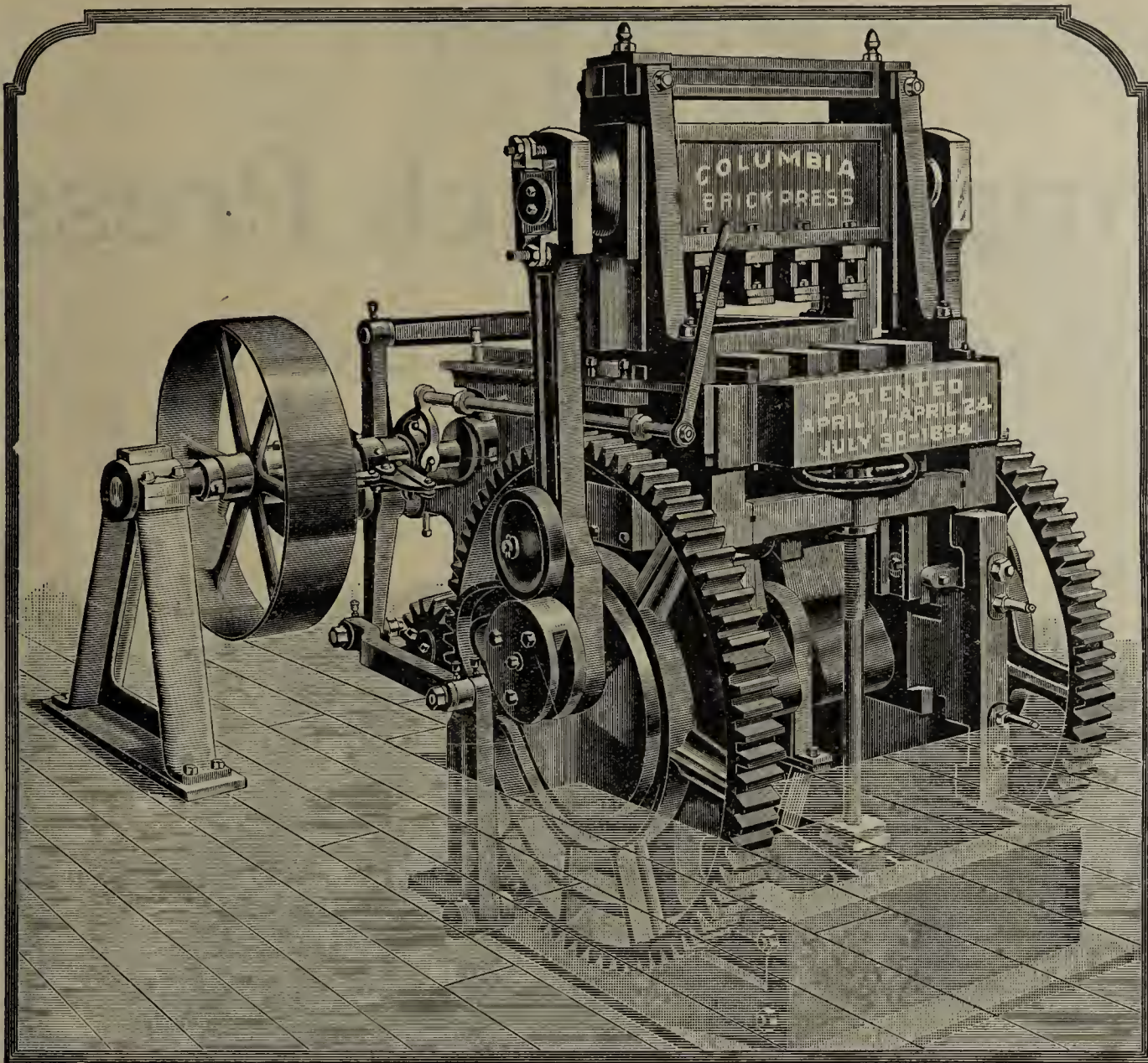
# This Press

Is Especially Adapted to the Manufacture of Fine Front and Ornamental Brick

And is as well the best and most unbreakable Dry Press Machine yet made.

It is a decided improvement over all other Machines. This we are prepared to fully demonstrate.

Those wanting the best and cheapest Dry Press Brick Machine now on the market should write us for our circular giving 18 REASONS why it is superior to all others.



**OUR NEW PATENT MOULD** is elegant in construction and is just the mould that brick manufacturers are looking for, it is so simple in construction that any one can adjust it in a few minutes from a front brick to an ornamental or brick of age.

**WITH THIS MOULD** every brickmaker can take out the liners, grind them and replace them himself and will enable him to turn out a first-class front or ornamental brick, which obviates the expense of getting new moulds.

**OUR TERMS ARE REASONABLE. ADDRESS,**

**Columbia Manufacturing Co..**

[Mention the CLAY-WORKER.]



2119 N. Ninth St., ST. LOUIS, MO.



NONE CAN COMPETE WITH IT

# The Simpson Brick Press

THE STANDARD MACHINE OF ITS CLASS.

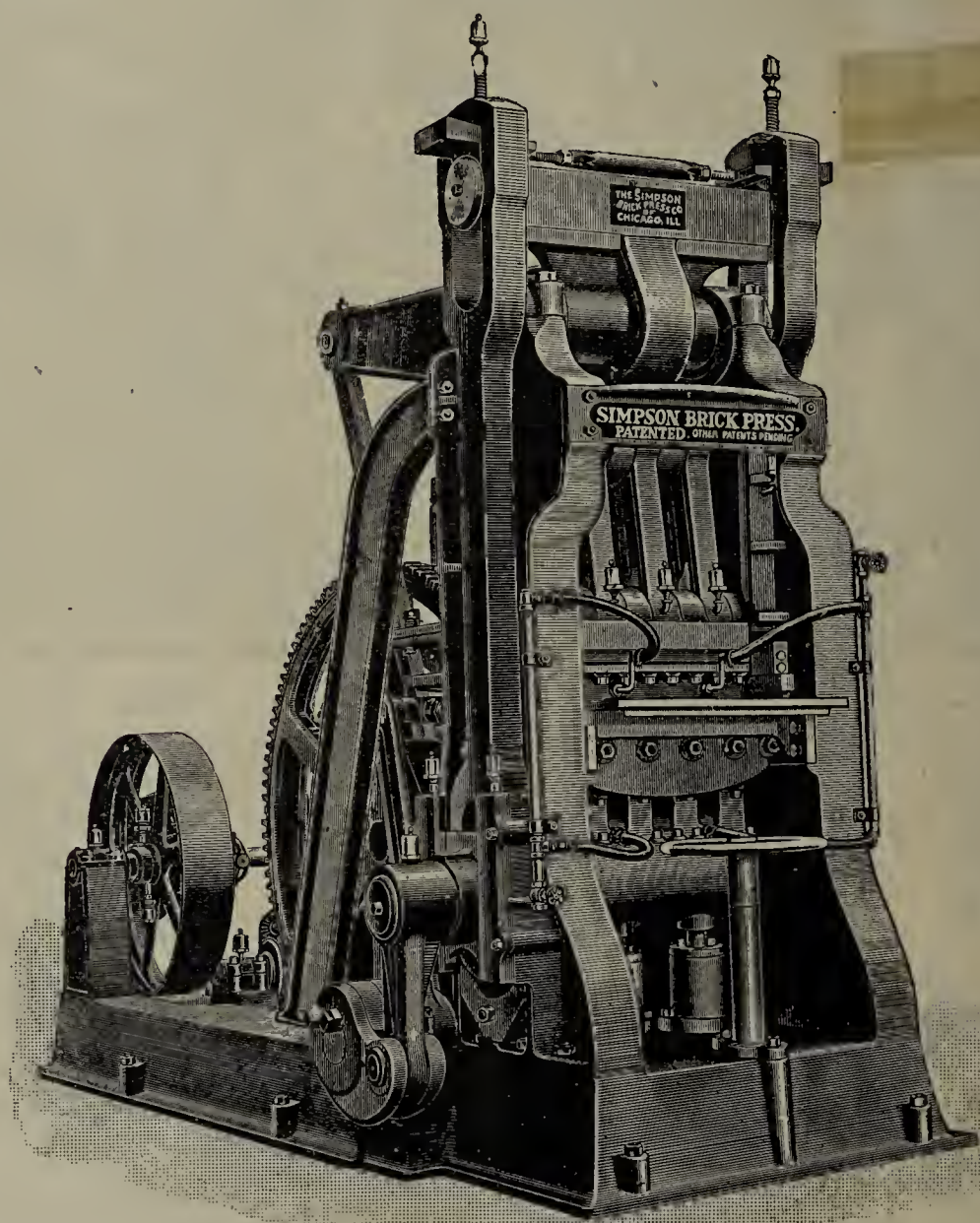
Every purchaser receives the benefit of years of experience in the dry press process.

The **SIMPSON** is beyond the experimental stage as its many successes can prove.

There are more of them running successfully than any other machine in existence.

It was the **only** machine to receive **favorable** mention from the **Official** Judge on Brick Machinery at the

World's   
 **Columbian**  
**Exposition** 



 Write us for descriptive matter, prices, terms, estimates, etc.,

## The Simpson Brick Press Co.,

AGENTS FOR CANADA,  
 Waterous Engine Works Co., Brantford, Ontario.

Chamber of Commerce, CHICAGO, ILL.



# U. S. BRICK PRESS

Perfect in Mechanical Construction.

Least Cost For Repairs.

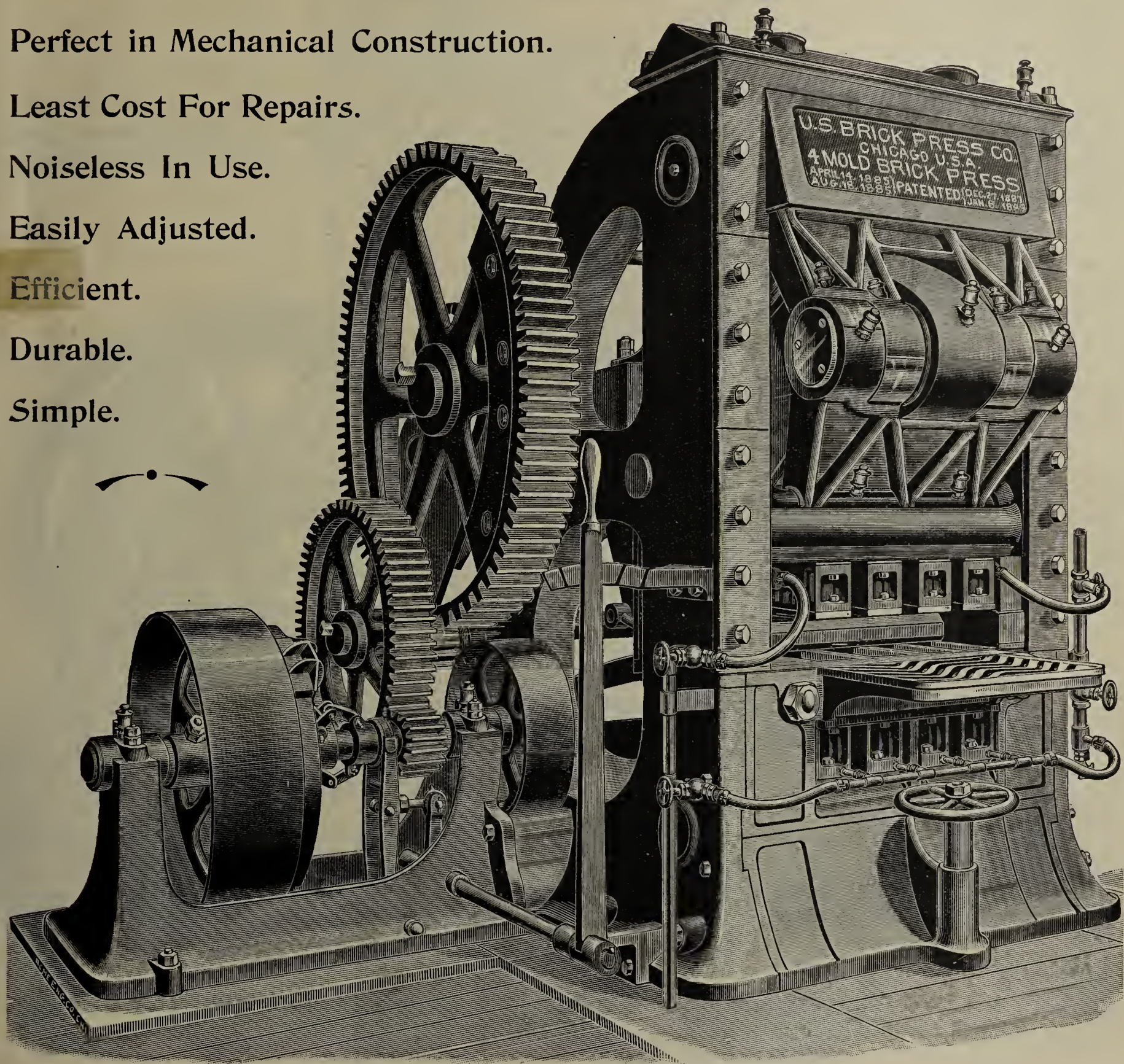
Noiseless In Use.

Easily Adjusted.

Efficient.

Durable.

Simple.



The U. S. Brick Press embodies all the requirements demanded by Pressed Brick Manufacturers, and its record is proof conclusive of its perfection as a Pressed Brick-maker. Write for new descriptive sheets.

UNITED STATES BRICK PRESS WORKS,

OSWALD KUTSCHE, Proprietor,

OFFICE AND TESTING ROOMS:  
72 West Washington Street.

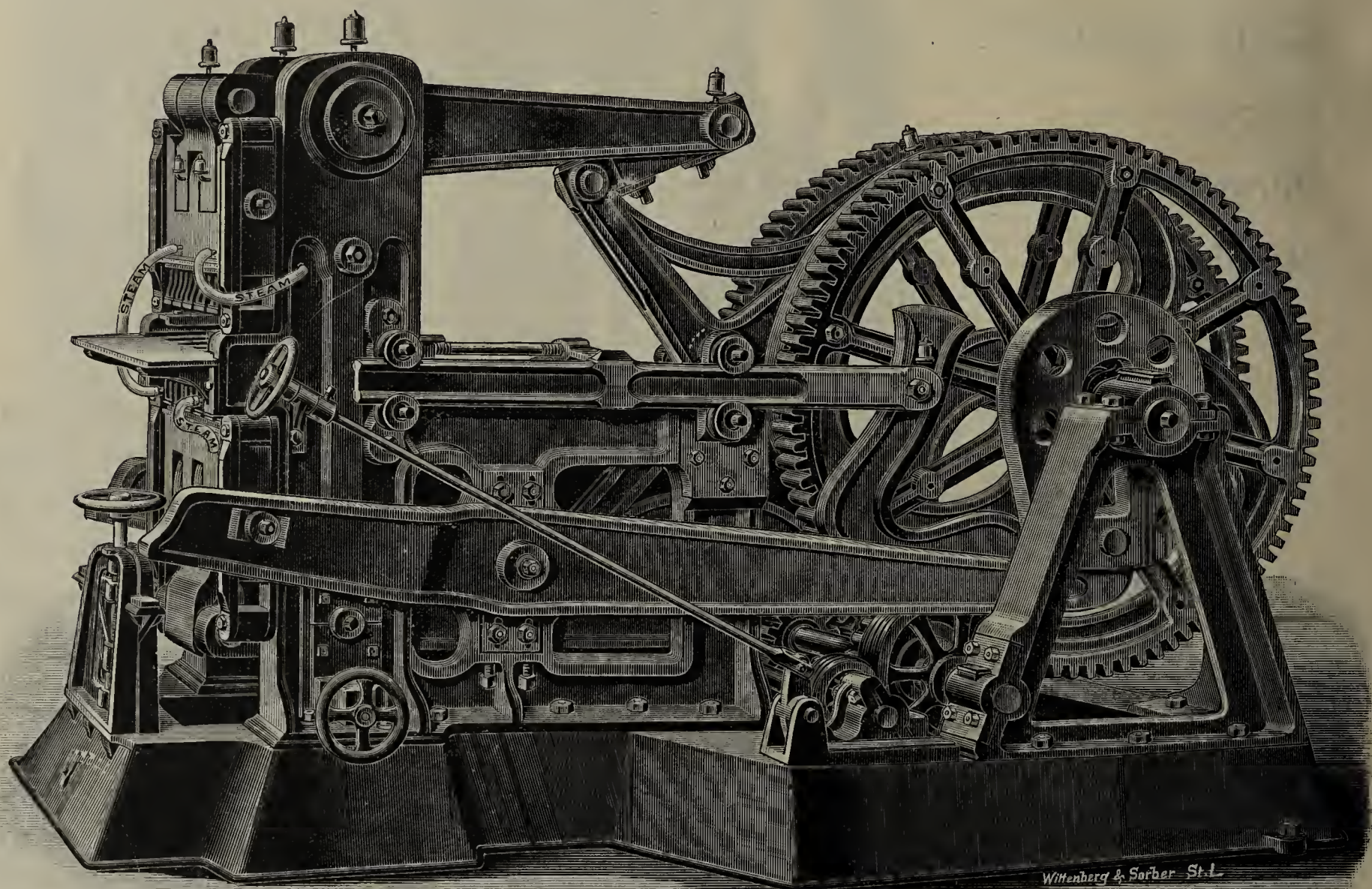
CHICAGO, ILL.



# The Progress Brick Press,

✻ DRY and SEMI-DRY. ✻

This machine is the result of years of practical experience in Dry Pressed Brick-making, a model combining **Simplicity, Durability and Economy**, as Brickmakers and Press Builders, we have entailed every advantage in producing the machine for a Brickmaker.



Can be seen in daily operation on plain, stock and ornamental bricks at any time at our yards. **Inspection solicited.**

Equal in strength to 50 tons of iron; this press is built of **Bassic steel** and **best quality iron**.

Bearings of **split boxes**, and wear taken up with **kib and key**, hence no lost motion.

All **adjustments** arranged with **wedges** operated by **hand wheels**, no troublesome liners and all parts easily accessible.

**Only Six Horse Power** required to operate our largest 6-Mold Press.

No liners to our mould, **no table** to fit mould into, and **no change** in size bricks by **regrinding** moulds.

Of the **time** of each revolution **40 per cent.** is spent in **high pressure** on bricks, permitting all air to escape, hence, **no seam or granulation**, in the brick, **28 per cent.** in **charger forwarding** bricks, perfect filling of molds and **undamaged product** secured by this easy movement. **Only 32 per cent.** in moving of the **Plunger**.

This machine is adapted to making **all sizes and shapes** of bricks up to **12 inches square**. Bricks pressed on **edge**, etc., etc. We manufacture **2, 3, 4, 5 and 6** mould presses and sell them with a **perfect guarantee**.

Descriptive catalogue, prices and terms on application.

**Tower Grove Brick and Machine Works,**  
King's Highway and Oak Hill R. R. **ST. LOUIS, MO.**



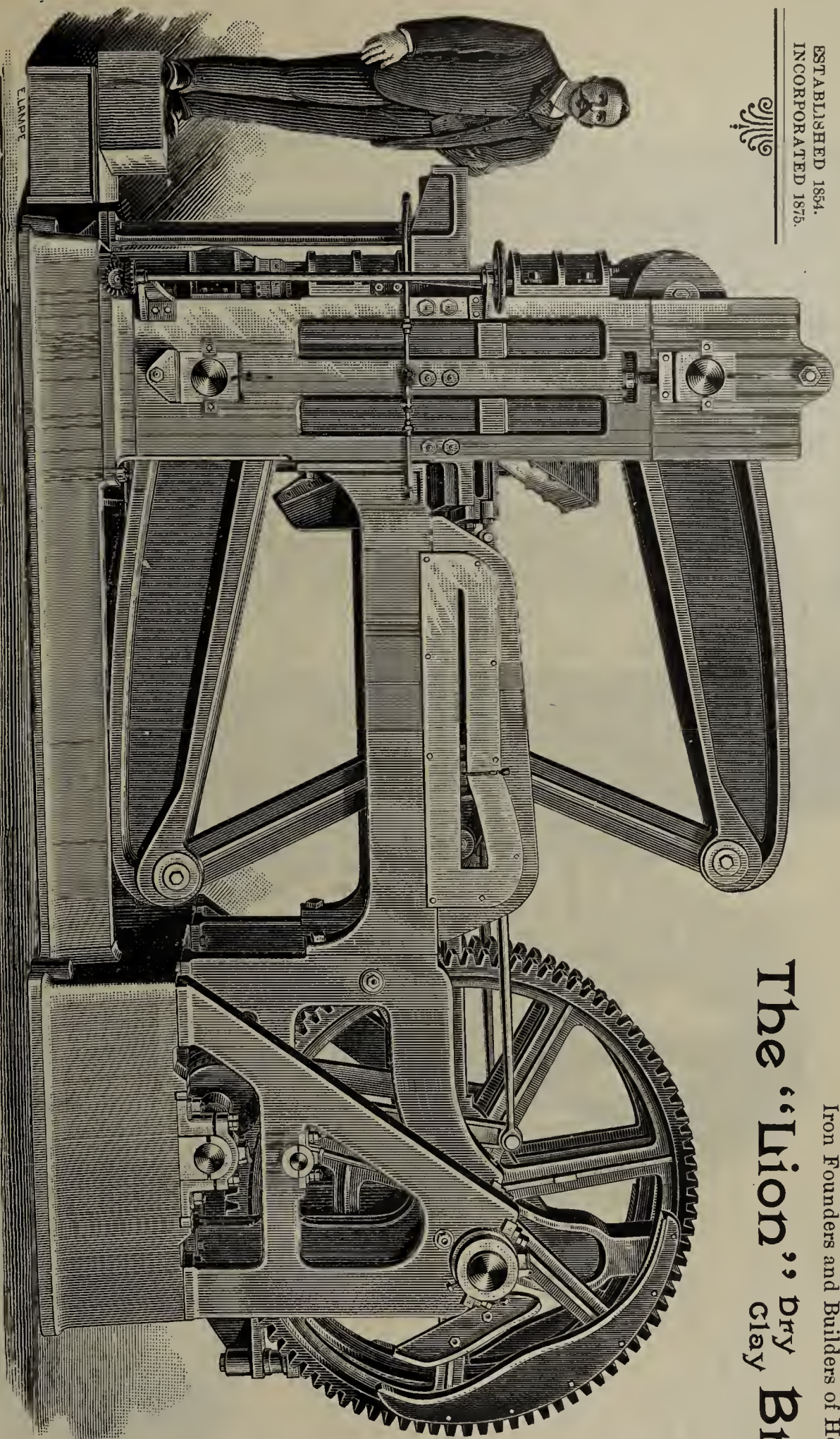
# ST. LOUIS IRON AND MACHINE WORKS.

ESTABLISHED 1854.  
INCORPORATED 1875.



Iron Founders and Builders of Heavy Machinery.

## The "Lion" Dry Clay Brick Press.



Weight, 44,000 pounds.

Capacity, 25,000 to  
30,000 pressed  
bricks per 10 hours

Pressure, 200 Tons on Five  
Bricks.



### WE CLAIM THE FOLLOWING ESSENTIAL FEATURES AND ADVANTAGES FOR OUR MACHINE:

1. The main feature of this machine is its great strength, power and durability; the pressure on each brick being 40 tons, and the working parts are so strongly constructed that there is no spring to give under the working strain. 2. The great simplicity and openness of framing and construction, so that every part of the machine is easily accessible for inspection, lubrication and adjustment, thereby reducing necessary repairs incidental to every Brick Press, to a minimum. 3. Pressing 5 bricks at each revolution of machine keeps the regular force of off-bearers and setters fully employed, which a 4 Brick Machine cannot do. 4. The adjustment of each machine from common to stock brick and vice-versa, can be made in a few minutes' time.

Besides the Presses, we manufacture and furnish a complete set of Clay Preparing Machinery, Elevators, Mixers and Rollers, also Engines and Boilers complete. We also build different kinds of Steamboat Machinery and Steam Boilers, Corliss Engines, Cotton Compresses, Water Works Plants, Coal and Mineral Mining Machinery, Bridge Works, Hoisting Travelers, Cranes and Elevators. Also general and large castings and machinery. Any further information cheerfully given.

If you are in the market for a Pressed Brick Machine, don't buy until you have examined the Lion. St. Louis makes more pressed brick than any city in the world. Here you can see all of the different machines in practical operation. And it will pay buyers to come here and see for themselves which machine does the best work at the least cost for repairs, etc. The Superior Pressed Brick Co., of this city, started May 1, with one press, and has made to this date (December 24) 6,000,000 Good brick, with little or no cost for repairs. We make this press now in two sizes—25,000 to 30,000 capacity and 10,000 to 12,000. This small machine, for fine front and fancy shape brick, has no equal on the market. We will test any clay sent to us free of charge, provided the sender prepays the freight charges. For circulars, price and other particulars. Address

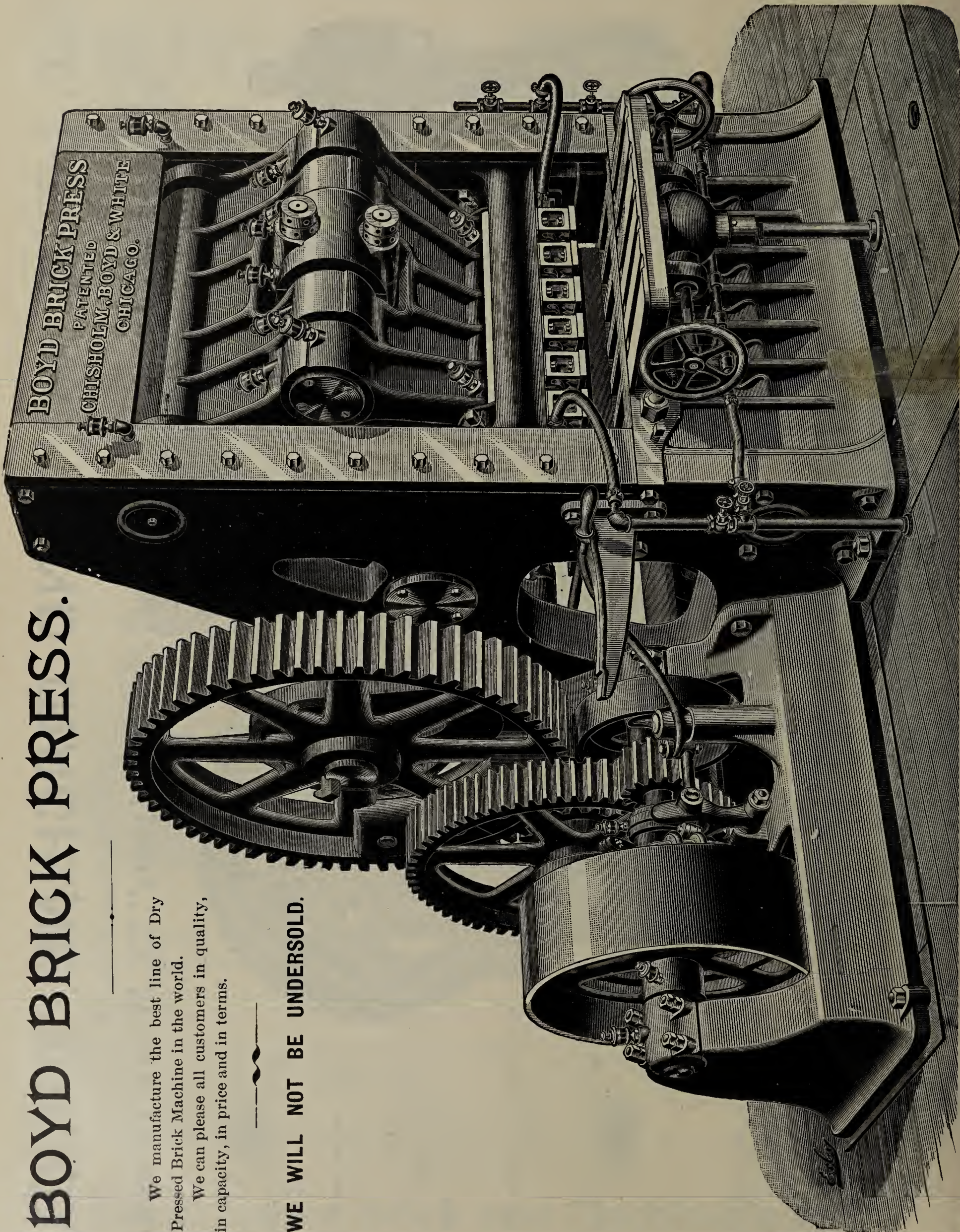
**ST. LOUIS IRON & MACHINE WORKS, Main Street and Chouteau Ave., St. Louis, Mo.**



# BOYD BRICK PRESS.

We manufacture the best line of Dry  
Pressed Brick Machine in the world.  
We can please all customers in quality,  
in capacity, in price and in terms.

WE WILL NOT BE UNDERSOLD.



The CHISHOLM, BOYD & WHITE CO., Monon Block, Chicago.



## A SURE THING.

We will construct and equip a Brick Plant of any capacity desired for any responsible party, furnishing Brick Presses, Power, Kilns, Clay-preparing Machinery, Shafting, Belts, etc., and erect the necessary Buildings. We will make and burn one or more kilns of brick, and turn the Plant over to him in proper working order under guarantee of satisfactory results as to quality of product and cost per 1,000; the loss to be ours in case of failure.

Why experiment when you have a sure thing?

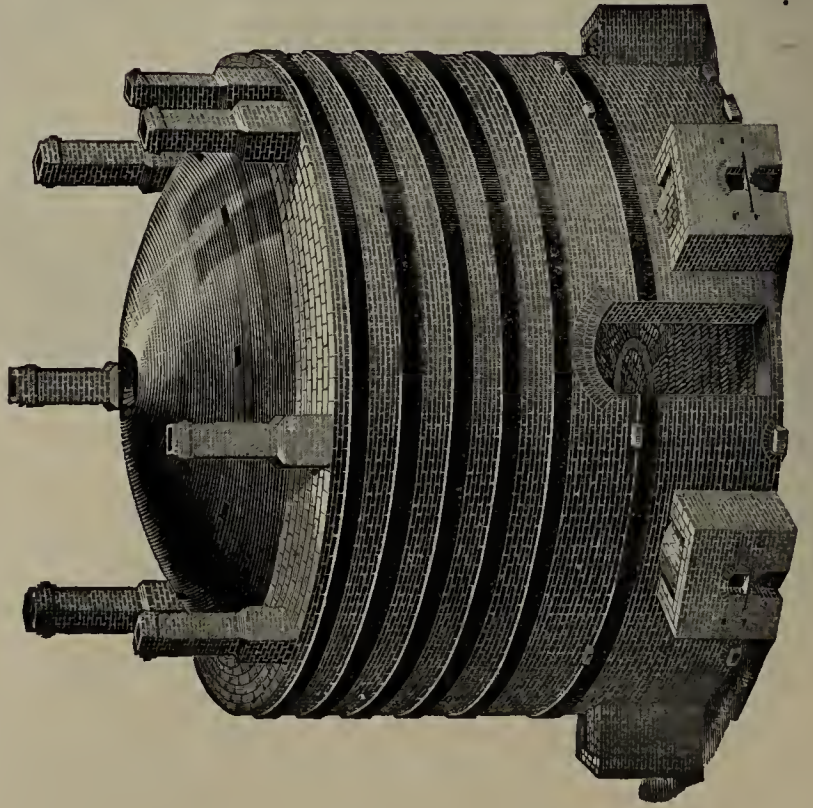
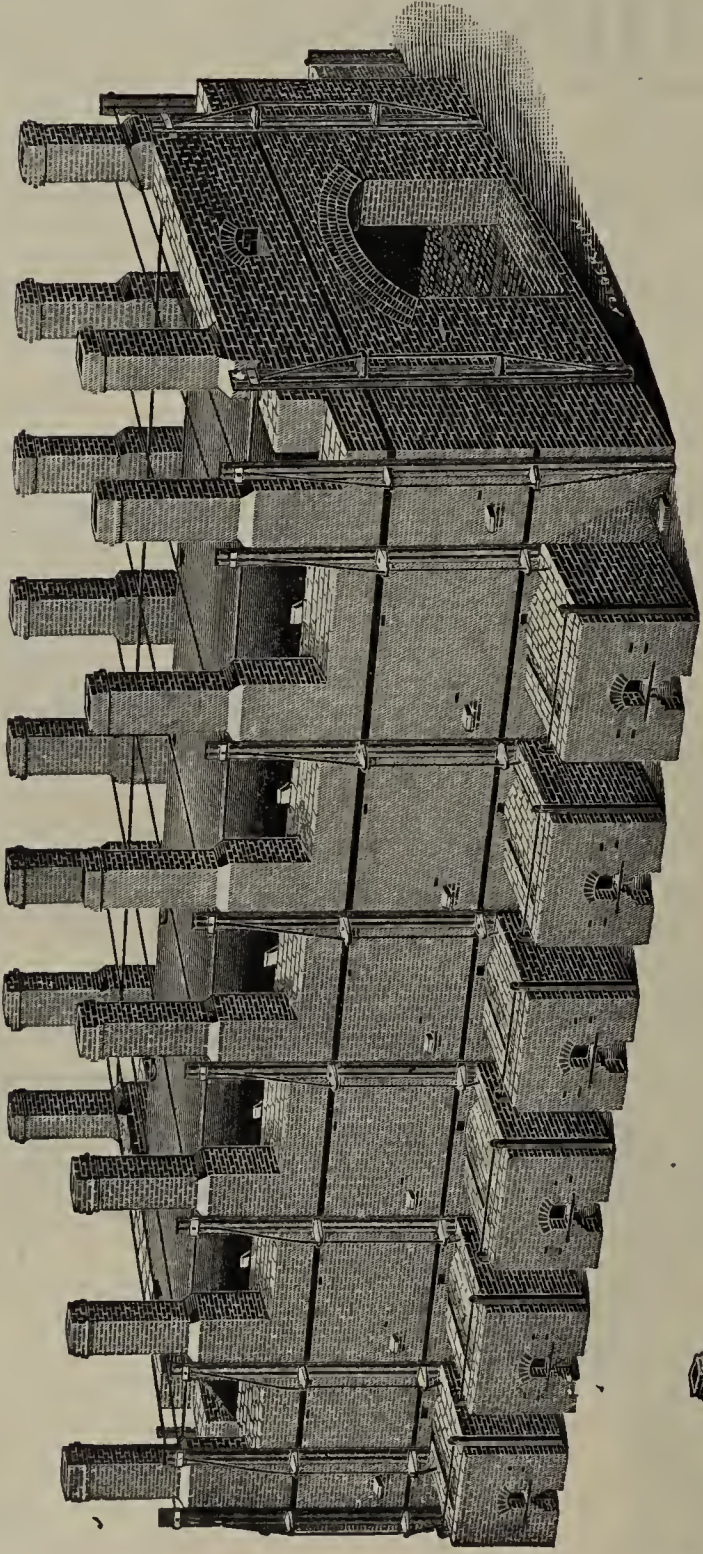
THE CHISHOLM, BOYD & WHITE CO.,

MONON BLOCK,  
324 DEARBORN STREET.

CHICAGO.



# The Eudaly Improved Down-Draft Kiln.



**A** VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

**W. A. EUDALY,**  
 64 Johnston Buildings,  
 Cincinnati, Ohio.



# THE KILN OF THE PERIOD.

## THE "PERFECT KILN."

*Sercombe's Patent.*

Designed on Economic and "Common Sense" Lines, for Burning Brick, &c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.  
Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

**T**HIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Hoffman's are being converted and new ones erected in Austria (the home of Hoffman's); also a number in America.

### NOTE WHAT THE USERS SAY.

100 per cent. Hard Brick, out of which are 70 per cent. Vitri-  
fied, Annealed Tough Pavers.

John A. Wiley, *Pres.*  
Geo. Allen, *Sec.*

W. S. Bleakly, *Treas.*  
W. Cramer, *Gen'l. Man.*

FRANKLIN PAVING BRICK CO.,

March 19, 1894.

To L. HANCOCK, Esq., Metuchen, N. J.

Dear Sir:—In answer to yours of the 13th wanting to know how we are getting along with our kiln, would say that we are improving steadily as our men get to understand our material. You know that our clay is one of the most difficult kind to work that your kiln ever had to contend with, for the reason that there is so small margin between vitrifying and melting. We are now getting 70 per cent. vitrified brick and balance all hard. We expect to do better than this soon. I feel confident we will. A kiln that will burn our clay properly, will burn anything in the shape of brick material.

Yours truly,  
GEO. ALLEN, Secretary.

From the Russian Agricultural Agency, St. Petersburg.

Herewith we beg to inform you that the erection of the Kiln is finished, and we are very glad to tell you that our customer (Prince Kourakine) is very much satisfied with the kiln after same was duly tried.

We enclose cheque for balance of license fee, etc.

From Mr. H. Burrridge, Bedford.

No doubt you will be pleased to hear that I am getting on all right with the Kiln. I have no hesitation in saying that I am pleased with it. It is going well.

From Mr. J. D. Dunlop, Woodstock Works, Belfast.

I am very pleased to be able to inform you that the "Perfect Kiln" is doing well, burning the brick all hard, at a cost of between 7d. and 8d. per 1,000 for coal.

From Messrs. Hawkes & Joberns, Kenilworth.

We shall be happy to let the gentlemen you name see the Kiln. We are quite satisfied with it, and its work.

From the St. Julian's Brick and Tile Co., Ltd., Newport, Mon.

In reply to your letter, my Directors instruct me to say that they are very pleased with your kiln, and will be willing for any intending clients of yours to inspect same.

..... Secretary.

From the Longton Hall Co., Ltd., Stoke.

Our Kiln seems to be working satisfactorily, and we shall not at present require the assistance of one of your men.

From the Exmouth Brick and Tile Co., Ltd.

In reply to your inquiry, my Directors instruct me to say that they are extremely well pleased with the way the Kiln is working. The splendid lot of brick in the yard is a credit to anyone, and no one could reasonably expect better.

..... Secretary.

From the Stramberg Lime Co., Stramberg, Moravia.

After speaking highly of the economy in erection, and the system of flues, they say, "After we have been used to working two Hoffmanns, beside the "Perfect" furnace, then can we truly assure you that we save 20 per cent. burning material in the "Perfect," and attain a more equal heat. We can therefore highly recommend this system, and shall be pleased to answer further enquiries."

From the Rothneusiedler Brick Co., Vienna.

The altered Hoffmann is very easy to work, and we save 15 per cent. of fuel and get the brick more evenly burnt by the "Perfect" system.

References can be given to over Forty first-class firms already.

Agents for Canada, R. H. PYNE & CO., Yonge Street, Toronto.

## SERCOMBE, OSMAN & WARREN,

EXMOUTH, DEVON, ENGLAND.

Mention the CLAY-WORKER.



W. H. KELSO, Pres.

F. HASPER, Sec'y

PAUL BOEHNCKE, Treas.

M. C. KELSO, Ass't Sec'y.

MAX A. TH. BOEHNCKE, Gen'l Mgr

P. O. Address:  
Centinela,  
Los Angeles County,  
California.



# THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:  
Inglewood, California.  
Tel. Address:  
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,  
No. 474,807, May 17th, 1892.

BOEHNCKE'S

Several other U. S. Pat-  
ents applied for.

UP AND DOWN DRAFT

## Continuous Brick Kiln.

Canada Patent, No. 44,615.

DON'T LOSE TIME TO INVESTIGATE.

18 Kilns in Operation in  
.....the United States.

Several Kilns in course of  
construction  
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

Beware  
of  
Infringe-  
ments.

### ADVANTAGES OF THE KILN.

1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of

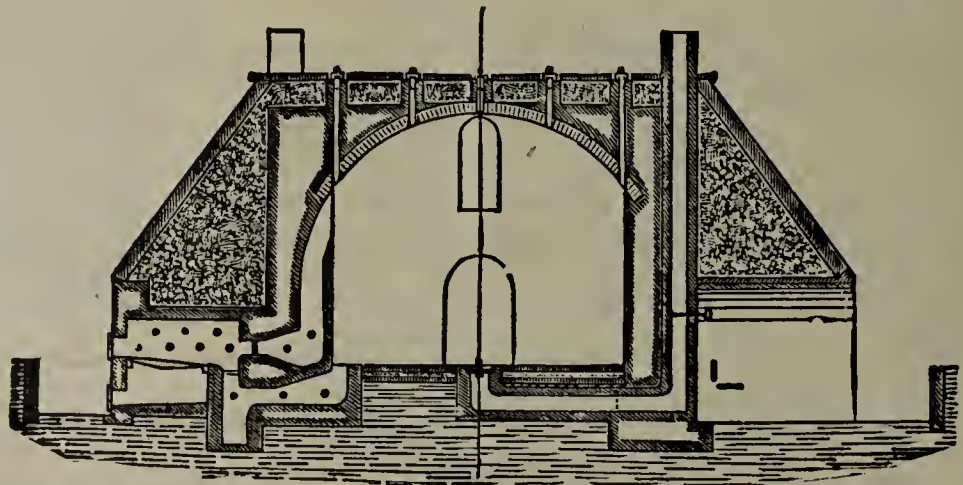
Soft and Stiff Mud Brick,  
Dry Press Brick,  
Shape and Face Brick,  
Sewer and Paving Brick,  
Fire Brick, Cement and Lime.

Write for Circulars to

Centinela Brick  
Kiln & Drier Co.,

Box 35,  
Centinela, Cal.

COMMON SENSE KILN.



Patent No. 475,433.

FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

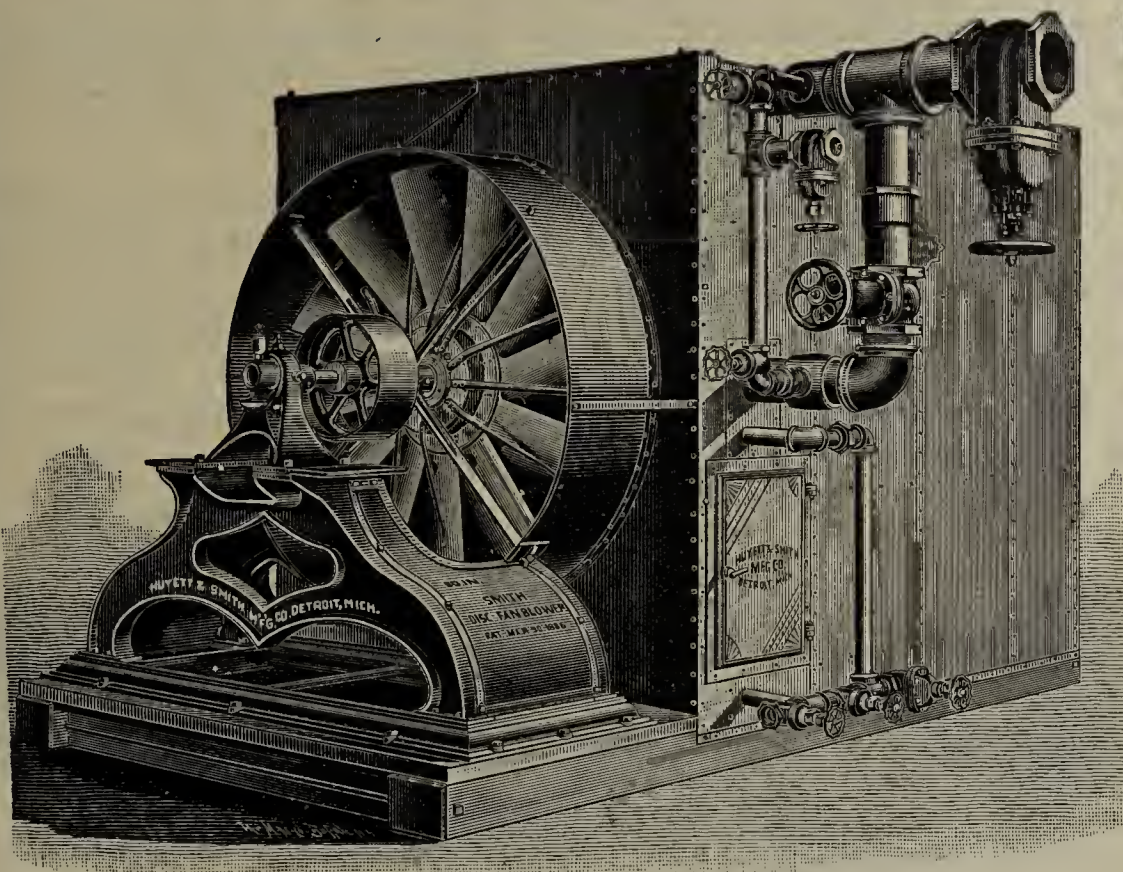
## A NEW BRICK DRYER.

We have also Boehncke's Brick  
Drier, which is very economical

Agents for Eastern States: DeHaven and Charles Lance,  
Commercial Union Building, Philadelphia, Pa.

Agent for Illinois, Indiana, Wisconsin and Michigan: John Col-  
lins, 75, 76, 161 La Salle Street, Chicago, Ill.





## Four Inch Tile

Dried in  
Six Hours  
Without Crack-  
ing  
in the

Smith Hot Blast Brick  
Dryer.

BOTH

BRICK and TILE

Dried as fast as they  
can be taken care of—

So Say the Users in  
Their Letter Below.

MORENCI, MICH., August 25th, 1894.

MESSRS. HUYETT & SMITH MFG. CO., Detroit, Mich.

GENTLEMEN:—Replying to your inquiry asking us how we like the Dryer purchased of you about nine months ago, will say the said Dryer has been in constant operation since the day we first started it, and It is giving us the very best of satisfaction. It dries both brick and tile as fast as we can take care of them, and in fact we can dry 4-inch tile in six hours without cracking them.

We consider the Dryer a **PERFECT SUCCESS** in every particular and would recommend it to any one in want of the same.

E. CLARK & SON.

The above is a sample of the letters we are constantly receiving from our patrons. Write us for plans, catalogues, and estimates.

## The Huyett & Smith M'f'g Co.,

Main Office and Works,  
1400 Russell St.

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BRANCHES

CHICAGO, 31 South Canal Street.  
NEW YORK, 26 Cortlandt Street.  
BOSTON, 48-54 Union Street.  
SAN FRANCISCO, 21 Fremont St.  
PHILADELPHIA, 118 Custom House Place.



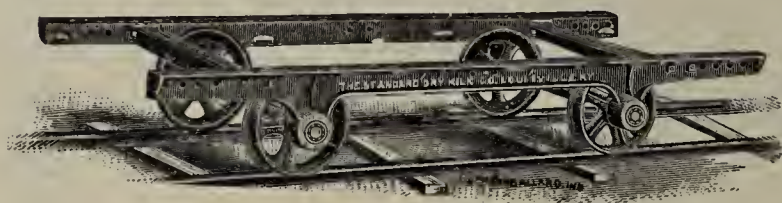
# Brick Cars

And other Drier equipment is our specialty. We are headquarters for everything in this line. Our improved Car has many points to recommend it; it is well proportioned and substantially made; its construction is such that 50 per cent. less bolts are required than in any other make, reducing in this proportion its liability to get loose. It is provided with "chilled" Cage Roller Bearings, which insure greatest ease in running and a minimum amount of wear.

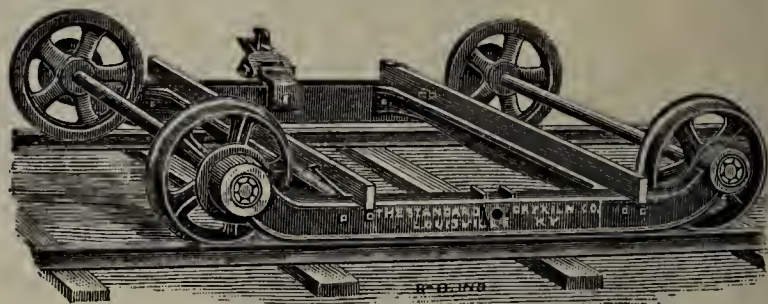
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**THINK OF IT!** A 6 post Double Deck Car put together with only 12 bolts.

If you are overhauling your Drying Plant and require equipment of any kind—Cars—Turn Tables—Transfers—Rail—Pump or Tank—write us for Catalogue and figures. We have reduced our prices to "hard time" basis.

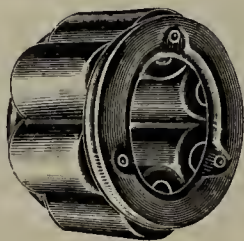


SINGLE DECK CAR.

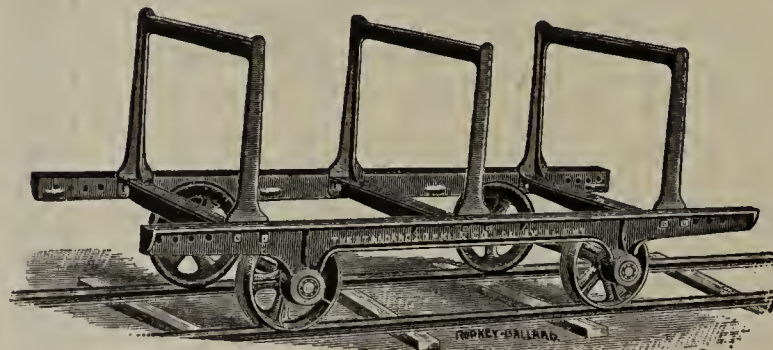


TRANSFER CAR.

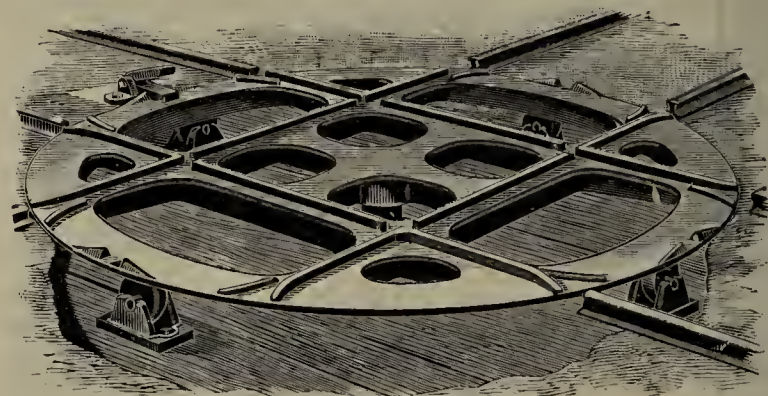
~~~~~  
~~~~~ Chilled Cage ~~~~~  
~~~~~



~~~~~  
~~~~~ Roller Bearing ~~~~~  
~~~~~



DOUBLE DECK CAR.



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In your choice if you select our Equipment for either an old or new Drying Plant; and if in need of the latter, don't fail to investigate the merits of

### The Standard Improved Brick Drier

It has stood the test of time and has been found to wear well. It's no experiment, but a recorded success, as our patrons cheerfully testify.

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INDIANAPOLIS, IND.  
LOUISVILLE, KY.



# THE CLAY-WORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXIII.

INDIANAPOLIS, IND., NOVEMBER, 1894.

No. 5.

Written for the CLAY-WORKER.

## AMERICAN ARCHITECTURE IN CLAY Number 2.

THE bright, broad streets of Chicago are well calculated to afford good views of the architecture of the city, whether good or bad; and they furnish splendid opportunities for the architect of the present and the future to display his work to the fullest extent. In this we have the advantage over some of the older cities, but the makers of Chicago, when they mapped out our broad streets and roads, had constantly in mind that there would be no limit to the growing of our city on three sides of it at least; and little by little we are encroaching in on Lake Michigan.

Goethe says, "Above the heights there lies repose." We suppose that there is repose above the mountains of brick, mortar, stone, iron and glass of our great city; but we are certain that there is none inside of these mountains, nor on the streets that divide them one from the other. During the hours of business these immense mountains and lesser ones are like bee-hives, there is a continued hum of voices of the people passing in and out, up and down all day long. Watching them one must be thankful that that there are homes on the plains as it were, to which these busy human bees may escape at night from all this turmoil and find rest.

As we write, one of these great buildings is fast nearing completion, and it has a new interest in it for the worker

in clay. We give you a picture of the lower stories. It is the Reliance Building. It is fourteen stories high, and stands on the corner of State and Washington streets. The building erected after the great fire on this lot was a fire proof one of the best then known fire proof construction.

This new building is faced with glazed terra cotta. It is unique of its kind in that it is the first one so built, and the

the facades of business houses, and possibly of homes in Chicago.

The terra cotta is a light cream color, and will be comparatively easy to keep clean without undue expense, as it is glazed. We have seen it stated that the terra cotta work will come out clean and new after every rain storm. This we believe will not be found to be so; for the gummy particles of soot will not wash off so easily. This has been clearly demonstrated to us where glazed brick have been used in alleys and courts.

D. H. Burnham & Co. are the architects for this building, and The George A. Fuller Co., the general contractors.

The building rises 200 feet above the street, and the dimensions of the ground area are but 50x85 feet. It seems a very great pity that so high a building should stand on so small an area. Running so high and narrow gives it a cramped appearance, and reminds one, with a difference, of what "Pat" said of his sweetheart, "Faith she is so tall and so straight that she leans over." This building is so tall and so straight that one might almost expect to see it lean over, but of this of course there is no danger.

One very great advantage is gained for the occupants in the "sky scrap-

ers" if no other, and that is plenty of light and air in the offices; and this is an advantage not to be overlooked lightly, for the business men and women of to-day come very near spending their days in stores and offices.

Mr. W. E. Hale has owned this prop-



A CHICAGO SKY SCRAPER IN COURSE OF ERECTION.

new use of glazed terra cotta makes it a subject of great interest to the clay-worker. Our sketch shows the design and ornamentation of this part of the work very clearly. We think that this building marks a new era in that part of construction which has to do with



erty since 1884, and has long been desirous of putting a good modern building on this lot; but owing to long leases he could not get possession of the entire building. In 1890 the leases for the lower floor and the basement expired. He consulted his architect, and the consequences were that the building above the first floor was raised and supported on jack screws and shores, and the first floor and the old foundations were removed. Then the usual foundations of concrete and railway iron was put in and the first floor reconstructed on the steel construction plan. The stone used in the front of the first story was polished granite, and now the upper stories are torn away and thirteen stories being added.

This great building has gone up like magic, and people who pass it daily scarcely know when or how it has been accomplished. The work of tearing down the old walls and removing the debris has been done at night after the army of day workers in stores, tradesmen and shoppers had gone home. New material arrived at six o'clock or later at night and was hoisted to its place, and the daylight brought a new army of workmen to put it in its place in the building, making room for more material to be stored the next night; so all the work went forward briskly.

During the changes of the first floor and the foundation in 1890, the owner was collecting large rentals from the undisturbed tenants on the upper floors and now while story after story is going up over their heads, he is collecting large rentals of the occupants of the first floor of the same building, and the customers are passing in and out, and the people passing the store are unconscious of the wonder growing up over their heads, and there is scarcely a piece of building material to be seen in the streets below.

As the *Tribune* says, "Truly there has been strange doings on this corner." We cannot do better than to quote a little from the *Tribune* to show how this great piece of work was accomplished. The result has been a revelation in building. "In May of this year the last leases of the tenants on the upper floors expired. Owner Hale prepared to finish up his tall building. He built a high strong awning on the State street and the Washington street sides of the building. Its roof was 25 feet above the sidewalk, and it did not darken the show windows underneath. Then right

on the heels of the retiring tenants, workmen began ripping that old fashioned five story building to pieces. The dusty and dirty parts of the work were done at night so that few people suffered any inconvenience. The old walls were broken up, and tumbled through wooden chutes into wagons that carried them away. The building was cut down to the ceiling of the first floor. That left the stumps of the steel columns put up in 1884 sticking up for foundations. A gravel roof was built over the ceiling and a false roof of heavy planking was laid over this. Then one night about June 1st wagons with hoisting engines, derricks, ropes and that sort of thing drove up in front of the place. The hoisting engine was hidden in the space which was to be the main entrance to the new building, and the derricks were set up on the false roof. Other wagons came with steel beams for the sky scraper's ribs. These were unloaded late in the afternoon and the evenings, and before morning the beams would be hoisted out of the way. Few people saw the work at all. The steel skeleton grew and grew, but the derricks kept daily up with it and as fast as more beams came they were drawn up to the top floor and stowed away where there was no danger of State street shoppers stumbling over them. Sand and cement, terra cotta for the walls and fireproof tile for the floors, wires and steam pipe and bricks and a little lumber, and all that great mass of material that goes to make up your tall office building, was served in the same way. All of it was unloaded in small quantities late in the day, and hoisted dizzily away up in huge boxes during the night. The streets were kept clear and clean. No one has any idea of the bulk of material thus expeditiously and neatly handled. There were many trainloads of it. There are between 700 and 800 tons of steel in the building. All the main upright supports are of the gray column type, the invention of a Chicago engineer. Each of these columns consists in fact of four beams. Each beam is of riveted angle iron. The whole is strongly braced transversely and gives about as much supporting strength to the pound of material as ingenuity can devise."

Mr. Hale, the owner, says: "There is a clause in the specifications which insists that the streets be kept clear, and that my dry goods tenant shall not be in any way interfered with. The Fuller Co.

has carried that provision out completely, and I have not heard a single complaint from the tenants. The building has not cost a life, and only one or two workmen have received slight injuries."

Superintendent Collins, who is in charge of the architectural work for D. H. Burnham & Co., says, "Any contractor can do the same if he only wants to. We do not claim to be especially smart folks."

And so this great building has grown up among us, and it is of interest to the many classes of working men, to manufacturers, contractors, architects, tenants and landlords alike. FAX.

Written for the CLAY-WORKER.

### HINTS ON CHINA PAINTING.

#### Second Paper.

BY EDWIN ATLEE BARBER.



HAVING in our former paper described some of the opaque china produced by American potters for decorating, we will now turn our attention to the finer bodies, such as porcelain and thin Belleek ware, made in this country.

The Knowles, Taylor & Knowles Co., of East Liverpool, Ohio, are manufacturing a great variety of decorative shapes for professional and amateur china painters. The ware is a beautiful, thin porcelain of dazzling whiteness, intelligently designed and carefully modeled, and in reality superior to much of the imported china generally used by decorators. The group of pieces here shown includes but a small proportion of the designs made by this company, whose works are the most extensive in the United States.

The illustration includes tea sets, shell trays, vases and a graceful little rose jar of novel form and appropriate ornamentation in relief. The products of these potteries include the simplest forms adapted to the beginner and elaborate pieces worthy of the best work of the most advanced professional. Many of these shapes have been decorated by the manufacturers in a highly artistic manner and examples exhibited at the Chicago Fair were among the finest decorative work to be seen in the American department. We can recall several small vases covered with jewel



work and raised gold designs which attracted much attention.

The little pitcher shown in the lower row of the above illustration is a particularly graceful and effective piece for embellishment and suitable for receiving either a simple ornamentation or a more elaborate treatment. One of these is here figured as it came from the decorating room of the East Liverpool works. Around the swell of the body is an artistic floral design in natural colors, while the embossed device on the neck is outlined in gold, and the handle, foot and lip are heavily gilded.

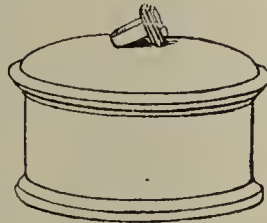
The two vases on the left of the group are, however, even better suited for receiving fine work. Messrs. Knowles, Taylor & Knowles have placed upon these the most artistic decorations of their best workmen. On the second piece a style of ornamentation new in America has been attempted with gratifying success. The entire ground is a

potteries have been making a specialty of this ware for several years, and the designs produced for decorators, from a thimble to a clock case, are legion. Messrs. Ott & Brewer first commenced the manufacture of Belleek ware in 1884, and at the present time there are no less than half a dozen firms in Trenton which are making it. This is produced largely in the white and sold for decorating. Many designs are made to represent sea-shells, with coral supports and handles, and the Cook Pottery Co., successors to Messrs. Ott & Brewer, are making a series of rustic pitchers and baskets of odd and graceful shapes. Some vases and ewers with full relief modeling of the cactus and the lotus are among the best original designs produced by this firm. By using

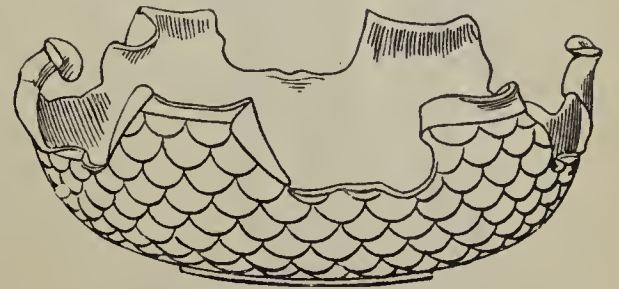
be made to satisfy the most fastidious taste. They include useful and ornamental objects of almost every conceivable description, such as plates, cups and saucers, trays, tea sets, pitchers, bon-bon boxes, cracker jars, salad bowls, candlesticks, salts, peppers, flower baskets and fancy vases. For plain painting we find a five-inch square tray with crimped edges, on which sprays of flowers and gold trac-



CUP AND SAUCER.  
Cook Pottery Company.



RING BOX,  
Ott & Brewer Co.



FRUIT BOWL—Cook Pottery Co.

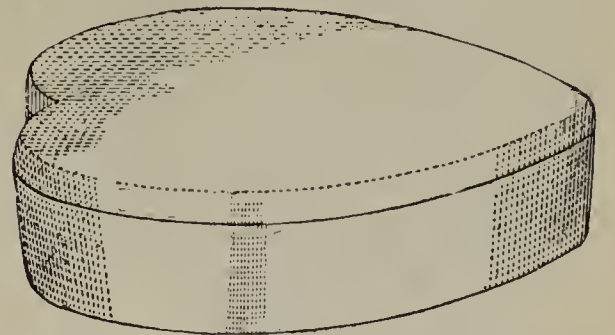
ery can be worked with most excellent effect. The claret ewer, shown below will admit of a great variety of beautiful decorations, as, for instance, a solid ground of mazarine blue on which may be placed raised gold designs, the dragon handle being covered with matt gold.



CANDLE STICK—Willets Mfg. Co.

A lighter style of decoration, such as sprays of diminutive flowers, would also be appropriate, painted on the white ground.

The nautilus pitcher with Cupid and ribbon handle is a beautiful piece of modeling and a popular shape with ad-



No. 242—2 in. High, 6½ in. Long, 6 in. Wide, for 1 pound.  
No. 243—Smaller Size, for ½ pound.

CORDATE BON-BON BOX—Willets Mfg. Co.

vanced decorators. We would naturally expect to see Cupid in a flesh pink tint, with golden hair, dull gold or bright blue ribbon and shell lightly traced with gilt along the corrugations.

It is not our purpose in these papers to attempt to offer suggestions on deco-

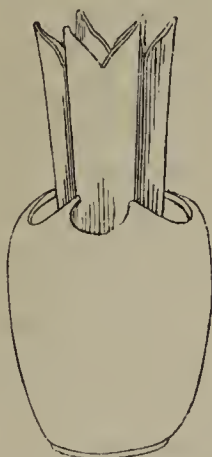


GROUP OF DECORATING SHAPES.—The Knowles, Taylor & Knowles Co.

deep, underglaze mazarine blue, on which designs of white Limoges enamel have been built up over the glaze—on one side Cupid driving a pair of butterflies, and on the reverse, Cupid in pursuit of a bird. The effect is that of a cameo design, and at a short distance resembles the celebrated *pate-sur-pate* work of Solon, though the method of decoration is different. The heavy gilding and chasing of the neck and handles form a striking and rich contrast. While the amateur can scarcely aspire to this style of work, other equally artistic effects can be produced in overglaze painting in combination with an intelligent and liberal application of gold.

The most dainty effects, however, in china painting can perhaps be obtained by utilizing egg-shell porcelain, generally known as Belleek china, as a basis for artistic work. Several of the Trenton

the natural tints of the plant, green and pink, and employing dainty colors and gold on the swell of the body, most artistic effects are obtained. Less elaborate and costly pieces, such as trinket boxes, plaques, square trays and plain flower bottles can also be produced here in great variety. We have selected the pieces here figured, almost at random, from their extensive stock.

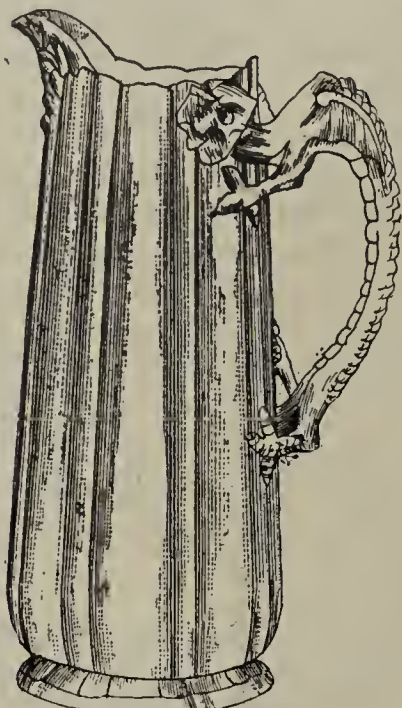


TULIP FLOWER  
HOLDER,  
Ott & Brewer Co.

One of the largest producers of white art porcelain is the Willets Manufacturing Company, of Trenton. They already have upwards of three hundred different shapes in Belleek body and are constantly adding new ones. From these alone selections can



rative treatment so much as to endeavor to convey a proper idea of the wealth of forms which are produced in this country for decorating. The amateur



NO. 210 9 IN. HIGH

CLARET EWER—Willets Mfg. Co.

painter will naturally commence by seeking to master the elementary principles of ceramic tinting and coloring and will first essay to imitate the styles of celebrated wares, such as those of Dresden, Limoges or Worcester. The more ambitious decorator will, however, aim at something higher in the direction of originality, and by this class the many entirely new shapes which have been designed by our potters will be most fully appreciated. The form and



53 10 IN. HIGH

CUPID AND SHELL PITCHER—Willets Mfg. Co.

design of a piece of china must regulate, in a great measure, the style of decoration to be applied, because an in-harmonious combination of modeling and painting will destroy the artistic

effect of the most meritorious work. Few of our amateurs reach this degree of discrimination, yet it is absolutely necessary to insure success in this difficult branch of art.

[To be Continued.]

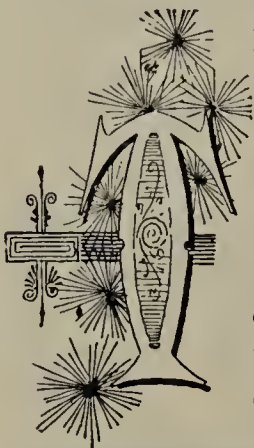
Written for the CLAY-WORKER

## HINTS ON BRICKMAKING.

No. 93.

BY R. BRICK.

## ARTIFICIAL DRYING.



HERE has been marked improvement in drying processes in the past 10 years. There are a few good dryers on the market. Tunnel drying seems to be in the lead. There are several of these in the field, and from the

statements of the parties using them, they must be doing good work. Inventors in this line deserve credit for the progress they have made. However, they will hardly object to a little friendly criticism or suggestion.

Some of our friends who invent dryers are not practical brickmakers, and are liable to make mistakes in their calculations — even practical brickmakers sometimes do this. Cars for tunnel dryers usually hold 500 bricks, this car with its load weighs 3,500 to 4,000 lbs., a tunnel containing ten cars must support 35,000 to 40,000 pounds. This weight not only passes over the track, but must be supported from 24 to 48 hours. These facts and figures should be taken into consideration, when constructing the tunnels and tracks, especially so, if the tunnel is to be heated by steam pipes.

It is a mistake to use wooden supports for these pipes, as the steam soon rots the wood, this allows the pipes to settle, subjecting them to strain and soon they are leaking at the points. I know of such a dryer that had to be rebuilt, pipes had to be all taken out and iron supports placed where wood had been. A permanent dryer should have no wood about it, it should be fire proof. The track should rest on iron supports and these should rest on brick walls.

Dryers are costly to construct, and should be permanent in all their parts. Cars should have strength, and axles large enough to prevent springing; if not, they will not move easy on the

track and nothing is more trying than to get a car off the track in a hot tunnel unless it is to go in and try to put it on again. Many a dryer man has been remembered in the imprecations of the man who has this task to perform. Have the cars right. Have a man to put in the track who appreciates the troubles referred to above. Don't send a man to put in a dryer fast because he is a good talker and handsome. It won't pay you, and it damages the brickmaker.

After a good track and a strong, well built car, the next point to consider is space necessary for 500 brick. Here, in my opinion, serious mistakes occur, we hear much about "nature's dryer." If



DECORATED PITCHER—The Knowles, Taylor &amp; Knowles Co.

we study Dame Nature's methods, we will find she requires a large quantity of space and air, as well as motion. If we use nature's dryer for 500 brick, we occupy 175 square feet of floor surface, while in a tunnel we occupy about 25 feet of floor surface. If bricks are packed too close on the car the gain in space is over balanced by waste of heat. Bricks on edge on car, or pallet, should be set at least two inches apart, and there should be that much space above the brick. The brick are to be dried rapidly by contact with a current of warm dry air which absorbs their moisture. Air, like water seeks a passage where there is least hindrance. If brick are packed too closely on the car, the larger per cent. of the current will pass over or under, or by the side of the car. This



soon dries the brick on the outer surface of the load. After this occurs most of the air is in contact with bricks that are dry, hence there is waste of heat, for want of sufficient space to equally diffuse the warm air. Rapid currents will not overcome this difficulty, but will rather add to it. For rapid, uniform drying, we must have enough space.

Another point: A brick on a car will not begin to throw off moisture until it is heated. In some dryers, the top brick on the car is dry before those in center get warmed through. If this be true, when a tunnel is filled with green brick, the first object should be to get all the brick uniformly heated. To do this there should be but little draft through the tunnel; this causes heat to penetrate to every part of the space, seeking an outlet. Soon all the bricks on the cars are warm, then turn on the air currents, and if there is sufficient space all the bricks will begin drying at the same time.

It is best to have an independent support for each tier of brick if we wish to preserve the bricks in good shape. It is almost impossible to pile plastic bricks, one tier upon another four or five brick high without damaging their faces. There is a great deal of loss by breakage in this way. The brick shrinks in drying, and if it has weight upon it, will break while shrinking; pallets are a nuisance, as they require so much handling and are continually in need of repair. These supports could be made part of the car and hinge alternately on one side, then the other of the car.

The artificial dryer should be fire proof, as the losses from fire originating in dryers have been serious. The coming dryer, must be fire proof, it must be durable in construction, must dry brick cheaply and preserve all the brick. A tunnel dryer can not dry economically unless all the brick on the car are dry when any of them are dry.

Again, perfect your dryer as near as may be before you put it on the market. Your agent goes to a brickmaker and tells him your dryer is an improvement on all others, it is simply perfection, will dry his bricks in 24 hours, no loss in drying, and dry them at a cost of 20 cents per thousand. The brickmaker gives his order for a dryer, which is built on the latest plan, and he goes along drying brick with it, has his trials and disappointments like everybody else. Next season this agent or another comes

along, looks at results, admits that it is not fulfilling the guarantee, and informs him that "We have recently made some valuable improvements, that remedies all these defects. Just put them in and you will be all right." Now, the brickmaker thinks "Why didn't you do this before you built mine," if he don't say it. He thought when he put in this dryer that it was as near perfection as skill and experience could make it.

There is a question of natural or forced draft for dryers. If natural draft can be made as effective as forced it is preferable, as it requires no expense to operate it. If natural draft is strong enough, it is certainly as effective as forced draft by the use of exhaust fans in the vapor stack. Some think a blow-



DECORATED VASE, WHITE ENAMEL FIGURES  
—The Knowles, Taylor & Knowles Co.

er at the opposite end best. It would seem that a force exerted at the end opposite stack forcing air toward it would heat the tunnel more uniformly than would exhaust draft at stack; I think a combination of natural draft at stack with a forced draft from opposite end would give best results.

The man or firm that will get up a drier, durable, fire proof, economical in its consumption of fuel, that will dry the brick uniformly all over the car and the entire length of the tunnel, and without damaging or destroying the bricks will have a paying business. Nothing short of these requirements will meet the demand at this time.

I trust these criticisms and suggestions will be received by the dryer men in the same sweet spirit in which these few lines were penned.

Written for the CLAY-WORKER.

## A TILE FROM THE HOUSE OF DAMASCUS, AND A BRICK FROM FLORIDA.

BY RICHARD G. FRACKELTON.



HERE are all sorts of tiles, from those of the Alhambra to the Grandfather's Hat kind from Ohio. From those with the color

all through them, like the fountain in the House of Damascus in the Midway to the kind you are sometimes said to talk through. And what a flood of happy memories the word evokes to many hearts; thoughts divergent enough among men of different lives, training and nations. To some come the old dreams half forgotten or rubbed out by time, of the red roofs of the peasant cottages in England, Germany, and Holland, the storks' nests and Lombardy poplars.

The very word itself is near akin to that of "Home," the dearest one of all in Anglo-Saxon speech. Word unknown to the versatile Frenchman, yet to him even, the tile roof brings back the thoughts of a "gite heureuse," a shelter for the night, or from the passing storm, and souvenirs of the time, "*quand on est bien dans un grenier a vingt ans.*"

The Kagel Ofen of the North German, the luxurious bath of the oriental, tiled walls of Spain and Mexico, the floors of Holland.

For man has used tile for roof, wall and floor of where he rests from wandering throughout the world from time immemorial, and since that period of civilization has dawned, wherein Boards of health have prevented him from burying under his church floor, and kindred peculiarities, civilized man has used drain tile.

From the European standpoint we must go back so far as glazing tile is concerned to the incursion of the Saracens. For with that inroad, enters the new era of progress. By their brilliant productions the Oriental invaders roused the Christians to the devotion of the art, caused them to paint, glaze, and then taught them how to enamel pottery.

Persia probably received the art of enameling pottery from Assyria, and transmitted it to China. China gave it to Corea and Japan.



Whether Persia always practiced it is doubtful; but it certainly remained in Central Asia, until found there by the Arabs in the Mohammedan Conquest. Whether this art was that of enamel, or only the art of painting and glazing pottery, cannot be determined until we have fuller knowledge of the Ceramic history of Central Asia.

It is by some supposed that stanniferous enamel, was a later independent discovery of the Saracens, and it has even been suggested that the presence of tin in Spain led to the discovery there.

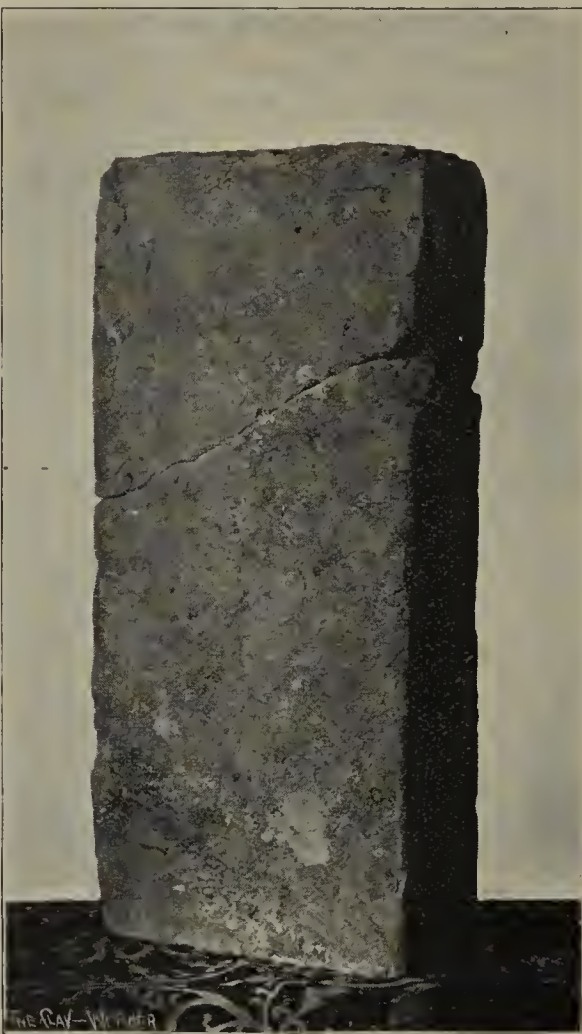
Their fictile art is properly divided into five distinct periods, called the Rhodian, Arabic, Damascene, Persian and Hispano Moresque, of which last I have spoken previously, and its effect in the past and present, on all clay and tile work on this continent, endeavoring to show your readers its connection both by words and illustration. And right here with this article I desire to reproduce what I have published before. I do not in any way desire either, to infringe on a work published in Chicago, entitled "How we find Relics," not being in that line of business, but at the time, the brick illustrating this article was found, with it also were found, a quantity of unglazed tiles.

When the line of the Pensacola and Atlantic Railroad was in process of construction, a kiln of bricks like the illustration was met with, in making a cut Deep under the soil, and above the old kiln, trees three feet in diameter had grown. There was nothing of the Mound Builder about these "relics." Nothing but the modern railroad cut striking, what may yet prove to be the missing link between the Ceramic history of two continents. By whom the brick and tiles were made, there is no record. From the measurement both brick and tile have been ascribed to a Spanish origin. The brick being eleven inches long, five and one-half inches broad, and two inches thick. In color both brick and tile would be called today "cream color," not unlike the brick made along the west shore of Lake Michigan. An exhibit of these brick and tiles from this newly discovered old American kiln (or Spanish as it may be?) for in Louisiana or Florida, antiquity goes no further back, or ancestry either, than the Spanish emigrants. So there, they were called Spanish, by the Louisville and Nashville railway, who exhibited them in the Cotton Ex-

position at Atlanta, Georgia in 1881, some of them having been in the Ceramic collection of the writer since the find. Since then, their similarity with some of the crumbling face work of the tumuli or Pyramids of Central and South America, has been noticed and European technical attention drawn to it.

*Spanish Military History and Records have been investigated, but no record discovered of a post being attacked and destroyed, as was at first surmised to have been their origin.*

Babylonian and Assyrian bricks and



ONE OF THE BRICK FOUND IN FLORIDA.

their origin are known like their makers. But of the history of these brick and tile we have no trace.

Unglazed, unrecorded and unknown.

#### BRICK FOR FENCES.

NO hard brick can be too bad to use for the construction of boundary walls. The crookedest, over-burnt, discolored bricks, if used intelligently, will go. It took architects of the highest reputation to establish this fact beyond any question by using such brick in one of the finest examples of brick gateways in America. They did not pick up a single brick and squint along its edge; nor did they think for a moment of fine mortar joints. They saw the work al-

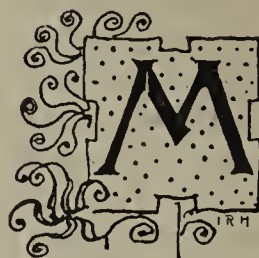
ready completed when they took these cull brick and only considered the effect of the wall surfaces. Don't destroy culls. Sell them for particularly choice stock. You can, if you know how.—*The Brickbuilder.*

Written for the CLAY-WORKER.

#### CHEMISTRY FOR CLAYWORKERS.

No. 28.

BY WM. WAPLINGTON.



ANY numbers of the CLAY-WORKER might be filled with interesting chapters on salt alone, without touching on many of its useful applications.

A little reflection will soon convince us that the seasoning of our viands—although its most universal purpose—is by no means its only use, and the why, and wherefore, of all its various purposes would amply fill a good sized encyclopædia with close reading matter. I have, however, given it all the space that can be afforded in these papers, and will only just say of it that I honestly believe it to be one of the commonest, but one of the most important compounds found in nature.

CARBONATE OF SODA—Sodic Carbonate—( $\text{Na}_2\text{CO}_3, 10\text{H}_2\text{O}$ .) This is another very important compound of the metal sodium and plays a large part in soapmaking, glassmaking, bleaching, washing, baking powders, medicine, etc. It is found native on the shores of some of the lakes in Egypt, Mexico and Hungary. Some of the Egyptian lakes called the *Natron Lakes*, are the most familiar as yielders of native carbonate, and from these lakes is derived the name of the metal *natrium*, and its atomic symbol *Na*. There are other sources of this native salt, for instance, some maritime plants yield it, as kelp, and barilla. The first is said to contain 2 to 5 per cent. and the latter, about 18 per cent. The salt of course is obtained from the burning of the plants and lixiviating the ashes. The bulk, however, of the carbonate of soda used, is manufactured from common salt, first by treating it with sulphuric acid, converting it into sulphate of soda. This is called "salt cake." (I am now telling you of the process as I used to see it carried out in Lancashire, England, over 20 years ago. I have been told of a more modern process, but it has never



been clearly stated to me. This much, however, may be said, that whatever process may be applied, chlorine must be expelled from common salt and carbonic acid take its place, whether it is done directly or indirectly, does not effect the principle.)

The "salt cake," or crude sulphate is crushed to powder, and mixed with small coal and limestone, then thrown into a reverberatory furnace and heated with constant stirring until it is fused, then it is raked out into iron wheelbarrows and allowed to cool. This is called the "black ash process," because of the dirty black color of the fused material.

The decomposition, etc., that occurs is said to be divided into two stages, but practically they are carried out at once,

dirt, and sulphate of calcium. This is easily accomplished, because the carbonate of soda is soluble, whereas the coal, lime, and other impurities are not, therefore *lixiviation*, or dissolving out the soda with water is resorted to. If we evaporate this solution to dryness and calcine the residue we get the soda-ash of commerce. Again, if we allow a saturated solution of soda-ash to stand quietly for some time large transparent crystals of *washing soda* separate out; this is a hydrated carbonate, having the following formula:  $\text{Na}_2\text{CO}_3 + 10\text{H}_2\text{O}$ .

Soda-ash is not a chemically pure carbonate, but contains from 48 to 56 per cent. of pure caustic soda as carbonate and hydrate. The impurities are generally small quantities of sulphate, sulphite and chloride.

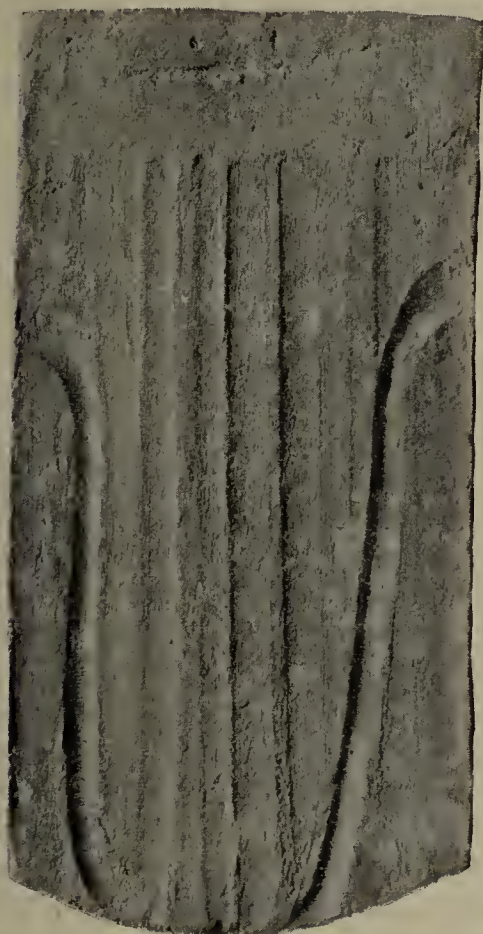
has the following formula:  $\text{Na}_2\text{SO}_4 + 10\text{H}_2\text{O}$ .

This compound is used in medicine to some extent, being a purgative, but to a greater extent in veterinary practice. It is found in some mineral waters, notably, the mineral springs of Cheltenham, England.

Like potassium, there is scarcely any limit to sodium compounds, all more or less useful in the arts and manufactures. There are half a dozen or more used in photography, and a volume might be written on sodium and its compounds without anything like exhausting the subject, especially when we reflect that these compounds are so widely and abundantly diffused over and through the earth, that we are informed by spectrum analysis that "every substance which has even been exposed to the air for a moment gives the soda line; every minute speck of dust containing sodium compounds in sufficient quantity to produce the characteristic reaction when placed in a colorless flame.—(Spectrum Analysis, Roscoe.)

**NITRATE OF SODA.** (Sodic Nitrate),  $\text{NaNO}_3$ . This sodium compound is found abundantly in Northern Chili and Peru, and is imported from these places—so the books say—and that it is found in many districts of these places entirely covering the soil. It is a salt very much like nitrate of potassium—(salt-petre), but not so energetic in many respects. It absorbs moisture from the air; when substances do this, they are said to be *deliquescent*. It also burns very much slower with combustibles than salt-petre, it is therefore unsuitable for the manufacture of gunpowder. Large quantities are used in making nitric acid, (hydric nitrate), *aqua fortis*, and it is also used to convert chloride of potassium into nitrate of potassium; therefore if it cannot be used directly in the manufacture of gunpowder, it can be used indirectly for that purpose in the following manner: A hot concentrated solution of nitrate of soda is mixed with a hot saturated solution of chloride of potassium, the chlorine of the potassium and nitric acid of the sodium mutually agree to change partners and the result is nitrate of potassium and chloride of sodium. The change may be shown by the equation:  $\text{KCl} + \text{NaNO}_3 = \text{KNO}_3 + \text{NaCl}$ .

Not many clayworkers I presume, pay much attention to agriculture, some few I know do; it may interest them to know that nitrate of soda is one of the so-called *chemical manures*, and I can



AN OLD ROOFING TILE.



and the "black ash" mentioned above is the result, which consists of carbonate of soda, unconsumed coal, sulphide of calcium, etc. So that you see the chemical reactions that have taken place are that the carbonate of lime has given up to its carbonic acid and the sulphate of soda has given up its sulphuric acid, while at the same time the soda absorbed the carbonic acid and the lime absorbed the sulphur of the sulphuric acid. The coal, assisted by absorbing the oxygen of the sulphuric acid and thus furnishing an abundant supply of carbonic acid.

The next operation is the separating of the carbonate of soda from the coal,

*Bicarbonate of Soda*, is obtained by passing carbonic acid gas over the crystallized carbonate; this converts it into a white crystalline powder and is the same article the druggist gives you when you ask for carbonate of soda to make effervescing drinks. Bicarbonate is also much used in medicine, and in the preparation of baking powder. The formula for bicarbonate of soda is  $\text{NaHCO}_3$ .

Speaking further of crude sulphate or "salt cake" this is known as *anhydrous* sulphate; that is, it contains no water, whereas the purer hydrated form is known as Glauber's salts and contains ten atoms of water of crystallization and



vouch for its utility on grass lands. Early in the sixties I witnessed its beneficial effects on the hay and clover fields of the Rev. J. W. Peach, Waingrove's Hall, Derbyshire, England. I think his Reverence paid more attention to scientific farming than to preaching. I never heard him preach, but I saw him do some excellent farming. Mr. Peach told me that  $1\frac{1}{2}$  cwt. to 2 cwt. of nitrate to the acre would about double the crops—a cwt. = 112 lbs.—and not only increase the quantity, but improve the quality. He always left small patches unfertilized to show the difference. He dissolved the nitrate and applied it to the land with a sprinkling cart. He was an enthusiast over the nitrate of soda, phosphate of lime and sulphate of ammonium. At the same time he by no means ignored his stable and barn manure, but took great care of them, especially the liquids.

It would be out of place in these articles to relate further Mr. Peach's experiments and methods, I may, however, just state that at agricultural and horticultural shows, he was always a great prize taker.

I will only mention another compound of sodium, namely, *borax*. Most of you know something of this, although you might not suppose it a sodium compound, but it is; it is a borate of sodium; its composition is best seen by its formula,  $2\text{Na BO}_2 + \text{B}_2\text{O}_3$ , or simplified thus— $\text{Na}_2\text{B}_4\text{O}_7$ . This is an excellent fluxing agent. A great many of the metallic oxides are soluble in fused borax, and with it they give colored glasses; hence its use in the laboratory with the blow pipe. It is also much used in the arts and manufactures as a flux. Where do we find a blacksmith's shop where welding steel is done, without it? Again it is much used in the composition of the clayworkers glazes, and lastly, it is used by washerwomen to whiten linen, save soap and to soften water.

#### BRICK FOUNTAINS.

WITH the present tendency towards brick pavements it occurs to us that brick is a most proper material with which to build the little drinking fountains so common on the streets of some of our cities. When these fountains are built at the curb, and have two sides, one for horses, the other for people, a number of effective schemes for treatment immediately present themselves. When the combination with

terra cotta is considered, the number is doubled.

It is a serious mistake to think that small things like this cannot come in for brick treatment. Of course the saving would be nothing, but if well done, all brickmakers would have a standing advertisement of their business, where thousands could see and admire the work daily.—*The Brickbuilder*.

Written for the CLAY-WORKER.

#### DRY PRESS HINTS.

##### No. 13.

#### LIME PEBBLES AND HOW TO GET RID OF THEM.

IN a previous article under the above heading we remarked that "After it (the clay) has gone through the reducing process, it can very easily be restored to a suitable condition by subjecting it to a steam bath before reaching the machine." There are many ways of doing this, some of which are patented and have been advertised in CLAY-WORKER columns. Design does not cut much of a figure, but the principles involved *must* be very closely followed to ensure success.

There are three (3) *musts* to the operation. The details and manner of arriving at their solution will depend on the ingenuity of the engineer or the man who makes up his mind that he will build his own.

First. The clay *must* pass through the steam in a very loose condition. This is of absolute necessity, because to insure good bricks each particle or granule of clay ought to contain its quota of moisture.

Second. The steam also *must* be introduced in as fine a spray as possible and in such a way that it will reach alike every part of the falling clay.

Third. The clay after receiving its moisture *must* also reach the machine in a loose condition to ensure even charging of the moulds. There are also peculiarities of clays that must be met and overcome; some absorbing moisture very readily, while others are not so easily penetrated. This is very noticeable in some shales which from their "greasy composition" and extremely "close texture" are not very susceptible to moisture. In treating a material of this kind it will be necessary to prolong the time of its passage through the steam.

With some clay there is also a great tendency to "ball" after passing through the steam. This must be guarded against, and, if necessary, the clay must be passed through another—smaller—screen with an internal brush. It can

now be passed on to machine with an assurance of good bricks out of material originally thought worthless. We will now very briefly notice

#### THE WASHING PROCESS.

The wash mill as usually constructed is a circular pit of diameter and depth to suit the capacity of the plant. It is generally used in making tile—floor, roofing, etc.,—repressed bricks and terra cotta, but I have in two or three instances seen it used in the manufacture of common bricks.

As before remarked, the pit is of circular design and can be built of brick, stone or lumber, but brick or stone laid up in cement are much preferable. A pillar is also built up in its centre which supports the vertical shaft carrying the arm and drags. An orifice is also built in the side, level with bottom of pit. Size of orifice to suit diameter of pit, but say about 24 in. x 12 in. wide. Six (6) or eight (8) inches at the bottom of the orifice must be closed with tight door to be opened only when cleaning out settlings. The upper portion is fitted with screen and sliding door through which the "wash" passes to drying floor. The operation of the pit is as follows:

The mill is started (it can be arranged for either steam or horse power) and the drags made to revolve in and around the pit, into which a stream of ware is carried. The clay is now dumped in, and by the action of the water and the drags, is quickly reduced to a pulp, releasing the stone and other weighty impurities, which of their own gravity sink to the bottom. After the clay has about all dissolved (some requiring more and longer working than others) the pulp is allowed to stand awhile to allow of settling when it is "washed out" by the drags through the screen, already mentioned, onto

#### THE DRYING FLOOR OR EVAPORATOR,

One form of which so closely resembles the old drying floor for mud bricks that it needs no descriptions except that it possesses these points of difference. It must have its floor of bricks with a raised fence of about 8 or 10 inches. It should also be constructed with a slight fall from wash mill.

If there are any points in this paper that are not sufficiently clear to your readers I will be pleased to try and make it so, or illustrate with sketches if so desired.

I beg to acknowledge the "German Criticism of Dry Press Hints" as translated and emphasized by friend Richardson, to which I will reply in next issue.

PRESS.



## CHARLES LEDERER.

## A Sketch of The Clay-Worker's Humorist and Artist.



BESIDES the reputation Charles Lederer has achieved as a contributor to the CLAY-WORKER he may lay claim to be the most brilliant of the newspaper cartoonists of Chicago.

Mr. Lederer was born in Lowell, Massachusetts, thirty-seven years ago. Lederer *pere* was an artist of repute, and imparted to the son that artistic temperament and appreciation notable in the best artists. At the age of fourteen the subject of our sketch was apprenticed to George D. Hammar, a wood engraver, then located at 208 Broadway, New York, the site of the *Evening Post* building, but a year's application was sufficient—he he struck, and took a studio room jointly with Henry Lovie, one of the most prominent artists in the illustrated weekly line in New York; and his first work was in drawing comic valentines for Fisher & Dennison.

His genius developed early, for while a mere boy from fifteen to twenty years old, he did very good piecework for *Harper's*, *Leslie's*, *Graphic*, *Hearth and Home*, *Irish World*, *Christian at Work*, and other publications equally varied in character. At an early age he showed a marked talent for caricature, and during the past decade he has won a national reputation by his clever work on the *Chicago Herald*. Apart from the management of James W. Scott and the editorship of Horatio W. Seymour, it is said no man has done more than Mr. Lederer to advance that paper to its present position. He was the pioneer of newspaper illustration in the West.

Mr. Lederer is one of the few men who can write entertainingly as well as draw, and the articles published in the *Herald* and the CLAY-WORKER over his signature have attracted much attention, and been widely copied. He is a member of several clubs in Chicago; among them the Chicago Society of Artists, the Newspaper Club, Germania Club, Fellowship Club, Chicago Athletic Association and the Massachusetts Society

in Chicago. He is unmarried, and one of the most popular young men in the city, his friends being numbered by the hundreds.

Mr. Lederer has been intrusted with several important missions by the *Herald*, the most noteworthy having been the expedition headed by Messrs. Wellman and Lederer, which in 1891 proceeded to find the place where Columbus landed (Watlings Island) and where the newspaper men erected a monument to commemorate the spot. Their conclusions have since been recognized as accurate and the work of the expedition has since become a matter of



CHARLES LEDERER, CHICAGO.

history. Referring to Lederer the *New York Journalist* says:

"In his work Mr. Lederer is prolific and versatile. He makes pictures of all sorts, sad, satirical, humorous and attractive. He is quick to perceive the strong points in an article for illustrative purposes. Let a proofsheets be given him, and in an incredibly short time he will find the wit, and with a rapidity truly admirable will fill in a graphic situation to illumine and emphasize it. His work is characterized by a vigor and boldness with a delicacy of touch peculiar to himself.

"It has been said that a man is a genius who can take the suggestions of others and make more of than the originators ever dreamed, and who can, with equal facility, suggest ideas to others, not in words, but with a few

strokes of a pencil. Lederer is this sort of a genius. He is great when he works with a proofsheets, he is greater when he makes pictures for an article that he has written himself."

His quaint satires and admirable sketches have won for him many friends among our readers, a number of whom have requested us to add his portrait to our picture gallery.

Written for the CLAY-WORKER.

## THE ECONOMICAL VALUE OF CHEMICAL ANALYSIS TO THE CLAYWORKER.

IT IS truly gratifying to observe the interest which clayworkers are showing in the chemical analysis of their materials. They are beginning to recognize its practical value, in so far as it furnishes suggestions and proof in relation to their products. It certainly is the most economical and satisfactory means to an end, when the true worth of clay is to be determined. It tabulates in a precise manner the elements contained therein, and a person who understands "the language" or meaning of an analysis, can discuss most intelligently the relation which any variety of clay bears to the many clay manufactured products.

Such progressive men as regard chemical analysis, either to their experimental work or to their business, an essential feature, are adopting scientific and, therefore, the surest methods. Their eyes have been opened to the fact that almost any clay will give results, of more or less satisfaction, in several lines of manufacture, but to determine what these lines are, and in which the clay will yield a product of the greatest intrinsic value requires more than even a careful glance at, or a "kiln test" of the sample.

From a complete analysis of clay it is possible to anticipate results, which otherwise would have to be investigated by long and costly, practical experiments.

As compared with old methods of research, along practical lines, it provides "short cuts" to the same end, and usually points out the virtues or weaknesses of a specimen, so plainly that it becomes a comparatively easy matter to prosecute experimental work in the right direction. Results derived by means of chemical analysis are invariably accurate, if the laboratory work is



properly conducted, besides possessing another advantage in their being unaffected by so many puzzling conditions, which often give rise to erroneous conclusions in a practical test. A chemical analysis not only answers many inquiries and describes to the investigator, in a very comprehensive way, the nature of the clay, but it shows plainly its fitness to the manufacture of a particular product.

Chemical analysis, therefore, is proving itself a necessity to the clayworker, and, especially to those who own and work clay beds. It furnishes the most reliable basis upon which clays may be classified. This is especially true of fire clays.

In making frequent observations of fire brick tests, prosecuted in rolling mill, puddling, blast, and various other furnaces, where the samples have had practical treatment and conditions, it has been proven to me that the life of refractory materials is more dependent upon their chemical composition than anything else. In practice each variety of clay becomes identified in a way worthy some special class of work. At the mines it is an easy matter to dig fire clay and to sort the different grades or, in other words, to keep each strata in a pile by itself, but it is more difficult to state in what proportions they shall be used in a fire brick mixture to yield a superior product. There is a great responsibility here which rests upon the shoulders of the producer, either the fire brickmaker or the fire clay miner, and yet is fully appreciated by only a few manufacturers now-a-days.

It is the great necessity of studying the nature of conditions which exist in a place where the refractory material is to be used so exhaustively, that the manufacturer can supply an article adequately adapted to the requirements. Here chemical analysis, a general knowledge of chemistry, and practical experience all work hand in hand. They place the clayworker upon a higher vantage general and in a position to be of the greatest assistance to his customer.

As I refer to the classification of fire clays then, my meaning is two-fold: Separating them according to their chemical composition, and also with respect to their adaptability to particular lines of work.

In revising fire brick mixtures with a view of increasing their efficiency, a chemical analysis of each variety of

available material is of the greatest assistance. Granting that the chemical composition of a fire brick is its most important feature, it is evident that the proportions of refractory materials entering into the mixture can be determined by, and is directly dependent upon, their chemical composition.

If a fire brick mixture has been found to yield excellent results, it can be reproduced by using other clays in such combinations and manipulating them in a way which will give a fire brick of the same chemical composition and physical structure. This only proves that the same results can be reached from the resources of several miners by combining their products in the proper manner.

There are grades of fire brick which appear to be identical, so far as their looks are concerned, but give very discordant results in a practical test. Thus the necessity becomes apparent, that for valuable data, the eye must probe deeper than the mere surface or place little reliance upon a superficial glance at a fire brick.

Chemical analysis also appeals to the manufacturer of paving brick as the cheapest and best method for examining any new material. If its composition and physical appearance strikes him favorable, he is justified in entering upon more expensive practical tests. The paving brick mixtures which yield the closest and toughest products usually carry approximately the same amount of silica and aluminum.

Too much aluminum, as well as too little, which is equally true of silica, is apt to cause trouble. It is also important that the mixture should contain the requisite amount of bases to affect a partial fusion or "vitrification." High siliceous pavers are inclined to be brittle, while those carrying a moderate amount of alumina fuse and anneal to better advantage.

These are only a few facts which serve to illustrate the value of chemical analysis, even to those who handle the most indifferent classes of material.

I can recall many instances in which difficulties have arisen in practical factory work, that have only been understood by, and overcome through, the assistance of chemical analysis. There are clayworkers to-day who are still pursuing the old, expensive and blind methods of investigation, which are no more than "games of chance." They start with no absolute data and

their only encouragement is in the hope of stumbling upon something satisfactory, they know not what. It is painful sometimes to observe with what incredulity men listen to new theories in relation to their products, as though these subjects have been so thoroughly exhausted by the many generations that have preceded us, the likelihood of discoveries along these lines has become highly improbable. They will laugh and shake their heads in the most ignominious way till you have them face to face with, and are fairly rubbing their noses in, the proof. Then all at once the truth of the theory seizes them, together with an amiable sense of gratitude for your persistency and at this moment another clayworker has, for the first time, begun to realize the practical value of a chemical analysis to him.

CHARLES FERRY.

Written for the Clay-Worker.

### THE MANUFACTURE OF PAVING BRICK FOR STREETS OF GEN- ERAL PUBLIC INTEREST, HINTS FOR MAKING THEM.

BY J. W. CRARY, SR.



PAVING of streets and roads with brick, has become a subject matter of great importance. The main point involved is the proper and best manufacture of the brick. If the brick can be made at convenient points, so that the cost of transportation will be reasonable, then the only thing to consider, in order to make street and road brick paving preferable to all other kinds of paving is the true maximum quality of brick.

This necessarily requires three indispensable pre-requisites. First, suitable clay; second, suitable machinery, and third, perfect burning of the brick.

By the term clay, we understand, that it means a combination of sand and alumina. Clay is pure, just in proportion to the absence of all salts, or oxides of minerals. We hear of "fire clay," "potter's clay," "pipe clay," "Fuller's clay," etc., but all these are based on the same minerals, silex and alumina, and just in proportion to the salts and oxides they contain, they are fusible and will shrink and warp.

WHAT IS SHALE.

What is called "shale," is the latest



"fad" for paving brick. This is a mere notion. "Shale" is nothing but indurated or hard clay, laminated much like slate. All kinds of rock are clay when decomposed and might be called "shale" if their structural appearance were the same. Some of the "shales" have bituminous coal or oil, mixed with them. Some are so free from foreign ingredients, and are so pure in alumina and silex, that they are used to make fire brick; so that when we hear that shale is the best material for street paving brick, we may ask, what sort of "shale" do you mean?

The "shales" used for street paving brick are composed of sand, alumina and alkaline salts, with iron; so that if any clay of similar ingredients, be properly manufactured, the brick will be just as good for street paving as if made of "shale." It will be a very nice thing for the owners of shale clay banks to make people believe they have a monopoly of the best raw material for making street paving brick.

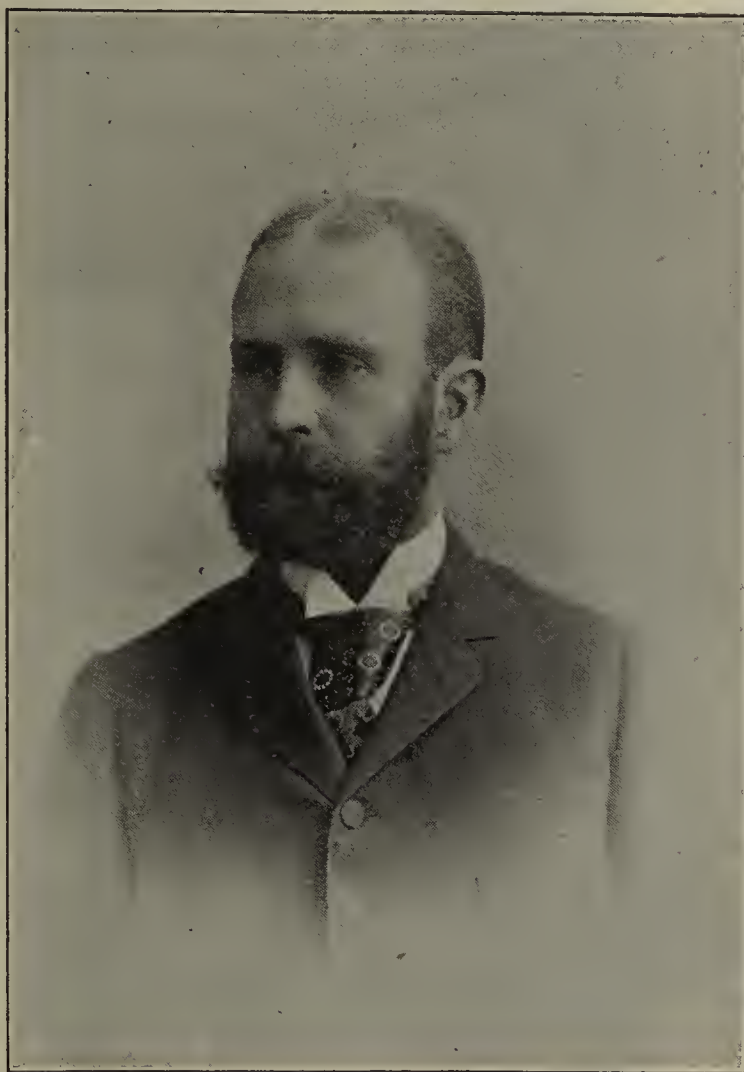
ANY STRONG CLAY, FREE FROM VEGETABLE MATTER, WILL MAKE STREET PAVING BRICK.

If we take any pure, tenacious clay and thoroughly make it into paving brick, it will resist as much pressure and stand as much wear as stone, commonly used in making street pavements. Clay that has alkaline mineral and iron will vitrify under comparatively a low heat; while clay, free from any kind of a flux will stand a very intense heat, with only a slight change of its particles. This is called "fire clay;" still, if such clay be suitably made and burned for paving brick, it will last in a pavement, as long as any vitrified brick. In fact, vitrified brick is a glass brick, and it has not been shown that a glass brick is any better for a street pavement, than an "oxydated" brick, or in other words, a perfectly burned brick.

WHAT KIND OF MACHINERY IS BEST, FOR MAKING STREET PAVING BRICK. AND HOW SHOULD THE CLAY BE PREPARED BEFORE GOING TO THE MACHINE?

These are vital questions, in discussing this subject. It must be conceded that a first rate paving brick must be very hard, dense and tough, that it must not break easy, or absorb much water. Now the question is, what class of brick machines is best to produce

the desired results? So far as experiments have yet shown the "semi-dry," or what is called "stiff mud machines," are in the lead. When the clay is in proper condition, these "stiff mud" machines of the best make, have some very excellent features; one is, that they are simple in construction, and easy to work. Another is, that brick can be made by them at a low cost. Another, and the most important reason of their value is, that for paving brick they make a more compact, and solid brick than can be made by any "soft mud process" or even "dry clay process," unless the "dry press" is of extraordin-



W. S. RAVENSCROFT, Gen'l Manager Ridgway Brick Co., RIDGWAY, PENN.

ary efficiency for making a uniform solid brick.

THE SOFT MUD PROCESS LEAVES THE BRICK TOO POROUS,

And the brick must be pressed after they are partly dried, and if not dried with proper care the pressing is of no advantage for paving brick. If brick are taken from the yard, or dry floor, or from pallets under a shed and pressed, a lamination of the corners and edges is caused by the pressing, indeed the entire surface of the brick is a sort of crust, while the centre is quite soft. In fact the texture of a brick is in no way

improved by pressing it, after it has been partially dried by air or sun, unless it has been properly "haked," so that the moisture is equalized.

THE ONLY RIGHT WAY TO PREPARE BRICK FOR REPRESSING,

Is to take them from the "floor" or "pallets," after they are dry enough to handle, and "hake" them tight, under a shed and keep them covered with a wet cloth or blanket, for at least three days, so that the edges and corners of the brick are as damp and tough as the middle, then they may be pressed to get a perfect shape and finish; but the idea of greatly increasing the solidity of a brick by pressing, after it has been dried a little is a mistake.

PREPARING CLAY FOR STREET PAVING BRICK.

As I have often said, clay cannot be too much handled and mixed, before it goes to a brick machine, and especially is this true when street paving brick are to be made. The texture of a good paving brick is equal in density and toughness; this can only be accomplished by a thorough intermixture of the clay, and this can only be done by cutting the clay from top to bottom, and throwing it out in a pile, where the rain will wet and disintegrate it. It should be dug and thrown out at least three months before taken to the machine. If the clay is lumpy, it should be well pulverized before going into the pug mill. A long horizontal pugging shaft, with suitable knives, running at a high speed is best for perfect tempering. The clay should be a perfect plastic mass, free from lumps, before going through the dies. The preparation and tempering of the clay, in order to make a uniform, solid paving brick, is of as much importance as is the selection of clay.

DRYING, SETTING AND BURNING, OF VITAL IMPORTANCE.

In order to make a strong, tough brick, they should be dried slow. Hot air 140° F. may be safely used, but a higher heat will so rapidly contract the surface of the brick that it is more or less fractured, and however hard the brick may be burned, they are liable to "spawling" when under heavy travel. The next thing after drying to consider, is the right, and I may say scientific, way to set the brick, so as to apply and control the heat with the greatest



economy, and produce the very best effect.

If the brick are to be burned in an up-draft kiln, the "benches" and "over hangers" should be set loose and uniformly open, about three quarters of an inch. There is no better way to do this than to set the brick "skintling" or zigzag, the brick cross like a narrow long X, they vary about 25 degrees from a right angle with a line across the kiln; so that the brick that lies on, or across two, will be even at each end of the two. This gives a perfectly certain passage for the smoke and heat, which take both a vertical and lateral zigzag course up through the kiln. There should be no tight courses in the kiln, except one course at top of "benches" to make a good foundation for the "over hangers," and then when the overhangers meet the first single course, put on as a "binder," over the meeting of the overhangers, should be tight, this causes the fire to spread. On the second off-set course or binder, one course of stretchers lengthwise across the kiln should be set, five brick should be set on the length of two, which gives about one inch of space between the brick; then start on top of this course and set skintling as in the benches and overhangers, all the way to the top of kiln. Then plat, leaving a space of at least one inch between the plating. If the clay fuses at a low heat the kiln should not be more than thirty-five brick high. If it stands a high heat, the kiln may be set forty to forty-five brick high. A kiln set as above directed will have a free, strong draft, and will give perfect combustion of fuel of any suitable kind, which is the only way that paving brick can be burned.

THE HEAT OF A KILN MUST BE CONTROLLED SO AS TO DIFFUSE IT THROUGHOUT.

We hear of kilns that control the heat by certain kinds of flues and cold air openings, or pressure. This can never be safely done. A cold air inlet on hot brick is always a damage. The brick are fractured and discolored, and no fuel is saved by it, nor is any time saved.

The dampering principle, is the only one that can be relied on to do perfect work. The furnaces and arches of a brick kiln should have at all times, an even and uniform degree of heat, great care should be taken never to get the arches too hot, and this cannot be easily done if the brick are not set so that a free draft is had from bottom to top.

The draft of heat, up or down, through a brick kiln is in distinct currents and will appear in spots on top, if the draft be up, and at bottom if the draft be down; when these spots are sufficiently burned they should be dampered with fine clay, this is easily done on up-draft open top kilns, but is impracticable on down-draft kilns. It is therefore evident that the up-draft kiln is best for burning paving brick.

I have fully discussed the up and down-draft system in former writings

reached by dampers, nor can the draft be controlled by the furnaces without letting cold air in, to the positive injury of the brick; so the only alternative, is to keep the furnaces and arches, at the proper needed heat, equal and uniform; and when the draft up through the kiln carries too much heat to any distinct spot, cover that with fine damp clay, of course that immediately checks the draft of heat to that spot, and turns the heat to the colder, unburned places. The consumption of fuel in the arches



BRICK YARD SKETCHES—THE TOWER GROVE CO'S CORNER IN ORNAMENTAL BRICK.

in CLAY-WORKER, and I here say without fear of any true contradiction, either by theory or practice, that no large kiln of brick can be as well burned by a down-draft kiln as by an up-draft kiln.

The principle of controlling heat in a brick kiln perfectly, is peculiar. It is not like any furnace or chimney; with these, dampers or cold air inlets, may be efficiently used, but a large kiln of brick is like a countless number of flues, grouped together like a honey comb; the interior flues or spaces cannot be

that are covered is much decreased, but the same degree of heat is present so that as the process of covering goes on, the use of fuel is lessened and by the time the whole kiln is covered very little fuel is needed. After a kiln has been thus burned and covered with clay, the fire should be kept up six to eight hours, so that the best will be equalized throughout the kiln, then close the kiln without adding fresh fuel, let it get cool before opened, and if properly burned the brick will be annealed and be tough, first rate paving brick.



## BRICKYARD SKETCHES.

## MAKING BRICK BY THE DRY PRESS PROCESS.



DECADE ago or less, the making of brick by the dry clay process was generally regarded as practical only in a few favored localities where clay could be found similar to that so abundant in and about St. Louis. This theory has proved fallacious. The countless dry press plants that have been established in almost every section of the country afford ample

proof that a great variety of clays may be successfully worked by this process if properly prepared before being fed into the press.

visitor is almost sure to find them making brick, rain or shine. Among the many successful plants where brick tourists are sure to find a cordial welcome is the

## TOWER GROVE BRICK WORKS.

The plant is located on the Oak Hill branch of the Missouri Pacific R. R., near King's Highway, being well located for wagon delivery throughout the city. They also have good railroad facilities. Their clay bed consists of some eleven acres of fine clay which burns a lustrous cherry red.

The plant is one of recent development, having started operations in 1890. It is very complete and well arranged,

of a capacity of 315,000 each, and propose to build several more this fall. The brick are set 40 high face to face, three on three; all shaped brick are boxed. They watersmoke with wood and finish with soft coal, a small quantity of slack is usually scattered along the sides of the kilns.

Mr. Emil Fernholtz, the patentee of the Progress brick press, is superintendent of this yard, and also gives attention to the building of the presses. He is a pioneer in the dry press brick business. When but a boy of 14 years, his experience with machinery began, which soon developed into practical engineering, he holding positions such as master



THE TOWER GROVE BRICK CO'S OFFICE AND WORKS.

Nevertheless, St. Louis, still remains the great dry press brick center of the world—the Mecca to which the disciples and converts of dry pressism naturally turn for inspiration and wisely, too, for in these latter days of the *Saints* almost every device and improvement known to this branch of clay work can be seen there in practical operation the year round, regardless of the elements. Whether the temperature ranges in the nineties or below zero, it matters not, the work goes on just the same, and the

operating three machines of about 65,000 capacity per day. The clay is harvested and stored under immense sheds in the customary way. They are using a Williams pulverizer of large size with steam jacket, inclined screens, and presses of their own manufacture—the Progress brick press, of which an “ad.” is shown on page 418. The brick are trucked from machine to kiln on spring trucks, and in order to make the truckers more careful than they might otherwise be, there is no end piece on the truck to prevent the brick from sliding off, thus the trucks must be moved very steadily.

They have five square up-draft kilns

mechanic in large railroad building establishments and wire mills in Europe.

But his mind was bent on brickmaking as his choice of occupation, so he came to America and sought employment among the manufacturers of dry press brick. He served a term on the yard of Anthony Ittner, and subsequently has successfully operated the Kennedy, Common Sense, Eureka, Whittaker, Boyd, Andrus, Simpson and Lion dry press brick machines, working clays and shales of almost every kind. He has superintended the running of presses on yards in St. Louis, St. Charles, Mo.; Wichita and Pittsburg, Kan.;



Peoria, Newburn and Edwardsville, Ill.; Cayuga and Crawfordsville, Ind.; Pueblo, Colo., and Cleveland, Ohio, and tested many shales and clays from elsewhere. This vast experience taught him every want in a dry press machine, and developed his life work, the production of a successful press, which has been well named, "The Progress."

Mr. Fernholtz was the first to make ornamental or shape brick in moulds.

readers may judge from the accompanying photo. of their sample case. They also have facilities for grinding angle and arch brick which enables them to do this character of work accurately and expeditiously.

The officers of the company are Jacob Stocke, president and H. C. Beckmann, secretary and treasurer. While both are comparatively young men they have had considerable experience in mercan-

Written for the CLAY-WORKER.

## BURNED CLAY FOR ROADWAYS.

BY E. H. LONSDALE.



THROUGHOUT the great interior and the western bituminous coal fields, which together make up portions of greater or less areal extent of Illinois, Ohio, Indiana, Iowa, Missouri, Kansas and a number of states contiguous to these, the mining of coal is

extensively prosecuted at various points and through almost limitless openings. These operations, so general in location and so persistent year in and year out, are such that any other use than for fuel to which the beds of the upper carboniferous, or coal measures, have been put appears nearly or wholly insignificant.

To be sure, the output of coal is so great, and the value thereof correspondingly large in comparison with that derived as yet from the utilization of any or all of the associated beds, that the result naturally is a tendency to under-value entirely these latter occurrences. At the same time the annual production both from the layers of stone for building purposes as well as from the clays in the manufacture of so many different articles represents an almost inestimable amount of capital successfully invested and indeed great stock of marketable products, the sale of which is annually very considerable. Especially is this the case as regards the clays.

Everywhere in the bituminous fields there occur beds of clay whose areal extent is without limit, from a practical standpoint, and whose individual thickness ranges from a mere parting to more than one hundred feet with little or no interference for practical working by the occurrence of deleterious particles or layers. This carboniferous formation, being far up in the geological scale, bears strata which are commonly of easy access or else soon made available; if not by the cutting out of channels for watercourses or by actual surface level exposures, then by shallow mining. This last is nearly always possible in the coal fields, especially if the absence of the glacial formation is a feature of the region.

There is perhaps no other geological



THE TOWER GROVE BRICK CO'S CLAY FIELD—THE PLOW OR DIGGER AND AUTOMATIC CLAY GATHERER.

The previous custom was to mould them the usual way and then cut them. He was, also, the first to apply steam to the rams to heat the pressing plates. This was on Mr. Anthony Ittner's yard in St. Louis, before the English machines were used in that city.

The Tower Grove works now make a specialty of ornamental brick and produce many handsome designs, as our

tile affairs and appreciate the advantage of a wide acquaintance with those engaged in their line of work and therefore invite every brickmaker who may be interested in the dry clay process, to pay them a visit and inspect their plant.

Honor and shame from no condition rise,  
Act well your part—and widely advertise!

—Printers' Ink.



formation which furnishes such abundance of material suitable for the manufacture of such great variety of products as does the coal measure hori-



EMIL FERNHOLTZ.

zon. At first its use was limited to the making of pottery, and only small deposits were held as being of any value. Later it was found that common brick were to be constructed of the shales, and now there is scarcely an article, exclusive possibly of the higher grades, from the white chinaware to the least valuable article, including all grades of ordinary pottery, fire brick, sewer pipe, encaustic tile and all tints and shapes of common structural and ornamental brick which are not made from such clays.

For a number of years the testing and the experimenting with these shales have from time to time extended the knowledge of their capabilities. One of the most important of the more recent discoveries resulted in the verification that the upper carboniferous clays were adapted to the construction of unexcelled street pavers. Many of the better grades are now afforded from such raw material. While seemingly nearly or quite perfected, the paving brick now produced are but faintly indicative of what may yet be accomplished. The rapidly and ever increasing demand for the article makes the establishment of many new plants inevitable and the availability and constant working of the coal measures render the contained clays the ones most liable to extensive future development in this connection.

And are the uses all determined?

Special reference is here given to a use, which, if considered, has been deemed of very secondary importance

yet apparently underestimated. Thus far it has always seemed impracticable, on account of the great expense involved, to argue the plausibility of the suggestion that ordinary country thoroughfares be constructed of carefully laid blocks of any material whatever. Gravel and macadam when conveniently obtained are yet extensively employed, but these are by no means always possibly secured. Such may also be said of any special clay, even the one under consideration. It may be that brick paving will be yet carried on in the main country highways.

There are collected in the coalmining districts great mounds of *debris* which has of necessity been lifted out of the mines, no matter of what character. These heaps thus accumulated occupy much space and commonly serve no purpose. They are composed largely of argillaceous shales and in the same dump are great quantities of bituminous shale, also iron pyrites and other impurities which after an extended exposure become altered and usually spontaneously set fire to the heap. The heat becomes so intense and the fire keeps up for such a length of time that the carbonaceous material is all driven off and there remains but a mass of red, may be

been utilized in driveways, and here it seems specially serviceable. Its red color harmonizes well with the green of the lawns and since the traffic is commonly rather light the road becomes exceedingly durable. A properly constructed bed is sufficiently porous, and since it is all hard burned and shaly the amount of resultant mud in wet weather is very slight. The use, therefore, in this line is highly commendable and whenever possible should be extended.

Aside from the purpose mentioned it would appear that these burnt shales could be laid down advantageously in public highways in the vicinity of the coal mines and be substituted for the more expensive materials and used where the cheaper kinds are not obtainable.

It is true that except in rare cases the individual dump would not answer for so great a length as a mile, yet the total amount in the mining district is sufficient for great distances.

If, again, the supply is to be soon exhausted and long stretches of country road are not to be constructed therefrom, let the better portions be transported to the nearest town or city and applied either as the principal street material



BRICK YARD SKETCHES—THE TOWER GROVE BRICK CO'S GRINDING MACHINE.

fritted, material. When thoroughly burned it is hard, shaly and of a nearly homogeneous color and certainly seems adaptable to some purpose.

For a long time a small amount has

or, where otherwise paved, be laid down at the approaches of pavement and along the less traveled ways.

In either case the thickness of the shaly substance would necessarily be



somewhat greater than where the loads were of less weight. As a matter of fact no such attempt has up to this time been made, but the practicability surely seems evident.

These additional uses to which the coal measure clays seem adaptable would soon do away with the many unsightly heaps, and at the same time secure a considerable recompense in return for the labor and time required for the removal of the substances from the mine.

Success along this line may result in the effort to secure a greater amount of the material and a superior grade through more careful mixtures of the raw materials.

As a rule burnt clay of the described

Written for the CLAY-WORKER.

### ENAMELING AND GLAZING BRICK.

#### Number 1.



N READING recent articles concerning enameling and glazing brick, and being deeply interested in same, I have concluded to submit a series of articles on the subject, which I hope

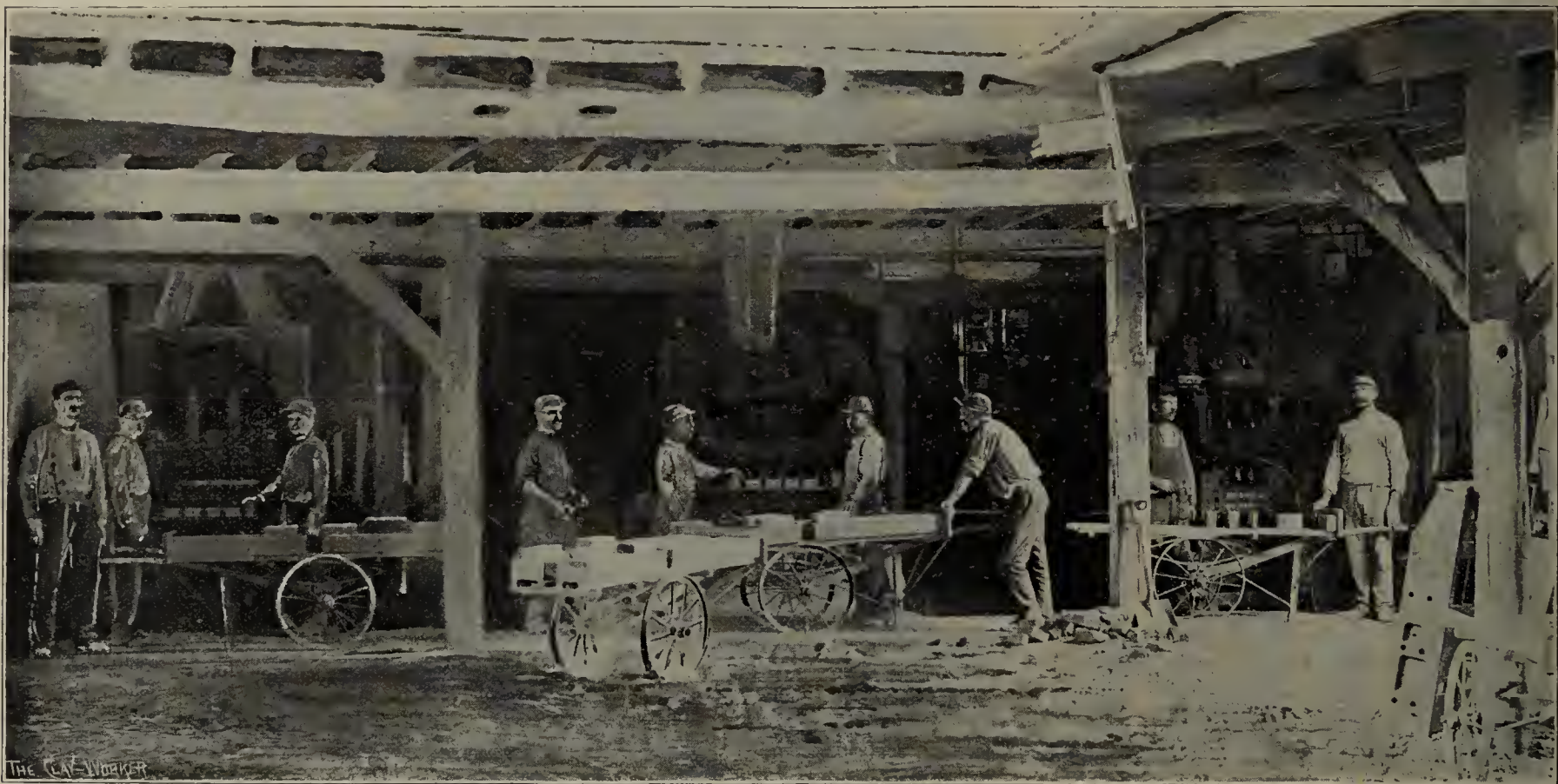
will be useful and instructive to brick-makers experimenting with that branch of the work. I will take up the glazing first, and the enameling afterward.

There has been a great deal of con-

absolutely necessary to have strictly pure lead, such as Colliers, S. P., (strictly pure).

There are very few lead glazes but will craze at a low heat. To prevent this, it is necessary to frit the boracic acid, feldspar and whiting and afterward add the raw material, which must be thoroughly ground. The best and most practical grinding apparatus, to my mind, is the old fashioned grinding mill with French burr stones, such as are used in all potteries manufacturing white ware.

Of course, in making experiments with these goods, it is necessary that a person have some knowledge of metallic oxides. In purchasing these goods, you are liable to get different materials from



BRICK YARD SKETCHES—TOWER GROVE BRICK Co's DRY PRESSES—See page 439.

character is obtained at a nominal extra expense, the only cost arising from the transportation from the bank to the desired point. As with a few exceptions all of the more important banks lie alongside a railroad track or projecting switch the means for inexpensive removal are usually to be relied upon.

After the great mounds now present are removed the artificial production may be started, using the same shales and if desirable the nonutilized coal slack from the mines.

A trade journal with a thousand subscribers often has a greater number of readers of the sort the advertiser wishes to appeal to than the daily paper circulating a hundred thousand copies.—Ex.

trovery in the CLAY-WORKER concerning the nature of clays and their adaptability to certain glazes, it being asserted that it is an impossibility to produce a perfect glaze on certain clays. Now, anyone taking up the manufacture of glazed brick, must first determine what amount of heat the brick to be glazed will stand. In my experience with many different lead glazes I have found scarcely any but that would stand more heat than almost any ordinary red clay.

These glazes are a compound of white lead, flint, boracic acid, oxide of zinc, whiting, clay and feldspar in different proportions. In using white lead, it is

different dealers, and as the results are sometimes very contradictory, I would suggest that you get your materials from one reliable wholesale house, as you can then always depend on getting the same thing.

#### APPLYING THE GLAZE TO THE BRICK.

There are many mistakes made in applying the glaze to the brick. There is less liability to craze when the glaze is put on thin, but the brilliant lustre required on a glazed brick is not there when applied thus. About 3-32 to  $\frac{1}{8}$  of an inch thick will produce a fine lustre. In using a raw glaze, (that is, a glaze without fritting,) the grinding is not so extremely particular, but in using a frit



with boracic acid, it is absolutely necessary; otherwise, you will have a cloudy surface on the brick, because of the raw material and the frit not being thoroughly ground.

#### FUSION.

In the fusion of glazes, it all depends on the quantity of lead used. On red clays and all clays that will not allow of a great heat, the percentage of lead used is great, but on clays that will admit of an extreme heat, it is possible to produce a fine glaze without using lead at all, using in its place a larger amount of feldspar.

#### OXIDE OF COBALT.

In using oxide of cobalt for producing blues and blacks, a fine frit can be made of one part ground flint and one part oxide of cobalt. It not only produces a better color, but brings down the price of cobalt one-half.

An ordinary white transparent glaze on a red brick produces a light brown; with a small amount of Albany slip added, produces a still darker brown. If you wish to produce a black glaze on a red brick, stain the ordinary glaze with a little oxide of cobalt—say, ten to one. There are but five or six self colors that can be produced on red brick and a few compound colors. A great variety of colors in glazes can be produced on a light or buff brick. It is different with enamels, which being opaque, makes it possible to produce a great variety of colors with them.

It is not necessary to enter into the details of the manufacture of the brick to be glazed, but the harder the brick, the less liable to craze, and better results will follow. Always try to produce a brick with good face and corners.

I have been asked if I could produce a good glazed brick with a single burning process; that is, glaze on clay. It may be done with one or two special glazes, but I would not advise anyone to experiment with that process. With enamels it is different. A very fine hard enamel is produced by the single burning process.

In making the frits for enamels (if making in small quantities) it is best to use crucibles, which must be lined inside with a coating of flint, mixed with water to a consistency of paste, and put on about  $\frac{1}{4}$  of an inch thick. This will prevent the enamel from sticking to side of crucible, and when turned upside down, the enamel will drop out of crucible, and the flint can be scraped away from enamel before grinding.

O. PAKE.

[To be Continued.]

Written for the CLAY-WORKER.

#### BRICKLAYING.

MANY places occur in the laying of bricks where it is desirable to have the wall hollow or containing air chambers. This is accomplished by two methods, the laying of common brick

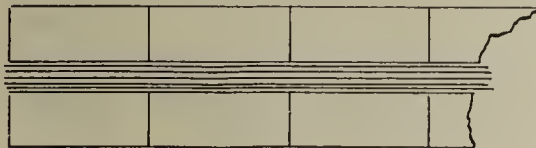


Fig. 1.

so as to form spaces within the wall, and the using of special form bricks. The first is naturally the older method, and to successfully utilize it, some study of the location of the individual bricks is

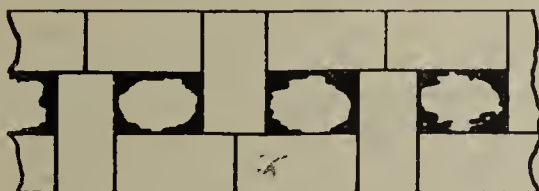


Fig. 2.

necessary in order that the best bond may be secured. Fig. 1 shows the two courses of a nine inch hollow wall in old English bond. This is one of the simplest of forms. Fig. 2 shows a sim-

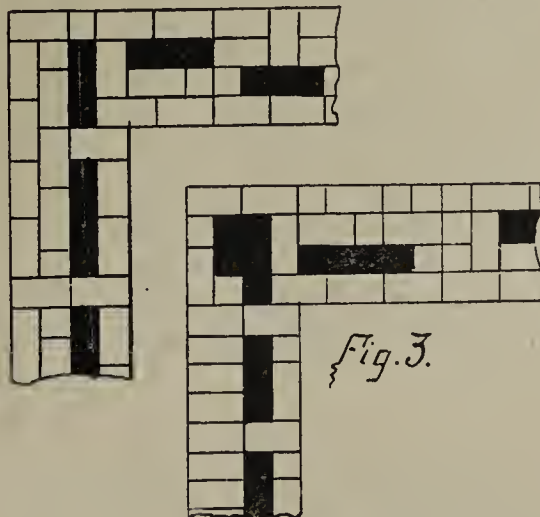


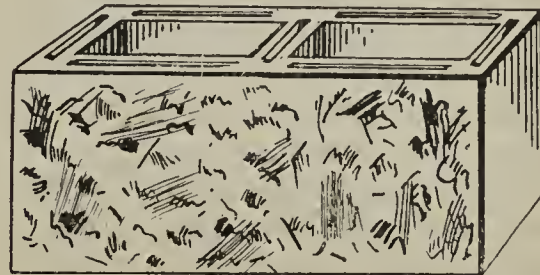
Fig. 3.

ple form for a fourteen inch wall. Fig. 3 shows the method of constructing a hollow wall return wherein the wall a

is in old English bond, while the return is in Flemish bond.

Figures 4 and 5 represent extreme forms of the special hollow brick. Fig. 4 is the Allison hollow block, an American manufacture, and which shows the special feature of enclosed bonding grooves in the top and bottom, and which may have a surface similar to spalled stone. In this respect it resembles the famous brick ashler made by a Boston firm. The Allison block, which is well covered by patents needs only a

Fig. 4.

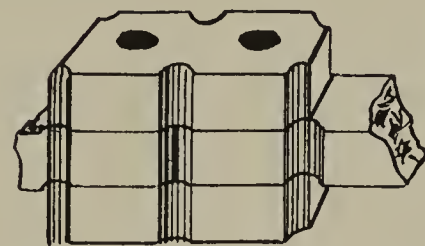


cheap manufacture to make it a very successful building material.

Fig. 5 is the Hesz brick, being the invention of an Austrian. It is also protected by patent. The utility of the brick is manifest, both old English and Flemish bond being accomplished with ease. Arches may be sprung by stringing the bricks upon pipes of iron, brick steps may be made in a similar manner, and there are many other devices which the ingenious



Fig. 5.



form makes the brick amenable to, besides the fundamental principle of forming a hollow wall. The next paper will be about piers and chimney stacks.

NIMBUS.

SEND ON YOUR \$2.00.

The man who does not keep posted as to what is going on in his own line may be successful, but he might be still more successful if he studied the methods and heeded the experience of others.—*Ex.*



Written for the CLAY WORKER.

THE NEW YORK MARKET.

**R**ECORD breaking is striven for by the trans Atlantic liners each trip. The ship "Brick" has broken the record this season, but in the wrong direction, the scale is like Mr. McGinty, always toward the bottom. The weather for the larger part of the season was conducive to a large output with a fall in rates, till one would say that they could not go any lower, still they kept dropping in price. Hoping that each day something would be done by some one else, the "Mecca" of an advance was anxiously waited for.

About two weeks ago the grades which were bringing \$3.75 and \$4 advanced an eighth, rather strange that the improvement should be in the lowest price brick. The following week the commission men were able to add another eighth making 25 cents per M in the

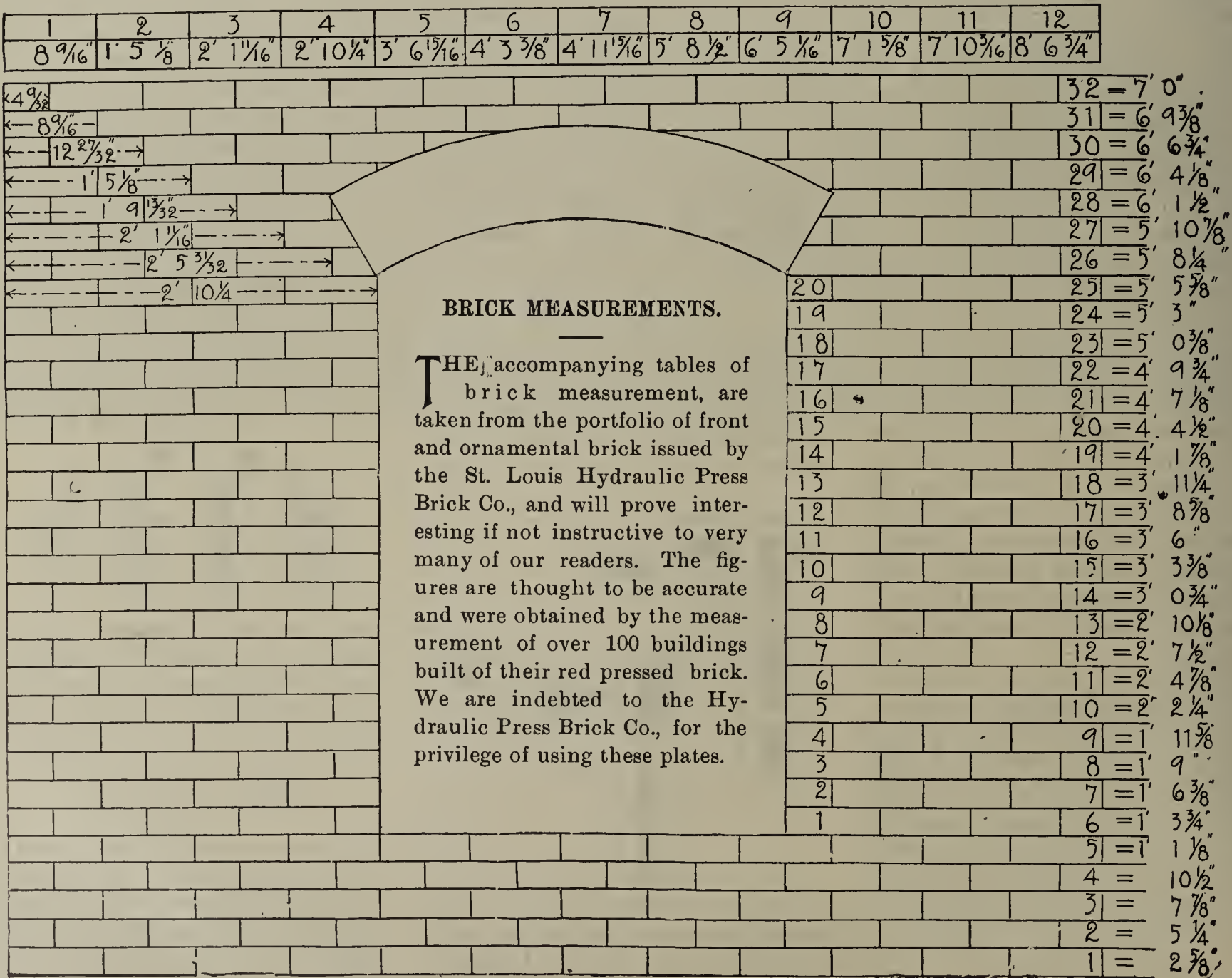
two weeks. The first class brick felt the advance with a raise of an eighth per M, at the close of the second week. Though the increase in price was not large, all felt that there was a prospect of a five dollar market, before the close of navigation. The general inference was, that the demand was better—but far from it, it was a decreased shipment caused by the closing of the moulding season, and the hurry to get the brick in and not loading on barges, thereby causing a seller's market.

If rain could be controlled so that it would only fall nights and Sundays the manufacturer would be kept from overstocking the market as often as he does. It does not seem to enter into his calculations that when he can load brick in the rain, the masons cannot lay them and while he is getting his boat ready for market others are doing the same. In clear weather a gang will load a barge carrying 250,000 in less than two days. This time of year he will double his gang and load her in a day and when the tow lands her boats at 52nd street

she will have ten or twelve barges with about 3,000,000 of brick, and the next day the same amount will arrive from further up the Hudson, making it rather uncertain what the next day may bring forth.

The brickmaker is a man of many minds, to-day he will tell you that he has laid his barge up and will not ship at going figures, the next day if you happen to pass through his shed probably you will see men busy loading her. If you meet the boss and quote to him his remark of the day before, his reply will be, "Well I thought the matter over and I do not see that there will be any change at present and I felt sorry for the men and thought I would send in this cargo," and so it is to the end of the chapter.

Reports are current that some of the captains are experiencing heavy weather with a prospect of being swamped. It is to be hoped that there is no foundation for the reports, the barometer of very free shipments during the past summer, at low figures tends to show a crippled state of affairs.





Of what has been and what I have seen was brought to mind by your sketch of the dilapidated yard with the rich owner. The men who make the most of their money in Haverstraw operated yards in like condition. One yard in particular, and the owner of it is to-day considered the wealthiest in Haverstraw, made most of his money on leased yards with a shed fully as poor as the one in question. It was so poor that to take the shed boards off when the fire was up one had to lift the boards out of the pocket from the top of the kiln, as it was not safe to walk from the eaves up. The line of shafting traveled back and forth with every revolution of the engine, the machines were out of plumb, in fact it was a wreck—but he made money as well as others with the same old fixtures. To-day he is the owner of up to date yards, but the returns are not commensurate with the outlay—not judging by present prices, but when rates are at least two dollars per M. better.

But not a successful one, it was my pleasure to visit a short time back. Nature it seemed had planned the ground for that purpose. It was as level as a floor and the yard could have been made any length so that a pit could be hacked on two hacks. The yard contained ten machines, Wiles Bros. make, with a length of shafting eighteen hundred feet long. Think of it, machines 180 feet apart. In Hackensack there is a yard with twelve of the same make of machines, on one-half the length or about 900 feet and none of the rows will dump 300 molds long. The length of the rows on the yard first spoken of was very short. It looked as if the builders were afraid that the wheelers

Loading the hard brick they did not

LENGTH			Measurement			LENGTH			Measurement			LENGTH			Measurement			Course			Measurement			Course			Measurement		
FT.			-IN.-			FT.			-IN.-			FT.			-IN.-			FT.			-IN.-			FT.			-IN.-		
1	Brick		4 $\frac{3}{32}$	14	Brick	9	11 $\frac{3}{8}$	27 $\frac{1}{2}$	Brick	19	7 $\frac{1}{2}$	1		2 $\frac{5}{8}$	33	7	2 $\frac{5}{8}$												
1	"		8 $\frac{3}{16}$	14 $\frac{1}{2}$	"	10	4 $\frac{5}{32}$	28	"	19	11 $\frac{3}{4}$	2		5 $\frac{1}{4}$	34	7	5 $\frac{1}{4}$												
1 $\frac{1}{2}$	"		12 $\frac{27}{32}$	15	"	10	8 $\frac{7}{16}$	28 $\frac{1}{2}$	"	20	4 $\frac{1}{2}$	3		7 $\frac{7}{8}$	35	7	7 $\frac{7}{8}$												
2	"	1	5 $\frac{1}{8}$	15 $\frac{1}{2}$	"	11	0 $\frac{23}{32}$	29	"	20	8 $\frac{3}{16}$	4		10 $\frac{1}{2}$	36	7	0 $\frac{1}{2}$												
2 $\frac{1}{2}$	"	1	9 $\frac{1}{32}$	16	"	11	5	29 $\frac{1}{2}$	"	21	0 $\frac{19}{32}$	5	1	1 $\frac{1}{8}$	37	8	1 $\frac{1}{8}$												
3	"	2	1 $\frac{1}{16}$	16 $\frac{1}{2}$	"	11	9 $\frac{9}{32}$	30	"	21	4 $\frac{7}{8}$	6	1	3 $\frac{3}{4}$	38	8	3 $\frac{3}{4}$												
3 $\frac{1}{2}$	"	2	5 $\frac{23}{32}$	17	"	12	1 $\frac{9}{16}$	30 $\frac{1}{2}$	"	21	9 $\frac{5}{32}$	7	1	6 $\frac{3}{8}$	39	8	6 $\frac{3}{8}$												
4	"	2	10 $\frac{1}{4}$	17 $\frac{1}{2}$	"	12	5 $\frac{23}{32}$	31	"	22	1 $\frac{7}{16}$	8	1	9	40	8	9												
4 $\frac{1}{2}$	"	3	2 $\frac{11}{32}$	18	"	12	10 $\frac{3}{8}$	31 $\frac{1}{2}$	"	22	5 $\frac{23}{32}$	9	1	11 $\frac{5}{8}$	41	8	11 $\frac{5}{8}$												
5	"	3	6 $\frac{1}{16}$	18 $\frac{1}{2}$	"	13	3 $\frac{13}{32}$	32	"	22	10	10	2	2 $\frac{1}{4}$	42	9	2 $\frac{1}{4}$												
5 $\frac{1}{2}$	"	3	11 $\frac{3}{32}$	19	"	13	7 $\frac{1}{16}$	32 $\frac{1}{2}$	"	23	2 $\frac{9}{32}$	11	2	4 $\frac{7}{8}$	43	9	4 $\frac{7}{8}$												
6	"	4	3 $\frac{3}{8}$	19 $\frac{1}{2}$	"	13	10 $\frac{23}{32}$	33	"	23	6 $\frac{9}{16}$	12	2	7 $\frac{1}{2}$	44	9	7 $\frac{1}{2}$												
6 $\frac{1}{2}$	"	4	7 $\frac{21}{32}$	20	"	14	3 $\frac{1}{4}$	33 $\frac{1}{2}$	"	23	10 $\frac{27}{32}$	13	2	10 $\frac{3}{8}$	45	9	10 $\frac{3}{8}$												
7	"	4	11 $\frac{1}{16}$	20 $\frac{1}{2}$	"	14	7 $\frac{13}{32}$	34	"	24	3 $\frac{1}{8}$	14	3	0 $\frac{3}{4}$	46	10	0 $\frac{3}{4}$												
7 $\frac{1}{2}$	"	5	4 $\frac{7}{32}$	21	"	14	11 $\frac{1}{16}$	34 $\frac{1}{2}$	"	24	7 $\frac{13}{32}$	15	3	3 $\frac{3}{8}$	47	10	3 $\frac{3}{8}$												
8	"	5	8 $\frac{1}{2}$	21 $\frac{1}{2}$	"	15	4 $\frac{3}{32}$	35	"	24	11 $\frac{1}{16}$	16	3	6	48	10	6												
8 $\frac{1}{2}$	"	6	0 $\frac{25}{32}$	22	"	15	8 $\frac{3}{8}$	35 $\frac{1}{2}$	"	25	3 $\frac{31}{32}$	17	3	8 $\frac{5}{8}$	49	10	8 $\frac{5}{8}$												
9	"	6	5 $\frac{1}{16}$	22 $\frac{1}{2}$	"	16	0 $\frac{3}{32}$	36	"	25	8 $\frac{1}{4}$	18	3	11 $\frac{1}{4}$	50	10	11 $\frac{1}{4}$												
9 $\frac{1}{2}$	"	6	9 $\frac{1}{32}$	23	"	16	4 $\frac{15}{16}$	36 $\frac{1}{2}$	"	26	1 $\frac{7}{32}$	19	4	1 $\frac{7}{8}$	51	11	1 $\frac{7}{8}$												
10	"	7	1 $\frac{3}{8}$	23 $\frac{1}{2}$	"	16	9 $\frac{3}{32}$	37	"	26	4 $\frac{1}{16}$	20	4	4 $\frac{1}{2}$	52	11	4 $\frac{1}{2}$												
10 $\frac{1}{2}$	"	7	5 $\frac{23}{32}$	24	"	17	1 $\frac{1}{2}$	37 $\frac{1}{2}$	"	26	9 $\frac{3}{32}$	21	4	7 $\frac{7}{8}$	53	11	7 $\frac{7}{8}$												
11	"	7	10 $\frac{3}{16}$	24 $\frac{1}{2}$	"	17	5 $\frac{23}{32}$	38	"	27	1 $\frac{3}{8}$	22	4	9 $\frac{3}{4}$	54	11	9 $\frac{3}{4}$												
11 $\frac{1}{2}$	"	8	2 $\frac{1}{32}$	25	"	17	10 $\frac{1}{16}$	38 $\frac{1}{2}$	"	27	5 $\frac{23}{32}$	23	5	0 $\frac{3}{8}$	55	12	0 $\frac{3}{8}$												
12	"	8	6 $\frac{3}{4}$	25 $\frac{1}{2}$	"	18	2 $\frac{1}{32}$	39	"	27	9 $\frac{15}{16}$	24	5	3	56	12	3												
12 $\frac{1}{2}$	"	8	11 $\frac{1}{32}$	26	"	18	6 $\frac{3}{8}$	39 $\frac{1}{2}$	"	28	2 $\frac{3}{32}$	25	5	5 $\frac{5}{8}$	57	12	5 $\frac{5}{8}$												
13	"	9	3 $\frac{3}{16}$	26 $\frac{1}{2}$	"	18	10 $\frac{23}{32}$	40	"	28	7 $\frac{1}{2}$	26	5	8 $\frac{1}{4}$	58	12	8 $\frac{1}{4}$												
13 $\frac{1}{2}$	"	9	7 $\frac{19}{32}$	27	"	19	3 $\frac{3}{16}$	40 $\frac{1}{2}$	"	28	10 $\frac{25}{32}$	27	5	10 $\frac{3}{8}$	59	12	10 $\frac{3}{8}$												



take, the arch brick, they left three courses above the closing standing, (that is, that did stand up,) after wheeling over them, as most of the arches fell in, to add further to the waste already spoken of. It is a well known fact that if the arches are taken out, they might as well be thrown away, as it does not pay to handle them. In this case with the tumbling in of the arch brick, many good ones got mixed with them and went in the dump, to add to the mixture where in tossing out they had met swelled brick which were thrown down and helped to break what they struck.

Shipments were made by water and railroad. The yard was some distance from tide water and was reached by a canal. The scows that carried the brick were from eighteen to twenty-five M capacity each; they were towed from tide water by oxen to the yard and back to deep water, there a tug boat placed them at point of destination. That part was about as handy and expensive to run as the yard proper. There was wide room for improvement in both.

#### THE ANNEX

Was a brilliant idea, whoever conceived it, to add cost to the manufacture of brick. The main road passed one end of the yard at right angles. On the opposite side they built a shed. The machine next the road furnished the brick to fill it when the main shed was full on that end. Back of the machine they had a yard of two days capacity of the machine's output. They had a gap cut through the embankment and trucked the green moulded brick away around behind the machine. When dry, they, as well as the ones in front of the machine, were wheeled over the wagon road to the shed—expensive pastime—is it any wonder that there was no dividends and the yard passed into new hands frequently. As a monument of foolish construction as well as management I do not think it has an equal in this broad land.

#### THE NEW YORK BRICK MARKET

Is now in the sellers hands, slightly on the advance in the poorer grades. An eighth advance in the better quality is the present rate from decreased shipment, as the demand is of no larger volume. Quite a number of brick are being stocked for winter use. As the season of up river navigation is at the furthest, about six weeks off, a large number of brick will be pushed on the market in that time. Will a five dollar

rate be realized by close shipment? It seems at present to be doubtful.

A. N. OLDTIMER.

#### THE LIEN LAWS.

IN our different States legislatures, soon to assemble, attempts will be made to revise the Lien Laws. In our own State the sub-contractors and material men are quite in favor of all the advantages which they derive from the present law, which gives them a right to first lien without notice. The general contractors feel, however, that the Lien Law is much against their interests. It brings into the market a character of competition which is anything but legitimate from their standpoint. They say that one of their "Jours" can go to a lumberyard or to a brickyard and buy material quite as advantageously as can they with their capital and their established business. On the other hand, the sub-contractors and material men are in favor of the Lien Law, because it protects them. This it unquestionably does.

During the recent session of the Louisiana Legislation, Mr. A. S. Blaffer, a member of that body, but better known to our readers as Vice-President of the N. B. M. A., secured the passage of a law that is very satisfactory to the New Orleans' builders and contractors, so we give it in full:

#### THE MECHANICS AND BUILDERS LIEN LAW.

##### AN ACT

##### RELATIVE TO CONTRACTS FOR BUILDINGS AND THE SECURITY OF WORKMEN AND FURNISHERS OF MATERIAL.

Be it enacted by the General Assembly of the State of Louisiana, That any person who makes a contract for one thousand dollars or over, with a builder or contractor or undertaker, to repair, re-construct, build or construct a building, shall require of the builder, contractor or undertaker, good and solvent security to full amount of contract for the payment of all the workmen, mechanics and laborers, and all those who furnish materials and supplies actually used in the building, and each workman, laborer, mechanic and furnisher of materials shall have his individual right of action against the said security, and should the owner fail to require of the contractor such good and solvent security, and to record the contract, with the bond and security, in the Mortgage Office, describing the property and giving the name of the security, within one week after the contract is signed and before the work is commenced, such owner shall be personally liable for all balances due to the workmen, laborers and furnishers of materials used in the building, and they shall have a privilege on the land and building if they record their sworn bills, whether the original contract is recorded or not. Provided, the bond and surety herein above provided for shall continue in force and effect only sixty days after completion of the building or repairs contracted for.

Be it further provided, the owner or builder,

or contractor or undertaker shall not be denied the right, to question the correctness of any account filed against said building, and, be it further provided, that all mortgages and privileges recorded against said land and building, previous to signing of said contract, shall have precedence, over all other liens.

Be it further enacted, That this Act shall only apply to cities of over fifty thousand (50,000) inhabitants, and all laws and parts of laws in conflict with this Act, are hereby and at the same time repealed.

#### FRONT BRICK AT \$4 PER M.

THE Chisholm, Boyd & White Co., of Chicago, have recently entered into a contract which is unique in its way for building and equipping a complete dry press brick plant at Ralston, Pa. The contract covers not only the power, machinery and appliances, but the buildings and clay sheds; also the Flood up and down draft kilns. The plant is to be turned over to the Ralston Brick Co. only after the making and burning of one or more kilns of brick of a certain high standard of excellence. A most unusual feature of this contract, however, is the guarantee as to cost of production. It is a part of the contract that the brick ready for delivery shall not cost to exceed \$4 per M. This sort of a guarantee is an innovation on the part of machinery men, but one which brickmakers will fully appreciate. The Ralston plant is now well under way, and will be running in about 60 days.

The Chisholm, Boyd & White Co. report business as improving rapidly. Among the plants recently equipped by them are the well-known Powhatan Clay Mfg. Co., of Richmond, Va., the Argillo Works, fire brick plant, of Carbon Cliffs, Ills., and a press and outfit to a prominent firm in Colorado.

#### A BUSINESS TERM ILLUSTRATED.



"Please find bill inclosed."





THIS DEPARTMENT IS DEVOTED EXCLUSIVELY TO INVENTION AND PATENTS RELATING TO THE CLAY INDUSTRY, AND IS EDITED BY MR. EDWARD C. WEAVER, ATTORNEY AND COUNSELOR, IN PATENT LAW, 800 F ST., N. W., WASHINGTON, D. C. COPIES OF ANY PATENT WITH DRAWINGS WILL BE SENT AT COST, NAMELY: FIFTEEN CENTS FOR EACH COPY. ANY INFORMATION AND ADVICE IN REGARD TO PATENTS WILL BE GLADLY GIVEN. ADDRESS ALL COMMUNICATIONS TO THE EDITOR.

### THE DESIGN PATENT.

THE bearing of the Design Patent upon the arts and industries is something that is very little understood outside of the offices of a few of the ablest patent lawyers. They have in a manner received a sort of tacit condemnation, that they do not in any sense deserve, and this perhaps, has resulted from the unskilled work of the attorney as much as anything else.

The proper application of the design patent is to articles that are essentially dependent upon their form of configuration for their usefulness. It has however been the practice to place in the same category, mechanical devices that have been anticipated by prior inventions or patents, but which have not been fully shown. While this anticipation bars a mechanical patent, the design patent has succeeded in issuing.

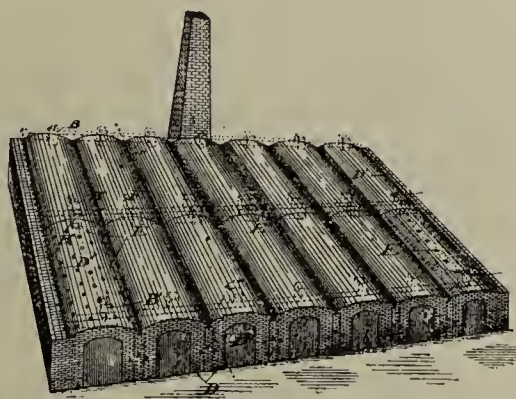
While Mr. Pierce, the examiner having charge of this class, has endeavored for years to limit the design patent to its proper function, his effort has not always met with success. The result has been that the design patent instead of being an instrument of protection, has become a device for deceiving the public and permitting the prima facie evasion of existing patents.

Properly applied, the design patent is governed by the same or similar rules that have been laid down for the mechanical patent, and its scope of protection is the same. It not only covers the exact design employed, but a design so similar that the eye of an ordinary person is unable to distinguish a practical difference.

The art of the brickmaker will in the coming years turn to a more ornamental product, and will consequently find a valuable ally in the design patent which it is to be hoped will then be better understood and appreciated.

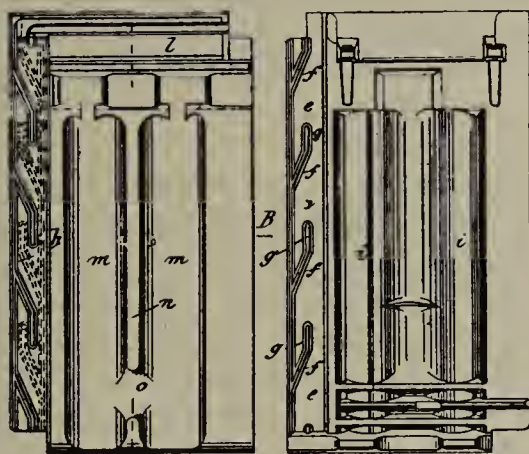
527,255—BRICK KILN, by William A. Wilford of Todmorden, Canada. Filed April 14, 1894.

A series of chambers lie side by side having main flues at their ends into which each alternate chamber opens;



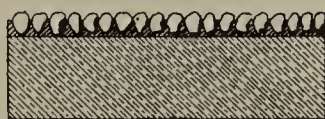
between each chamber is a series of openings permitting the drawing of fire from one chamber to another, and each chamber has a fuel entrance. All of the gases, etc., are conveyed out of the flues into the atmosphere.

527,431—ROOFING TILE, by Christian Lemeister of Aix-la-Chapelle, Germany. Filed June 2, 1884.



The form is shown in the cut, and is a typical German tile.

527,416—BUILDING BLOCK, by Antonio Frederici of Paterson, N. J. Filed March 30, 1894.

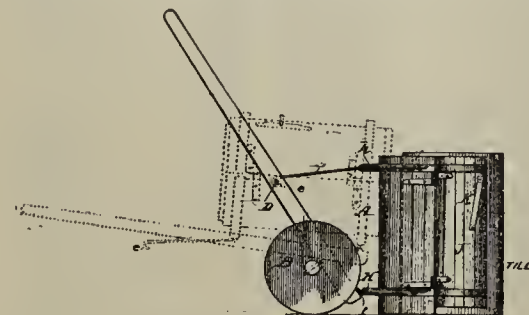


The block is composed of firm material upon which a surface coat of

cement is placed into which stones of a uniform size are imbedded.

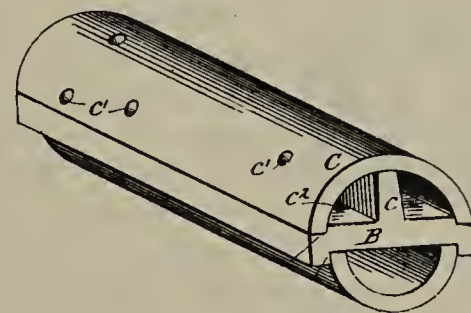
527,653—TILE TRUCK, by Joseph W. Bienz of Rockford, Ohio. Filed June 9, 1894.

An ordinary truck has a cradle hinged at its lower end, the upper end of the



cradle being free to move towards and away from the truck, such motion being regulated by proper stay rods.

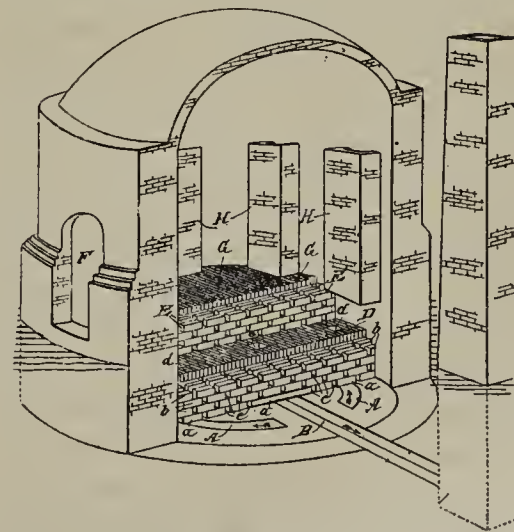
527,871—TILE, Geo. W. Morrow, Toronto, Ohio, assignor of three-fourths to



Chas. T. Young, same place. Filed February 6, 1894. Serial No. 499,310. (No model.)

527,703—BRICK KILN, by Nicholas Merley of Canton, Ohio. Filed May 28, 1894.

The firebox F has hoods H. Two

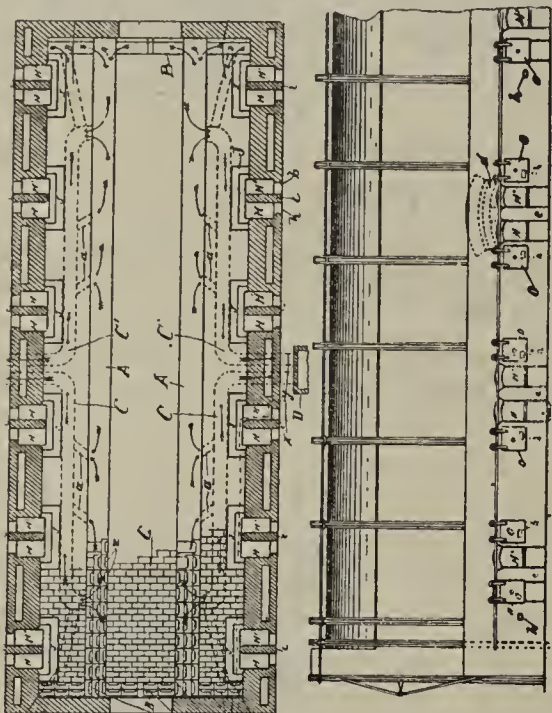


floors are perforated, being supported



one above the other by perforated or apertured walls. Flues A, B and C lead to a proper outlet. The kiln is a down draft.

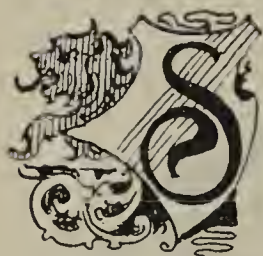
528,113—BRICK KILN, Geo. S. M. Rutter  
Canton, Ohio, assignor of one-half to



J. J. Renkert, same place. Filed April 16, 1894. Serial No. 507,665. (No model).

Written for the CLAY-WORKER.

#### THE VILLAGE BRICKYARD.



SOME of us who are crowned with the halo of "white locks" that comes either by years of experience or days crowded by sorrow, can remember that saying of General Grant, the way to resume specific payments is "TO RESUME." This was after the war had closed and the panic of 1873 had spent its force, and we also remember that the resumption was and continues to be a decided success.

But we are talking about the prosaic matter of brickmakers building houses and selling them at a profit.

We will build a pair of houses and here present the bill. A pair of cheap three story bricks standing alone with brick back-buildings, 32 feet front and of such size otherwise that they shall contain just 40,000 cubic feet of house, including porch and outhouses, roof them with tin and finish them with three coats of paint outside; and pine, with hard oil finish inside. Give them mortar floors, introduce gas, hot and cold water fixtures, pave, fence and plant trees and finish, adding the expense of commission to the real estate man for selling the same:

Material.	Total Cost.	Cost per 1,000 Cu. Ft.
Stone Foundations.....	\$99.10	\$2.49
Brick and Laying.....	822.63	20.56
Hardware.....	84.57	2.11
Plastering.....	297.00	7.42
Carpenter.....	288.48	7.21
Millwork.....	445.48	11.14
Lumber.....	387.85	9.70
Roofing and Plumbing.	291.00	7.27
Painting and Glazing....	143.89	3.60
Labor on Cellar and Grading.....	42.00	1.05
Small Items.....	78.00	1.95
Total Cost.....	\$2,980.00	\$47.50
Cost of Lot.....	585.00	
Profit.....	435.00	
Above Houses Sold for..\$4,000.00		

The cost 1,000 cubic feet is of course obtained by dividing each item of cost by 40,000 feet and thus shows the cost of every foot in that building.

These figures show that such buildings cost about  $7\frac{1}{2}$  cents per cubic foot, and consequently we would thus have a basis for counting all similar buildings and in ten minutes time can readily tell any customer wanting a ready built dwelling about what his proposed building will cost him.

If you go to a store any groceryman will tell at sight just what sugar is per pound, and a man building houses ought to be able to answer his client in a similar manner as to what a house costs to build.

Not that houses all cost the same per cubic foot, but similar houses on the same market cost like prices.

For instance, a house of say 50,000 cubic feet finished first-class, with oak trimmings, tile hearths, slate or marble mantels, water closets and porcelain bath fixtures, will run as high as 16 cents per cubic foot, and prices for various conditions and sizes will vary between these points.

What your builder wants to know is the price of a dozen different sample houses, and measure each new customer by his nearest sample. Only one thing needs to be guarded against—always be on the safe side; put your price a cent a foot, at least, high, and then disappoint your customer if possible by a subsequent abatement. This makes your estimate safe and you establish a reputation for telling the truth and honesty in dealing. Not that brickmakers are particularly deficient in either of these qualities, but my experience in selling houses has been that every house sold by me in which I take special care to look after the client's side of the bargain, is a strong recommendation to his brother or friend who may want to buy the adjoining house.

I have built and sold probably fifty

houses and never had a single customer dissatisfied with his bargain, simply because I have made a study to see both sides of this question.

THE VILLAGE BRICKMAKER.  
[TO BE CONTINUED.]

BRICKMAKING MACHINERY IN THE  
ERECTING SHOP OF MESSRS.  
CHAMBERS BROTHERS CO.,  
PHILADELPHIA, PA.



THE accompany photograph is an interior of the erecting shop of Messrs. Chambers Brothers Company, and is no doubt a view with which

many of the readers of the CLAY-WORKER are familiar, except perhaps, with much less machinery in it, for only a few weeks ago the floor was comparatively clear.

This room, with two floors above and a basement below, all the same except for height, are on Media Street, and were built in 1890 (the original building having been erected in 1870).

A five ton overhead traveling crane runs from one end to the other on the bench side of the shop; the other side has usually been reserved for machinery not requiring lifting power, but lately for the erection of two C Brick Machines, etc. I have numbered a few of the machines for the convenience of those interested in these matters. Before describing them I may say that the new, and old shops are connected by large arched openings. The Fifty-second Street Shop runs at right angles to the Media Street, and contains the lathes boring mills, planers, shapers, drill presses, etc.

Nos. 1 and 2, at the far end of the shop, under the traveling crane, are B Brick Machines. No. 1 is finished, No. 2 under construction. Nos. 3 and 4 are C Machines, both finished; these are—you will observe—in the other part of the room. Nos. 5 and 6, in the foreground, are also C Brick Machines. No. 5 is finished and No. 6 is under construction. No. 7 is a set of clay rolls, Nos. 8 and 9 are automatic cut-offs for brick machines. No. 10 is a Disintegrator under construction, but partially hidden from view by No. 5 Brick Machine. Just beyond on the floor is No. 11, a transfer car for kilns and dryers. There are besides these, several edgers for turning the brick on its edge just after it leaves the automatic cut-off; from the edger it is transferred to the



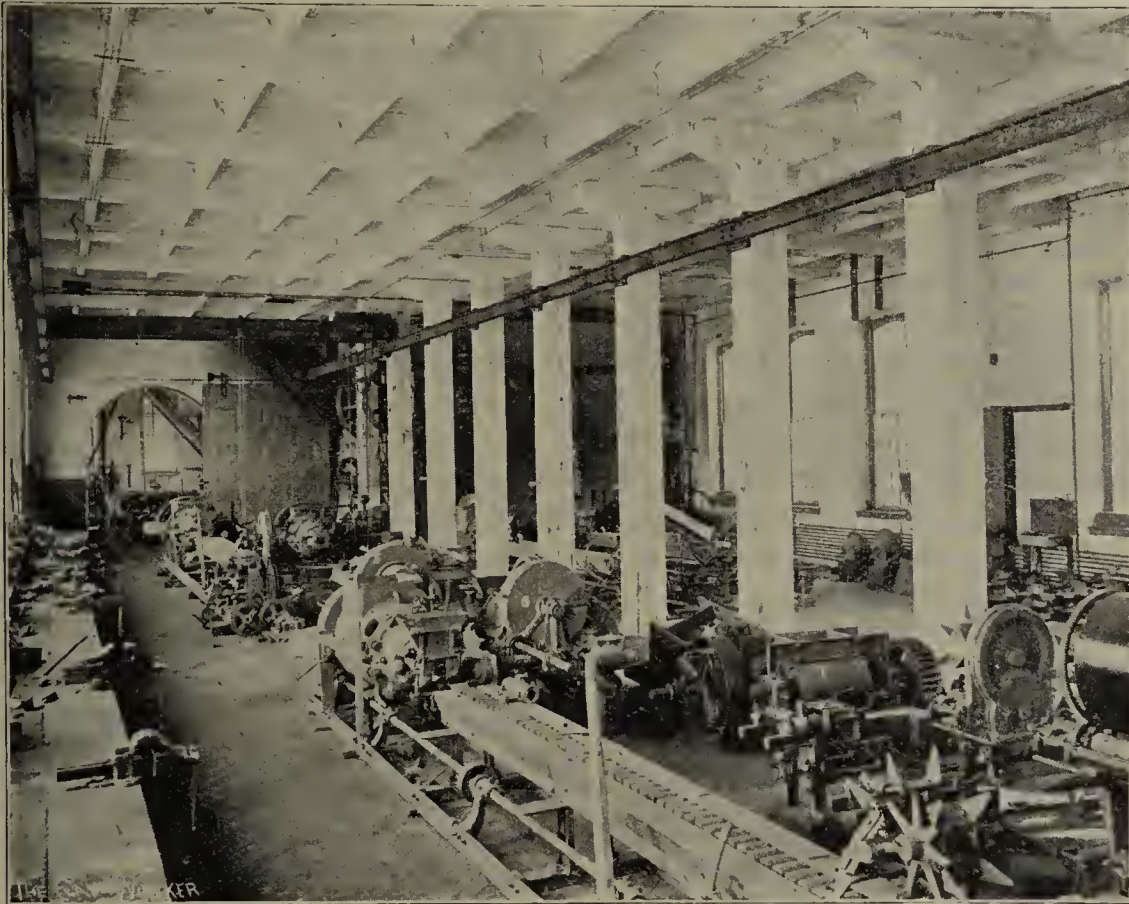
off-bearing frame on its edge. These edgers are hidden by the several brick machines.

As will be seen, a vice bench runs the whole length of one side of the shop, under it are stored duplicates of all the smaller castings used on edgers, cut-offs, pug mills, clay rolls, plain and conical, single and compound, disintegrators, dry pans, granulators, elevators, friction clutches, etc., all planed, drilled, tapped and babbited, ready to put in place in cases of emergency. In the other part of the shop may be seen screws for brick machines, screw case linings, formers, etc.

lathes, shapers, slotters, gear cutting machines, etc., while the third floor is the pattern shop, supplied with circular, band and jig saws, planer, boring or mortising machine, turning lathes, etc. The adjoining shop is the storeroom for patterns, etc.

The main office and drawing office is at the far end of the Media Street shop. A system of speaking tubes connects each floor with the office and with each other, and the whole establishment is heated with steam; a portion of the radiating pipes may be seen in the interior above.

Besides those departments described,



ERECTING ROOM—CHAMBERS BROS. CO'S MACHINE SHOPS.

An elevator belt may be seen near the far right hand corner rising from the floor at an angle of 15° or 20°. This comes from the basement, where a C Brick Machine is erected for testing clays. This machine is equipped with edger, conical clay rolls, and the belt elevator or conveyor mentioned above, which passes under the clay rolls and conveys the crushed clay up into the erecting shop and dumps it through a hole in the floor into the hopper of the machine beneath.

It will be observed the works are lighted by electricity from a plant of their own in the basement and driven by a Westinghouse engine of forty horse power.

The second floor of the Fifty-second Street shop is literally crammed with

there are behind the shops shown, the engine and boiler room, the blacksmith shop, consisting of seven fires and two Bradley hammers, etc., the pallet and dryer car shops, a Chambers' dryer, coal and coke sheds, etc. The pallet shop has a capacity for over one thousand pallets per day of twenty-four hours, and the car shop of forty cars in the same time.

The firm repair and supply every requisite for the brick manufacturer, from cut-off wires to finished brick plants.

WM. WAPLINGTON.

#### A TRUISM.

As a jewel of gold in a swine's snout, so is an effective advertisement in a journal without circulation.—*Decorater's Gazette, London.*

Written for the CLAY-WORKER.

## THE CLAYWORKING INDUSTRIES OF OHIO.

### Eleventh Paper.

BY EDWARD ORTON, JR., E. M.

#### PROCESSES OF DRYING BRICK.



DRYING has always been a subject of interest and usually of anxiety to a brick-maker, even to those representing the simplest phases of the art. With the development of modern machinery an urgent need has been felt for some equally modern and scientific means of drying, and while these have been supplied, the same relative watchfulness and care are still demanded as of old.

The problems to be met in drying every day the output of even a medium sized brick factory are by no means a light matter. A production of 40,000 brick per day requires the use of about 10 tons of water or about 7½ per cent of the total weight of the clay. This 20,000 pounds of water must not only be evaporated from the bricks and carried away, but must be done so gently and naturally that the shrinkage is uniform and the structure and appearance in no way impaired.

The means employed in drying the products of the smaller brick yards, by exposure to the sun and air in racks, or on the ground, is not applied to any extent in paving brick processes. Aside from these means, four general plans are now employed in drying bricks; viz, by dry floors, sewer pipe floors, periodical dryers and continuous dryers. The first two processes were both originated and used in other branches of clayworking, but have been adopted to a sufficient extent in the manufacture of paving material to warrant their description as one of the important means of drying bricks.

A piece of tempered clay constantly tends by evaporation of its free water to become reduced to a condition of equilibrium with the atmosphere. As long as the clay is wetter than the air surrounding it, so long will the water evaporate away. Water evaporates, or changes from the liquid to the gaseous condition at all temperatures; even ice, if exposed in a shady nook to air a few degrees above freezing, will gradually dwindle away without at any time visibly melt-



ing. The speed of evaporation increases greatly as the temperature is raised, and at the point of 212 degrees F. the evolution of vapor assumes the form of boiling; water cannot be heated higher than this point except by confining its vapor in a closed space and creating a steam pressure.

The receptacle of all the products of evaporation is the atmosphere; its affinity for the vapors of water likewise depends on its temperature, and also on its previous condition of humidity. That is, there is a certain quantity of water which the air can absorb at any given temperature, this quantity is small at low temperatures and large at high temperatures, and when a body of air has absorbed all it can, it is said to be saturated. If evaporation of water still proceeds, the excess of the vapor becomes visible as steam or fog, which will be precipitated as water again with the slightest lowering of the temperature. The humidity of the atmosphere varies from day to day and hour to hour through a wide range, and though it is often saturated at the ordinary outdoor heats, it never is so charged with moisture that it cannot take up a large quantity additional, if its temperature is artificially increased above the normal.

The speed with which the tempered clay will part with its water, then depends on three conditions: 1st, the temperature of both clay and air; 2nd, the humidity of the air, and 3rd, the physical character of the clay. This last element influences the process by affording a more or less easy capillary flow for the water from the inside to the outside of the clay. A tough, fine grained, waxy clay will retain its water with much more tenacity than a sandy open grained clay placed under exactly similar conditions, just as a lump of dough would remain damp longer than a sponge.

Therefore in considering processes of drying we first observe how these conditions are maintained, and next note the various mechanical economies and advantages claimed for each.

The dry floor is probably the oldest method in use in Ohio to regularly take care of a large daily output. The fire brick makers have been responsible for the introduction of the dry floor, and it is to-day almost the only means employed among them. As will be seen later on, there are reasons which make this means of drying especially conveni-

ent in the manufacture of refractory material. In the manufacture of paving brick however, no such special convenience exists, and the process is only entitled to the prominence which its actual excellence and economy give it.

The plan of operation consists in piling the bricks on the floor, usually only one course deep, and on their edges or ends. The floor is kept hot all the time, and the water is expelled from the bricks by the heat which the latter is constantly absorbing from the floor underneath. Naturally, the speed of the process depends largely on the temperature employed, and of course has a practical limit, indicated by the cracking of the brick, by unequal shrinkage or generation of steam.

This process is theoretically a wasteful and extravagant one. The brick borrows its heat by direct conduction from the hot floor beneath it, and with very poor economy, for it is not subjected to the influence of currents of heated air, to carry away the moisture which the heat tends to drive out to the surface. The air which plays over the heated surface of the floor, rapidly absorbs heat of course, but it rises as soon as it becomes heated, and as the bricks are usually only one course deep on the floor, they are beneath the line at which the currents of hot air naturally move. Thus, instead of being exposed to a thirsty atmosphere, which would draw out the water rapidly by constant surface evaporation, the bricks lie sweltering and steaming in a comparatively cool atmosphere and are gradually baked dry. By far the greatest part of the heat generated escapes in currents of hot air from the windows, doors and ventilators, or passes out of the draft stacks with the waste gases, without having been absorbed by the dry floor at all.

The dry floor, as it is almost universally used, is thus seen to be very wasteful of heat. If other floors above were so arranged as to utilize the heated air ascending from the dry floor, the quantity of material dried might be greatly increased with no increase in cost of fuel. And if more than one course of brick were used on it at a time, or if racks were used the results would be better.

However, viewing the subject from its practical side, there are some things in favor of a dry floor which entitle it to consideration. First, it is a cheap form of dryer; it can be constructed largely

from waste material. Common mud is good enough for its mortar, and culled bricks good enough for its flues; no new material need be bought on any brick yard except the furnace castings and fire brick for the furnace linings. So that in construction and first cost, it is probably the cheapest plant which can be built to handle a daily output. Secondly, for many clays, perhaps for most clays, it is a safe means of drying. Some others cannot be dried on at all without being checked and cracked to pieces. The safeness is largely the result of its bad economy, for the air currents which are capable of hurrying the drying do not come in contact with the brick to any great extent. Thirdly, the operating expenses are low; in small works, it is usually fired and tended by some one whose labor is necessary on some other account and in works where the floors are large enough to require the time of a man, day and night, the production is also high enough to make the cost per M very reasonable. Fourthly, it requires only the lowest grade of skill and care in manipulation.

From these assembled facts it can be seen that though the dry floor is a primitive equipment, and an expensive one in fuel, yet in those regions where slack and coal waste is cheap, it is not without its recommendations, and it is certain that many brick works thus situated find it a cheaper means of carrying on the drying than any of the more economical processes; in other words, in locations where fuel is cheap and money dear, the dry floor is efficient, and vice versa where fuel is high; it is better to spend more money in a drying plant which will use it more economically.

In construction, and design, there are a few points to observe. First, the dry floor should be long in the direction of its flues—100 feet is too short—150 feet is better, and 200 feet is none too long. The longer the flues are, the more heat will be radiated before the waste gases escape. If the surface of the dry floor needed is not large, it is better to build it 40 or 60 by 200 than 100 by 100, or 80 by 120. Second, the flue should be deeper from the top of the floor at the fire end, and come closer to the surface as they go further from the fires. This is done to equalize the heat and prevent the floor just above the fires from becoming so hot as to crack the brick. This is a good plan, but if overdone the heat will pass away unabsorbed. Where the flues are buried too deep, this is



always the case, no matter what length the floor may have. Third, the flues should be straight and should be accessible from the fire hole so that they may be cleaned out from soot and ashes by use of a steam blower now and then. Fourth, the flues, after being built should be covered with soft plastic clay and well puddled; when the fires are lit, this clay burns hard and constitutes an impervious cover which preserves the flues, and when this clay has been burnt hard; then the floor may be levelled up with sand and paved with bricks.

Dry floors have been constructed in various places using all kinds of heat producing arrangements. Cement floors containing steam pipes imbedded in them are not uncommon. Sewer pipes laid in cement and heated by exhaust steam are also used; cast iron plates covering brick flues heated by exhaust steam have been tried; even a wrought iron floor riveted tight and heated by steam underneath has been built. None of these devices are really as valuable as the old stand-by. They cost as much as a good dryer would do and when finished are not an economical way to use heat.

[TO BE CONTINUED.]

Written for the CLAY-WORKER.

### THE CARTOONS THAT FAILED.

Showing How Dolliber Did Not Catch On to the Throbbing Public Pulse.



IN THE preceeding number of the CLAY-WORKER I endeavored to relate in Dolliber's own words how he so masterfully fizzled out in his assault pictorially in the realms of poesy. This, the last of the series, is devoted to poor Dolliber's maudlin efforts to become a successful cartoonist.

While it is true I have appended my name as well as his to these cartoons as I have to those that appeared before, I have only to say that I did so at Dolliber's request. He said it might save his reputation and compel me to divide with him the annoyance and expense of a long line of libel suits.

### THE CARTOONS THAT DIDN'T SUIT.

"Ever since I was a boy, (said Dolliber, mind you,) I had a faculty of drawing pictures of people that made them enemies of mine for life. This was encour-

aging for genius. But I didn't go into it professionally until one day quite late in life—I was eighteen or nineteen. I had made a sketch of a neighbor's bull dog. He was a choice article in the



"Please my mama has sent for me to come home."

canine line, in the prime of life, with an unimpaired appetite and a misfit head. The dog saw the sketch and went mad. Then I knew I was cut out for the profession. I had tried my art on the dogs, or rather dog in the singular. One dog was enough.



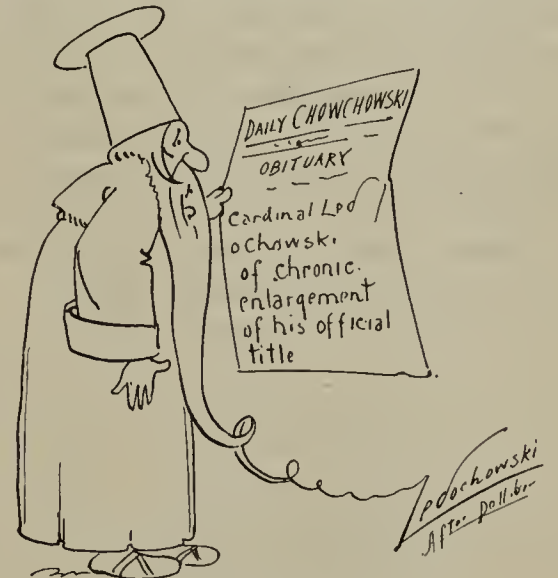
In the hands of his friends.

Luckily (?) I had an intimate acquaintance who was running a weekly paper in the interests of all humanity in general, and the West Side of Chicago in particular. He wanted to elevate the moral and political tone of the West

Side, thus avoiding the horrible grade slaughter.

He agreed to let me make a cartoon for the first page. The cartoons were to be a foot by a foot and a half square. The first one I made lost him all the subscribers he had among the militia-men of the West Side—I think there were nine of them. But he let me keep right along with my cartoons because the one that drove away the militia secured him three additional subscribers from the anarchistic ranks, four walking delegates of the soap-peddler's union, two members of the governor's staff and a lawyer and one saloonkeeper. Grislyton, the publisher of the "Weekly West Sider," was a persevering cuss.

The second week I took a fall out of the democratic party by means of a big dollar mark cartoon and the *Weekly West Sider* came very near losing some democratic readers, but luckily none



A cause for General Rejoicing.

PARIS, July 30—The French papers contradict the statement that Cardinal Ledochowski, the perfect of the congregation of the propaganda fide, is dead.

could understand the point of the cartoon.

I found during the few weeks that I was artist-in-chief of the *Sider*, that it was unsafe to caricature the Irish, the German, the Jew, the English, the French, the Norwegian, the Swede, the Pole, any nationality, in fact, except the simon pure American. I forgot to say I was permitted occasionally to take a fall out of the Chinese, until Ah Ling Wong, the laundry of West 12th St. inserted a t. f. 3-inch adv. in the *Sider*. And then I was shut out of China.

I saw that I had better tackle subjects that were not local or even national. It is true I threw a sop to our Chinese advertiser by making a cartoon giving the Japanese merry—well, go-round, which was quite a hit although "Chronic Reader" wrote in to say that it was a



dead steal from an abandoned tea chest that he had at home.

Then the editor of that moulder of public opinion the *West Sider* concluded that it would be a rare good stroke to print character figures with big heads and little bodies, portraying the idiosyncracies of prominent citizens. I started in and made a fine effort to begin with. The man I pictured was a wealthy man who manufactured brick for a living. I entitled the picture "A Reformed Brick-maker," and the printer got it "A Reformed Blackmailer." The brick manufacturer like all of his ilk (that I have ever met) was a large, husky man with a hair trigger temper, and who would rather fight than eat (immediately after a hearty meal.) It took a patrol wagon full of policemen to calm the brick man down, but he had already done \$275 damage to the office fixtures besides making it necessary for the assistant editor, who was the only man in when the brick pugilist called, to live off of his accident insurance for the next six weeks. I fled to the stock yards, where I have friends, until the brick man subsided.

It was a lesson to editors and artists not to monkey with brickmakers.



The cartoon that never was finished.

But I did my *Cheever Doover* when I attempted foreign subjects. When I made the cartoon entitled—"Cause for general rejoicing," I thought old Ledowski was some relation of the artist of near-that-name, and was at the best a Brahmin or Hindoo or Bulgarian, or something of that order.

It was not until a mob of enraged Roman catholics surrounded my studio

that I discovered that Led was pretty near to the pope at Rome, and that is why I never finished a fellowship cartoon of Harrison and Cleveland, which I show you just as it was when the mob tried to get at me."

That was the end of Dolliber as an artist. I hope he will get on well in his new business. He is a plumber now.

CHARLES LEDERER.



#### OFFICIAL ANNOUNCEMENT.

Ninth Annual Convention of the National Brick Manufacturers' Association, to be held at Cleveland, Ohio, in February, 1895.

To the Members of the N. B. M. A.:

Unforeseen events have made it impracticable for the Pittsburgh brick-makers to entertain the National Association this winter, as it was their desire and intention to do.

Learning this fact the Brickmakers' Association of Cleveland, Ohio, has extended to us a very cordial invitation to hold the Ninth Annual Convention in their city in February next.

A similar invitation has been received from the brickmakers of Philadelphia, but as we have held one very successful convention in the latter city, and as the city of Cleveland is much nearer the territory from which we draw our largest membership, we deem it best to accept the invitation to hold our next annual meeting in Cleveland, believing that we can reasonably hope for a much larger attendance there, than at a more remote point.

Satisfactory arrangements will be made for reduced railroad rates, hotel accommodations, etc., as usual, and further announcement giving full particulars will be made subsequently.

Respectfully,

THE EXECUTIVE COMMITTEE,  
WM. H. ALSIP, *President*.  
THEO. A. RANDALL, *Secretary*.

B. W. Blair, of Cincinnati, O., writes that considering the "hard times," they have had a very fair year.

Written for the CLAY-WORKER.

#### SPECIFICATIONS FOR PAVING BRICK

BY D. V. PURINGTON.

THE first introduction of brick for the purpose of street paving was an experiment, and the city engineer or superintendent used such as were furnished by the brick manufacturer without question or criticism. The development of this industry has been so rapid, and so many styles, shapes and qualities of paving brick have been put on the market that the time seems to have come when some definite standard should be adopted. This is as necessary for the man who makes the brick as the one who makes the specifications. Some little consideration is also due to the man in front of whose property the pavement is laid and who pays the bills. At the present time it is almost impossible to find two city engineers whose requirements for brick paving are the same, and yet the manufacturer is frequently compelled to ship pavers from the same kiln to at least a half dozen different towns. This, of course, would only be possible where the size is practically the same, but the next contractor applying for samples would doubtless have a set of specifications requiring a different size.

Another would want the corners rounded, still another would want nothing but repressed brick. The point I desire to make is, that the time is rapidly approaching, if it is not already here, when a standard should be established. The manufacturer wishes to please his customers, and will usually make brick of any shape or size desired. If a city engineer should require them half round, or three-cornered, the machine man receives a telegraph order for the proper dies or moulds. Until a year and a half ago the diversity in specifications was not so great as to entirely preclude the manufacturer from in some way getting his brick accepted. But this year we have all had trouble. Brick that suit one set of officials have been rejected by another. One city engineer will instruct his inspectors to accept no brick that are not very dark in color, while another with equally good intentions will instruct that all dark brick are too brittle and must be rejected. I am not now criticising these gentlemen. They are all working for the same object, viz., to secure the best, but they work in different directions, make their tests in different ways and



often for different purposes, and very frequently produce widely different results.

It not infrequently happens that several manufacturers furnish brick to several city engineers at about the same time for a test as to their fitness for use as pavers. In one of these tests A's brick would stand ahead on absorption, B's on tensile strength, C's on the abrasion test and so on, while in an adjoining city, perhaps on the same day the results would be completely reversed. The manner of making the test would in each case be different. This is especially true of the abrasion test which is the only one that really cuts much figure in a practical way. The rattlers used are of different sizes, the iron of varying weights and the results necessarily confusing. Is it not time to call a halt, and in the interests of good pavements, at least insist on some approach to uniformity in the requirements of a good paving brick. Every city engineer that I have discussed this question with, would heartily co-operate with the brick manufacturers in the establishment of a standard, the requirements of which would be reasonable and at the same time be sufficiently explicit to insure a good durable pavement. Every manufacturer of paving brick in the country would give a description of his brick as coming the nearest to perfection, and every city engineer would give good reasons why the brick he had described were the best. No brick manufacturer in the west could make brick which would be accepted under all the specifications of city engineers in the west. Assuming that all the manufacturers can make a good durable article of paving brick, and assuming too, that all city engineers want nothing else, has not the time come to take steps to get these men together? The diversity of opinion is increasing and the evil effects felt in 1894 will be greatly increased in 1895.

There must be a middle ground on which we can all rest. The same size and shape of a common paver that will wear best and last longest in Pennsylvania or Ohio will do exactly the same in Illinois, or Iowa, and the same is true of a repressed paver. The same radius of the corners will produce the same results in different localities. A test should be made in Peoria, Ill., or Fort Madison, Iowa, in the same manner and under the same conditions as at Indianapolis, Ind., or Columbus, O.

A brick unfit for use in Cleveland, Ohio, because it will absorb three ounces of water in 24 hours should also be unfit for use in Omaha, Neb., and a brick condemned in Syracuse, N. Y., because it was overburned, should also be condemned in Kansas City. My object in writing this is to suggest that an invitation be extended to the city engineers of all cities using or proposing to use brick for paving purposes to attend a session of the next convention of the National Association of Brick Manufacturers which shall be devoted exclusively to the paving brick interests, and that the question of a standard paving brick be discussed and if possible settled. The longer the present independence of action continues the more serious will be the complications. If we cannot obtain the co-operation of the gentlemen who make the specifications the only thing remaining for us is to decide for ourselves what is best and make nothing else.

From correspondence and conversation with leading manufacturers throughout the west, I am satisfied that these sentiment are those of a large majority and that they feel as I do—that this great diversity of requirements must in some way be lessened. I have carefully refrained from an expression of opinion on the size, shape or quality of paving brick best adapted for use. I am willing, however, to admit that some of my views heretofore expressed have been materially changed, and it is not impossible that some city engineers would now make a different list of requirements for a number one paver than they made two or three years ago. We are perhaps more directly interested than they for the reason that changes in size or methods of manufacture cost us money and ought to be carefully considered before being enforced.

#### True Happiness Depends Not So Much On What We Have, As How We Like It.

The prince passed by. A careless boy,  
As he watched him ride away,  
Thought, "O, for a taste of the boundless joy  
Where the prince must feast each day."  
And a great hope burned in his youthful heart  
To sometime play in a prince's part.

The prince passed by; his heart was sad  
With a thousand cares oppressed;  
"To be once more like that happy lad  
And freed from this deep unrest,  
I'd give all the sorry hopes of men;  
Alas! that youth comes not again."

—Nixon Waterman in *Chicago Journal*.

## CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

### Patent Office Vagaries—The Old Dutch Kiln Presented as a New and Novel Invention.

*Editor Clay-Worker:*

Suit was brought in the United States Court, at Knoxville, Tenn., in Nov. 18, 1893, by H. H. Ingersoll, attorney for John Kinzel, against the Leuttrell Brick and Tile Co., E. D. Davis attorney for the defendants for infringement of patent rights, and resultant damages to the amount of about \$5,000, for the use of a certain brick kiln which was described in specifications and for which he had been granted a patent, numbered 471,769, 1891.

Mr. Kinzel in his claims and proof, set forth that he had discovered and invented a new and useful device for the burning of brick.

That he was the inventor of the method of using bituminous coal as the exclusive fuel for drying, sweating or watersmoking, and burning of brick.

That he was the inventor of the process or method of burning bricks with coal, using grate bars, and ash pits under the ordinary arch of green bricks.

That he was the inventor of the method of using a permanent wall of brick in which were built the furnace doors and grate bars, underneath which was an ash pit.

That he was the inventor of the method of burning coal on grate bars dropped in a channel or fire box of uncertain width and depth, varying from 16 to 18 inches in width to one foot in depth, and from four to six feet in length, from front to rear in the kiln floor.

He also set forth in his proof that he was the inventor who had discovered and named (and thereby the godfather of?) The Dutch Kiln or Dutch Oven for brick burning.

He also set forth in his claim that he was the inventor who had discovered, that by raising his furnace door from three to five inches above the ends of the grate bars he could *poke the fire* without opening the door!

The defendants set up as a defense to said suit:

1. That the kiln which they were using did not in any way constitute an infringement of the complainant's kiln.



2. That the patent of the complainant was invalid, on the ground that it contained no new or useful invention or improvement.

That it had been in use all over the older settled portion of the United States for a great many years. And that even if it had any patentable features the complainant had abandoned the same to the public by allowing various persons to publicly use the same for more than two years prior to the time application for a patent was made.

Proof was taken upon these issues and the contentions of the defendants were fully sustained in all respects. And upon the trial of said cause, Judge Key held the patent in question to be invalid and dismissed the bill.

A study of this case by brickmakers might be of great benefit to them in various ways.

The kiln in question was nothing more nor less than the old well known Philadelphia or Dutch kiln which has been in use time out of mind, and for aught we know older than the United States patent laws.

There are very many patents asked and granted, that undoubtedly are new to the party who seeks to obtain the patent, and not until the matter is contested in a court of equity is it suspected that the vendor of the patent is at fault in the matter.

There are great numbers of good mechanics who are endowed with a fair degree of inventive genius, and a smattering of education whose knowledge of patents and patent laws is limited to the grant and sale of their own particular device.

These are the ones who are led to believe themselves great discoverers, and soon to be great possessors of wealth and distinction.

The case in question was of this kind, the patentee asked for a patent on a certain described kiln, and it was granted upon payment of requisite fees, etc. It was shown is his evidence that his entire knowledge of brickmaking and burning had been gained by his own experiments without going beyond the limits of the county in which he lived.

Had he been a student of the CLAY-WORKER and its literature, he might to-day be both better informed and richer.

In the granting of a patent on a device as old and obsolete as the old Dutch kiln, so called, it would seem that some one connected with the Patent Office is chargeable with gross carelessness or

ignorance, or perhaps complicity in the matter of granting patents on invalid claims.

The claimant for patent had no more grounds on which to set up a case, than the milliner would have in the changing of the shape of next spring's bonnets; or the tailor has in the cut and style of this winter's overcoat.

Any patentable invention must have one or more of four points on which to claim exclusive right.

First, It must be a new contrivance applied to new ends.

Second, Or a new contrivance applied to old ends or objects.

Third, Or new combinations of old parts whether relating to material, objects or processes.

Fourth, New methods of applying a well known object.

There must also be some display of ingenuity in the method or process, with the definite object in view always of its being economic or expeditious over already known methods.

It must possess some degree of utility and novelty, although the degree of utility may not be great. If the process or method is devoid of novelty altogether the case is at once doubtful, and is usually or should be declared invalid, or unpatentable by expert examiners.

#### Waplington To Crary.

*Editor Clay Worker:*

Any man with an inquiring mind and sixty-five years, or more, of practical experience in a brickyard is entitled to be heard, and to a large share of attention, when he speaks or writes on the subject of his life-long toil and study; but, it is to be regretted that even this length of time is quite inadequate to enable him to steer clear of misconception and error. This is applicable to all.

We fall into many errors by misconstruing terms. Let Father Crary and I but have a clear understanding of terms, and it will to a certain extent reconcile our opinions.

In last July CLAY-WORKER, Mr. Crary says, "I will only say that clay has a powerful affinity for ammonia and carbonic acid," etc. *Affinity* is the term I stumbled at, when I said in the September CLAY-WORKER that I was not aware of such affinity. I presumed of course, chemical affinity was meant.

Mr. Crary replies in October CLAY-WORKER and fortifies his assertion about the affinity of clay, ammonia and carbonic acid by quoting Prof. Youman's class

book of chemistry (page 123), "Clay possesses the valuable property of condensing carbonic acid and ammonia from the atmosphere."

This assertion occurs in the first edition of the class book published in 1852. I find no such statement in a later edition published in 1884 by the same publishers, D. Appleton & Co.

Mr. Crary says further in this same reply, "As ammonia is constantly formed by the decomposition of matter, and as clay is a powerful absorbent, it is not unreasonable to say that it absorbs ammonia."

Now Father, in the first four lines of your reply (Crary to Waplington) you say, "Waplington wishes to know how it is that clay will absorb carbonic acid and ammonia." Certainly I am not averse to such information, but I did not ask for it, nor did I ask for information as to clay possessing the property of condensing ammonia and carbonic acid, but it is the affinity of clay for these substances that I am in doubt about, which you will find by reading my letter again.

I infer from your reply in October CLAY-WORKER, that to you the terms affinity, condensation and absorption, are synonymous, with me they are far from it.

I am free to confess my ignorance as to why a kiln of burning brick in an unhealthy locality will prevent sickness attacking the men working near it, further, I must thank you for the fact, it is quite new to me.

I do not desire to pose as an authority before the readers of the CLAY-WORKER. I am quite satisfied to teach the *infant class*, while I can.

Catalysis, etc., is foreign to the subject in hand—so it appears to me—I therefore pass it over.

W. WAPLINGTON.

#### Philadelphia News.

*Editor Clay-Worker:*

This has been a year of small operations in building. Last spring big operations were talked of but not attempted. This fall they have been more seriously talked of but not to enter upon until next spring. That there will be a rush then is evident. People are fretful of delay. Here are two seasons gone. Must we have another? Our thousands of manufacturing establishments are all quite busy, not full in many cases, but work is gradually improving, and we expect a fair winter.



The larger brick manufacturers have done well at the expense of the smaller.

The Jarden Brick Co. has bounded ahead of all competitors. Their equipment and organization is superb. The Peerless Company, with its fancy brands, comes close up in the volume of business done. Both Companies have able officers at the head. Our brickmakers do not receive the credit they deserve in improving and cheapening brick. They have taken us away from the old-fashioned dull red brick and have given us shapes, sizes and colors suggestive of art and taste, of which our fathers, to say nothing of our grandfathers, never even dreamed. Brick are now made as mottled as a Sea gull's egg, or any of the varying tints of the autumn leaf. This, all brickmakers know, is done by the mixture of clays and by adding certain metallic ingredients to the clay after the latter has been ground to the finest powder, using the word "finest" in a general sense.

Of late years the appearance of our residence streets has been greatly improved by the building of brick structures of diversified colors. The Reading Terminal Station at 12th and Market Streets, has been largely constructed of a pink brick, manufactured by a New Jersey concern. The Pennsylvania Station on Broad Street, presents a beautiful facade of deep red brick, which gives it a rich appearance and one which will stand age perhaps, better than lighter brick.

The Monteith Brick Co., of Reading, Pa., have secured an order for 10,000,000 brick. This will crowd them until next month.

A new cement works of very large dimensions has been established at Phillipsburg, New Jersey, on the Delaware River, opposite Easton. The proprietors are Elkins, Evrett and Garrecht of Philadelphia. The capital stock is \$300,000.

Our leading brickmakers expect to do a fair amount of work during the winter. The wage question is removed from discussion until next spring. What may come then we will not talk about. If times improve, as now seems they will, we must count on some readjustment of wages, but brickmakers, carpenters and other branches of the building trades have been reduced very little.

Considerable repair work is to be done during the winter. Enterprise was frightened last spring, but next spring several big operations will be

undertaken. Brickyard machinery and equipment is going through a gradual evolution. Old machines and old methods are too costly. New machines are cheap in comparison. More new yards are to be established next spring. In some cases the purchases have been made of the land and the machinery contracted for. Brickmakers will be satisfied with narrow margins; they know the tendency is in that direction. Prices have come down never to return to old levels. It is not best they should.

Our City Hall tower is nearly completed. The bronze cast of Wm. Penn has been disjointed ready to be raised to his stand where for ages to come he will look over the city he did so much to make. It is 36 feet high. The tower iron work is nearly finished. ANON.

### Brickyard Construction.

*Editor Clay-Worker:*

After the proper location the next thing that presents itself is the construction of the works. The question arises at once how much should be spent to make the business pay or should the best or the cheapest methods be resorted to? There is a happy medium in all things and especially in the brickyard. The good substantial machinery, etc., should be selected, and the complicated and theoretical rejected.

The power should exceed the requirements by ten horse power unless more power is required by the addition of new machinery in the future. The plain strong engine with few wearing parts is preferred to the more complicated. The dust and hardships most engines are subject to in brickyard work make the plain ones desirable. The wearing of engine by dust dropping on it and the danger of fire from the boilers makes it necessary to have the engine in a close room and the boiler encased in brick work, with sheet iron roof, apart from the rest of the factory. The entire machinery of the works should be run from a line shaft which enters the engine room at one end on which is the pulley and main driving belt from engine. By hanging this shafting separate from building on bents placed on solid foundations, it can be kept well lined and bearings all true.

The first machine attached to this shafting is the dry pan or some machine to grind clay but as we cannot describe all kinds of grinding machinery we adopt the dry pan which is so universally used in fire and paving brick

works. The iron framed pan on account of its rigidity, durability, ease in holding parts in position, trueness of scrapers with reference to screen plates and rim, and capacity are qualities necessary to good work and economy. The pan should be set on a firm foundation of brick work with frame well anchored down. The elevator should travel about 200 feet per minute and stand at an angle of 30°.

For most clays the greatest capacity can be obtained from a dry pan by using a revolving screen, by the use of which all the dust is extracted from the clay passing up the elevator and the tailings returning to pan are all coarse material. The clogging of screen plates in pan is very much due to the return of enough fine dust from screen to bind coarser particles together. The screen should be about six feet long, forty inches diameter at one end and thirty at the other and revolve thirty revolutions per minute.

The dust from the screen reaches receiving end of pug mill through a funnel shaped bin of sufficient capacity for half a days run. The open topped pug mill is preferable. The importance of thoroughly tempering the clay before reaching the brick machine, no brickmaker can dispute. By using the open topped pug mill the temper of the clay can be changed and be kept more uniform. The tempered clay from pug mill should drop from ends of mill into hopper of brick machine.

There are many good brick machines that could profitably be used, but it is not the purpose of this letter to describe any make of brick machines, but will state in general terms, that for paving brick we prefer the end cut and for fire brick the side cut stiff mud machine. Near the brick machine we would locate power represses sufficient for the capacity desired.

The brick as they come from brick machine are best handled by piling on tables beside power represses, and passed through same; and from them loaded on cars on other side. These cars are passed through tunnels—the receiving end being near the represses and the other end near kilns. There should be an incline of one inch in twelve feet from the repress to kiln door. The building covering the machinery should be large enough to give plenty of room to work around machines and be provided with plenty of light.



The kilns best suited for fire brick are round down draft and twenty-five feet in diameter, and for paving brick the long rectangular kiln is preferable. It is impossible in a short letter, or a letter of moderate length, to give the reasons for using a certain class of machines, tunnels, kiln, etc., and for that reason will try to describe separately the different parts of a paving and fire brick works in future letters.

LAND O' FLOWERS.

### The Situation At Chicago.

*Editor Clay-Worker:*

I would like to say something about the political situation just at this time, but, remembering what occurred at the Auditorium last winter as a result of Mr. Harriman's speech at the Powwow I am constrained to believe that it is wiser to maintain a discreet silence on matters political. However, those of us who were in sympathy with Mr. Harriman then, are now justified in feeling very much elated over the results of the recent elections. For myself I must say that I regard the verdict in the light of a vindication of Mr. Harriman's position and heartily congratulate him thereon.

In regard to the general business situation in Chicago I fail to see that there has been any very marked advance made. It is often stated in the newspapers that business is improving and reviving, but in the aggregate this is not borne out by facts. The reports of railroad earnings of the best lines show a decrease in the large majority of cases. The clearings in the Chicago banks for the week ending November 2nd show a decrease of \$1,918,760.89 over that of the preceding month. The stock markets show a falling off in the prices of most of the very best securities, and the bear element seems to have been largely in control. Any considerable change in the business situation for the better must show itself through the bank clearings and the condition of the market. The bankers of the country are overstocked with money, and have been disappointed in the falling off in the demand for loans where they had hoped for an increase. While it is universally accepted that business is dull, there is a strong hope expressed by business men since election that there will soon be a moderate improvement.

The situation in building lines since my last letter I am glad to say has shown a very satisfactory increase and

improvement. There has been a decided improvement in the number of buildings projected, as well as in their size and cost. Permits were taken out in October for 786 buildings, extending over a frontage of 19,261 feet; the buildings to cost \$3,059,340, being an increase of 150 in the number of buildings, 2,834 feet in frontage, and \$1,325,640 in cost. These figures show a gain over the month of September of 7,102 feet frontage and \$492,590 in cost. There is no doubt that capitalists and people desiring to build are at last taking advantage of the very low prices of material, and enquiry among material dealers establishes this fact.

The prices of common building brick have advanced a little, and all dealers and manufacturers are now asking \$5 per M. This is an advance of about 25 cents per M during the last month. Pressed and repressed brick are still selling at the lowest prices dealers seem to be able to make. COSMOPOLITAN.

### A Visitor's Views.

*Editor Clay-Worker:*

The August number of the CLAY-WORKER has just arrived, which reminds me that my subscription is due and hasten to send it along, as I do not want you to stop the paper and mark me as a defaulter, for the more I see of the CLAY-WORKER the more I like it, and the articles that have appeared in it during the past year have been exceptionally good.

Last year I found that the CLAY-WORKER was of eminent use to me for I paid a visit to your world renowned World's Fair, in Chicago, visiting Cleveland, Buffalo and New York by the way. I had a copy of the CLAY-WORKER with me, and from its advertisements I found out quite a number of machine men, to whom I introduced myself as having known them through your valuable paper. It served as my passport while in the States.

I also did not fail to pay my respects to Mr. D. V. Purington, who gladly gave me a pleasant half hour; also had a pleasant chat with the now president of the N. B. M. A., Mr. Alsip. Both of these gentlemen I instantly recognized from having seen their portraits in the CLAY-WORKER, so you see that your paper is a great power for good, and I wish it every prosperity.

I was very much impressed with the high standard quality of brick that are made in the States. I consider them to

be the finest in the world. I was also amazed at the great strides you have made in terra cotta work. Broadway, New York, is an interesting study in terra cotta, and I spent many hours in that city admiring the fine brick buildings. They certainly were an eye opener to a  
NEW ZEALANDER.

### Among Detroit Brickmakers.

*Editor Clay-Worker:*

The last kiln has been burned and all the yards have closed for the season, fairly well stocked.

It is safe to say, several plants will be equipped with the pallet rack system by next season.

Never before has there been so many brickyard laborers idle, at the least calculation, there are 800 out of employment.

The kiln shed of the Hall & Wolf Co., was considerably damaged by fire, caused by the heat of a kiln that was nearly burned.

The market still continues good with fair prospects for a heavy fall demand. Prices remain unchanged, common selling at \$4.50, select \$5.50, stock \$6.00.

Mrs. Peter Burns, wife of one of Detroit's early brickmakers, had her house totally destroyed by fire on the 2nd inst.

Charles P. Collins, of Archer & Collins a prosperous brickmaking firm of this city, was, at the last election elected to the office of sheriff by a very large majority.

The three new government buildings at Fort Wayne are nearly finished and present a handsome appearance. R. H. Hall was the lucky one to capture the contract to furnish the brick—about 600,000 in all.

Fred C. Wolf, of whom there was an excellent likeness in the September issue of the CLAY-WORKER, and who was married last month, has just returned from an extended tour through the East, and now occupies a stylish residence on Central Avenue, which was built for the occasion. We offer our hearty congratulations and trust he will enjoy a long and happy future.

DOROTHY DALE.

"Brickmaker to the President," J. C. Adams, of this city, has been elected a member of the State Legislature and will probably be chosen speaker of the house, a position he is eminently well qualified to fill.



**THE CLAY-WORKER.**OFFICIAL ORGAN OF THE NATIONAL BRICK  
MANUFACTURERS' ASSOCIATION OF THE  
UNITED STATES OF AMERICA.

PUBLISHED MONTHLY.

INDIANAPOLIS, NOVEMBER 15, 1894.

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ADVERTISING RATES furnished on application.

Correspondence on all subjects of interest  
to Clayworkers is solicited. Communications  
from practical men will always be welcome.  
Address all communications to

T. A. RANDALL &amp; CO.,

**THANKSGIVING.**

IN accordance with the proclamation of the Nation's Chief Executive, Thursday the 29th inst., will be observed as a day of general Thanksgiving.

He lives not half who lives insensible of the many mercies which crown every year of his existence. To the thoughtful and well instructed, even the less pleasant experiences of life are not without compensation.

We count him a dolt in school who regards the discipline and hard lessons imposed upon him, as burdens to be borne only because they must. Such a youth lives only for the present hour preferring the unsatisfying pleasures of truancy to the solid enjoyment of acquiring knowledge which will fit him for the higher ranks of men. The coming man, he who is to be a man among men, is not insensible to the rigid rules of the school, and he may even chafe under them at times, nor are the hard problems which he must solve always just what he would prefer, but he endures all with cheerfulness because he sees in them that development which fits him for manhood.

So the thoughtful business man does not rebel against experiences which may not in themselves be agreeable. Hence even those who have had losses and sorrows, have occasion to be thankful, because of the mental and spiritual development they have wrought, if they have been properly received.

But in addition to the individual occasions for thanksgiving, there is great propriety in our Chief Magistrate's call to us to render thanksgiving as a Nation for the aggregate mercies and blessings we have enjoyed. Though war even is not always an unmixed evil, its good is purchased at such a cost that we are thankful for the peace which has prevailed within our own borders and with other nations. Our flag floats over all seas and is everywhere honored. For this, we give thanks.

Though in some localities crops have not been as abundant as usual, yet as a whole, we have seldom harvested such a crop of the necessities of life. For this, we give thanks.

Under any condition, that chapter in our continuous existence which we call death, is attended with sorrow, even though it be the going hence of the aged and infirm, but when death comes in troops, as when some devastating pestilence rages, it is dreadful. We have not been visited with pestilence. For this, let us give thanks.

In common with those engaged in other lines of manufacturing, the clayworkers of America have felt the pinch of business depression during the year now drawing to a close, but with comparatively few exceptions, they have weathered the financial storms bravely. No great industrial interest has fared better, and as there are now unmistakable signs of returning prosperity, let us one and all, with thankful hearts, prepare for the busier, better times to come.

**THE NEXT N. B. M. A. CONVENTION.**

The official announcement of the selection of Cleveland, Ohio, as the place where the Ninth Annual Meeting of National Brick Manufacturers' Association will be held in February next, is given on page 452 of this issue.

The Executive Committee have acted very wisely in accepting the invitation to meet in Ohio's chief city. Cleveland's central location will enable many to attend the next convention who would not have done so had the Convention been held farther east.

The brickmakers of Cleveland are well organized and are already arranging plans for the entertainment of their expected guests. A large attendance is anticipated notwithstanding the dull times, and a warm reception will be accorded each and every delegate.

**ANY COLOR SO IT'S RED.**

Our most able and amiable contributor "R. Brick" Morrison, takes us severely to task in a private letter for having intimated editorially in the October issue, that we considered his interesting contribution in that number, espousing the cause of red brick, as partisan in character, and refutes the fair impeachment by enclosing to us an advertisement of the Rome Brick Co., of which "R. Brick" has been superintendent for a term of years, announcing the fact that they manufacture brick of various colors, buff and gray as well as red. So of course, Mr. Morrison speaks from a purely disinterested standpoint.

Whatever conclusions our readers may reach as to the merits of "Red vs. Party-Colored Brick," one thing we feel sure they will all readily concede, namely, that "R. Brick" is the best *read* brick on this continent. No other individual has contributed so much to the literature of the brickmaking craft as he, and his writings are always so practical and instructive that our readers prize them very highly. For this reason, he should rest content knowing that, regardless of any transitory fad, his "Hints" are always *read*.

**REBUILDING OF OUR TOWNS AND CITIES.**

It is an ill wind that blows nobody good. Many of us have been living under the influence of the ill wind. The depressed financial situation, the hard times, the product of fool legislation, and various other circumstances—we assign the cause to the nearest thing at hand; many things are measurably responsible. The ill wind has depressed prices and among other things it has made better building possible. There is a good deal of substantial building being done throughout the country and it is being handled exceedingly well. Where wooden joist and wood floor and partition construction were used before, we now find the impulse to use steel surrounded with burned clay and in other ways to develop fire proof structures. This is the result of the educational impulse, which comes about from the cheapness of building materials at this time. It is something which will last. The pace is being set. It will not be possible to go backward. It is now possible to build with a material and in a way to make a fire proof construction at about the same cost as a brick building



with wood joist and floor and partition construction so common during recent years. The real meaning of this condition is not difficult to understand. Say one is inclined to put up an office building, he can construct such a structure at about the same cost; using fire proof material that was possible a short time ago using only inflammable internal construction. This means that the man who builds to-day can depopulate the structures put up a few years ago. He can build and equip a first class structure at a relatively low price. He can afford to rent it at the same price that is now charged for relatively inferior buildings. Of course people will go into fire proof structures. They will go into buildings which are practically vaults. Burned clay and steel are as cheap as were brick and wood a few years ago, this will practically mean the rebuilding of all our towns and cities, where the best construction is not common. No one who is not purchasing steel for constructive purposes has an idea at what a low price that product can be purchased at the present time. As stated before, this really implies a modern building revolution. Steel and clay are cheap, steel and clay will be universal. Having once started in this direction, the spirit of good construction will remain with us. There will be no turning back.

#### A REMINDER OF THE WORLD'S FAIR

Our German cotemporary, *Die Toepfer und Ziegler-Zeitung* has favored us with a copy of "The Brick and Clayware Industries of the United States and the Ceramic Exhibits of the World's Columbian Exposition at Chicago, 1893." The book contains 180 pages clearly printed in Latin letters and makes one wonder why the publishers do not use the same type for their journal. There are 172 illustrations in the text and 13 plates, all of which are remarkably clear, artistic and well selected.

The book is the result of the intelligent and painstaking investigation of Architect K. Duemmler, of Berlin, who visited this country during the World's Fair as the special correspondent of the *Toepfer und Ziegler Zeitung* in which paper his reports have appeared weekly for the past year and are now, by request collected and arranged in the volume before us. These reports not only describe the exhibits at the Fair of interest to clayworkers, but also the methods

of manufacture of all the ceramic wares produced in the United States, as obtained by actual observation in the most prominent establishments, together with a description of the machines and tools in use clearly explained and illustrated in detail.

The clayworkers of Germany must feel greatly indebted to Mr. Duemmler for his able and successful labors in their behalf and likewise to Mr. Hoffman for furnishing the means to carry out such an undertaking. There probably does not exist in any language such a clear and elaborate picture of the ceramic industries of a country prepared for the craftsmen of another country. The influence of this work will unquestionably effect an improvement in many of the methods of German clayworking. It would be fortunate for us also if some one would "do" the clayworking establishments of the old World for the American clayworkers, as Mr. Duemmler has done ours for the Germans.

#### THE PAVING BRICK INTERESTS.

The paving brick manufacturers of Ohio, Pennsylvania and West Virginia have formed an association for mutual benefit and protection. This does not necessarily mean that a paving brick trust is contemplated, or that those interested propose to form a "combine" for the sole and only purpose of maintaining unreasonable prices for their products, though there may be a need for organized effort to prevent ruinous competition. There are various features of the paving brick business that are crude and place the individual manufacturers at the mercy of municipal officers who are not always as scrupulously honest as they might be, and not infrequently practice a specie of extortion that is as disastrous as unjust. The paving brick industry is comparatively new. There are problems unsolved that those engaged in the business will find more economical to work out together than as individuals. To this end, every manufacturer of paving brick in the territory named should identify himself with the movement.

#### A CHANCE FOR THE BOYS.

On page 464 our readers will find a new "ad." that may be of special interest to some of our younger readers who have a little spare time and capital for a side issue. Nearly every town affords

an annual market for a few thousand flower pots, which might easily be supplied by some clayworker in the immediate vicinity. The making of the pots by the Rathsam machinery is a simple operation requiring no particular skill and but very little power. A small dry room and kiln will enable an enterprising lad to turn out quite a large quantity of pots at small cost. If you are interested write the Rockwood Manufacturing Co., Indianapolis, for full particulars.

#### SEASONABLE THINGS.

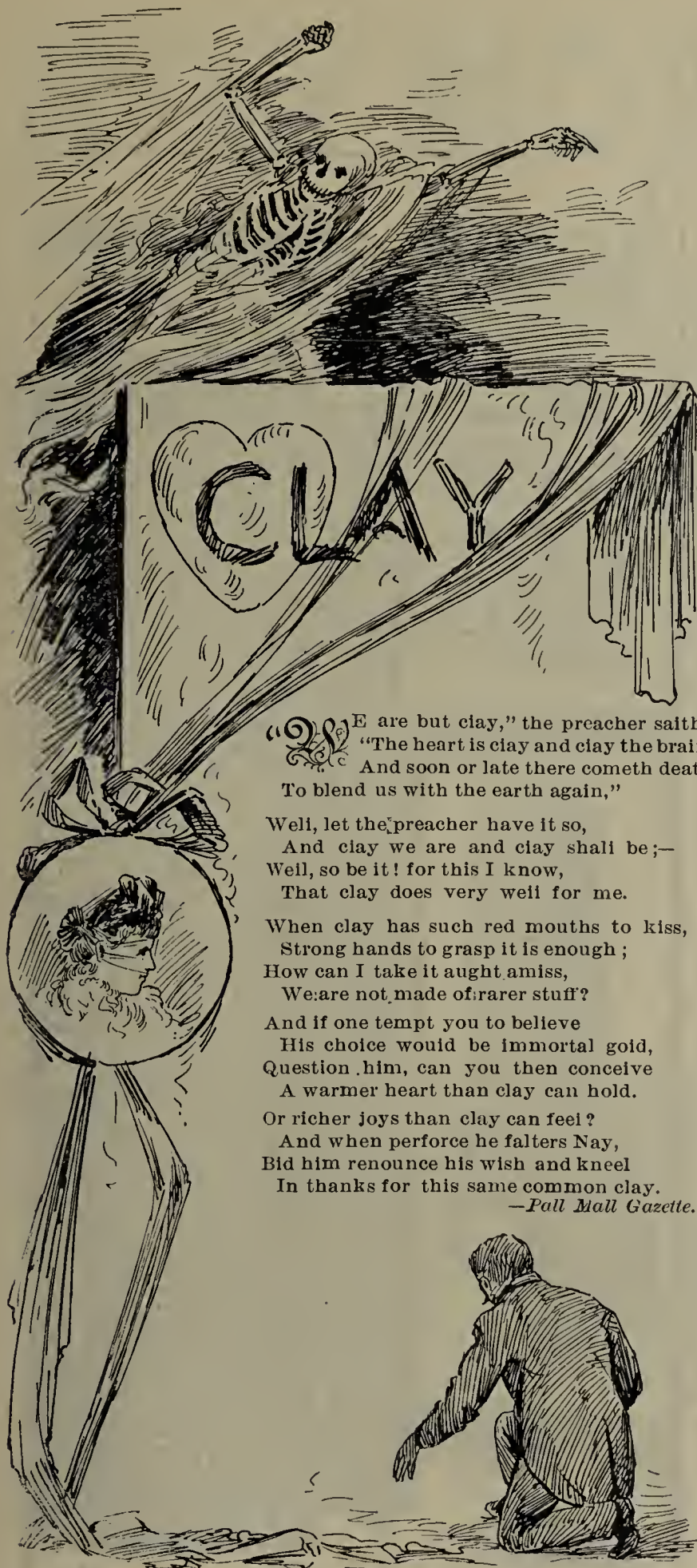
This is a good time to secure experienced workmen. Many good men are now open to propositions for next seasons work. See our "Wanted Columns." This is a good time to pick up the odds and ends about the works, clean, oil and put away the machinery and tools that will not be used till spring time comes again, gentle Annie. If you have some that will not be needed at all next season, dispose of them by an adlet in the "For Sale Column."

This is a good time to provide suitable brain food for the long winter evenings, which afford such excellent opportunity for study. Our Books for Brick-makers are interesting, instructive and practical. See list on page 459.

This is a good time to reflect on the vicissitudes of the past season and prepare for better and more effective work next year. To do this you must keep in touch with the progressive spirit of the times. First subscribe for the CLAY-WORKER and then prepare to attend the Ninth Annual Convention of the N. B. M. A., to be held at Cleveland, Ohio, in February.

Smith & Anthony, successors to Predmore & Smith, of Gouverneur, N. Y., in renewing their subscription to the CLAY-WORKER say, "We have a yard here now which we can honestly say is a good one. Since taking control of same we have improved the plant in many ways, increasing capacity of rack room from 15,000 to 125,000, built new kiln shed and power house and added a pug mill, etc., which enables us to take care of 30,000 brick per day. Notwithstanding the fact that we did not complete improvements until the middle of July we have made over one and one-half million of brick. The brick trade has been very brisk and good prices prevail."





"We are but clay," the preacher saith;  
 "The heart is clay and clay the brain,  
 And soon or late there cometh death  
 To blend us with the earth again,"

Well, let the preacher have it so,  
 And clay we are and clay shall be;—  
 Well, so be it! for this I know,  
 That clay does very well for me.

When clay has such red mouths to kiss,  
 Strong hands to grasp it is enough;  
 How can I take it aught amiss,  
 We are not made of rarer stuff?

And if one tempt you to believe  
 His choice would be immortal gold,  
 Question him, can you then conceive  
 A warmer heart than clay can hold.

Or richer joys than clay can feel?  
 And when perforce he falters Nay,  
 Bid him renounce his wish and kneel  
 In thanks for this same common clay.

—*Pall Mall Gazette.*

#### OLD BUT SEASONABLE.

"Father! who travels the road so late?"  
 "Hush! my child, 'tis the candidate;  
 Fit example for human woes;  
 Early he comes and late he goes.  
 He greets the woman with courtly grace;  
 He kisses the baby's dirty face;  
 He calls to the fence the farmer at work;  
 He bores the merchant, he bores the clerk;  
 The blacksmith, while his anvil rings,  
 He greets, and this is the song he sings:  
 'Howdy! howdy! how d'ye do?'—  
 How is your wife, and how are you?  
 Ah! it fits my fist as no other can,  
 The horny hand of the workingman."—*Exchange.*

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 J. W. Crary, Sr., \$2.50

"TABLE OF ANALYSES OF CLAYS,"  
 Alfred Crossley, \$1.00

"DURABILITY OF BRICK PAVEMENTS,"  
 Prof. I. O. Baker, \$ .25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address T. A. Randall & Co., Indianapolis, Ind.

We also fill orders for the English work entitled "THE MANUFACTURE OF GLAZED BRICK," H. Greyville Montgomery, \$2.00.

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ESTABLISHED 1859.

Red Pressed and Ornamental Brick of unsurpassed quality a specialty and can be furnished in any desired quantity. Builders who desire the finest pressed brick at reasonable prices, are requested to write for illustrated catalogue and price list.

Rock-faced and Roman brick, red and brown, granite, mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

ANTHONY ITTNER, Telephone Building, ST. LOUIS, MO.



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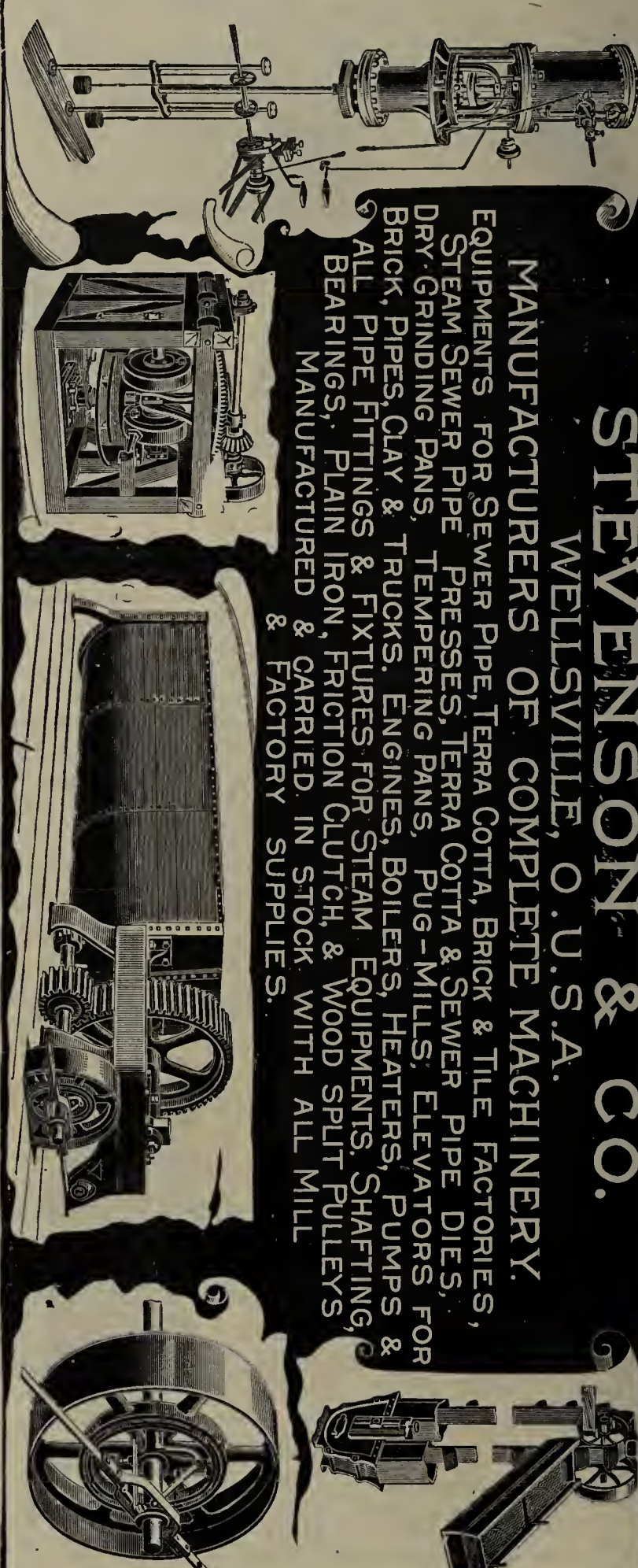
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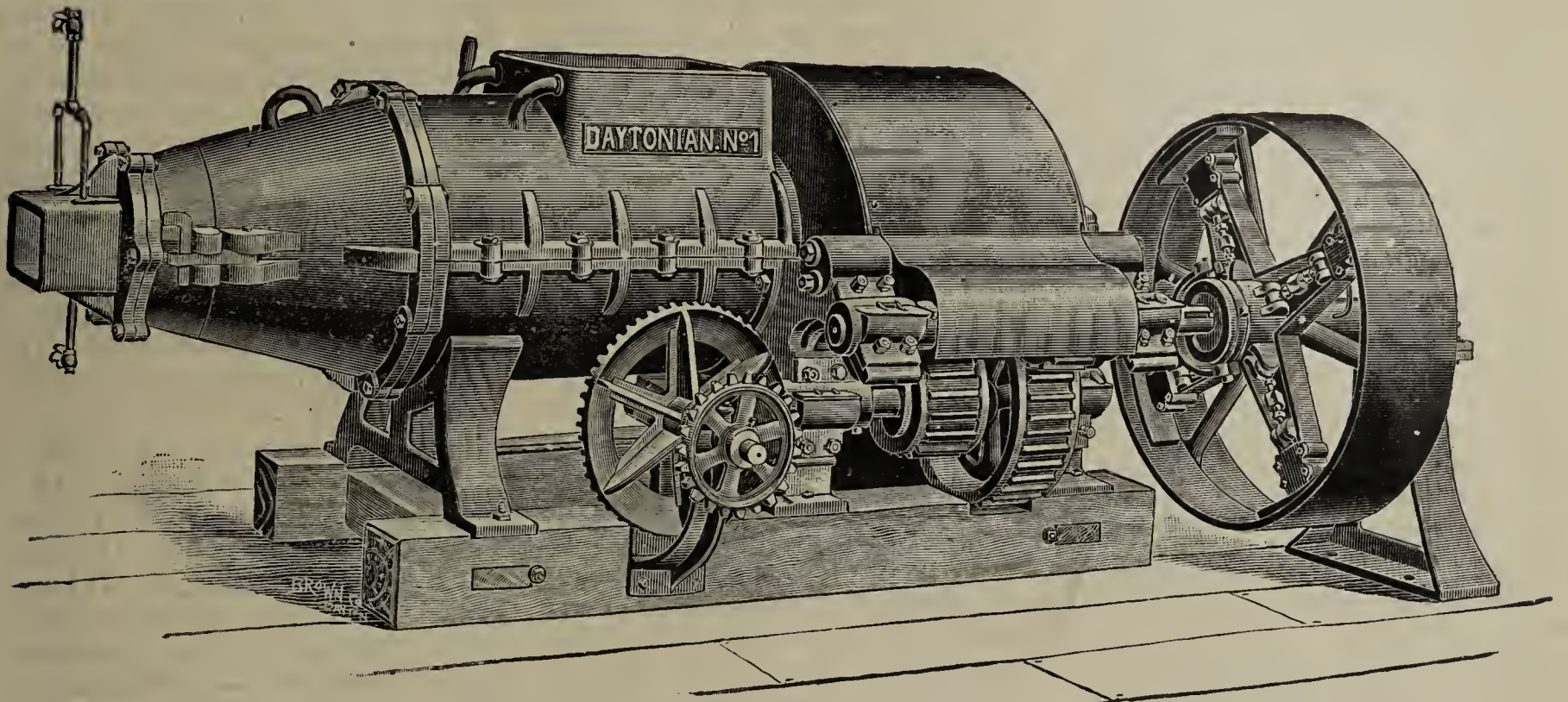
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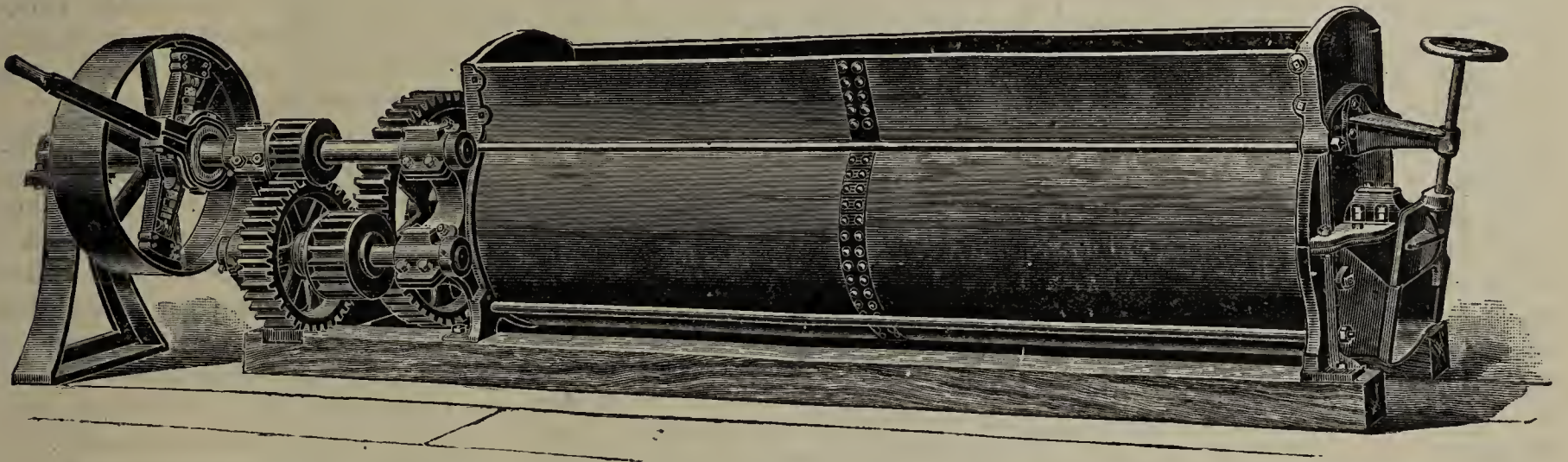
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## FLORIDA AND BRICK.

*Editor Clay-Worker:*

As promised in a previous number of the *CLAY-WORKER*, herewith is submitted the facts and information that will lead investigators to an intelligent understanding of what Florida offers as a new field for brickmakers and clay-workers who desire to change to a new location and one in its infancy for clay industries. While it is true that the surface of the peninsula is one great stretch of sand, it is now a well proven fact that this is true only of the surface, and to a depth of from one to ten feet more particularly of the peninsula portion extending North and South from the Georgia line to Lake Okechobee. The western portion of the state taking in the portion along the Georgia and Alabama lines and the Gulf of Mexico, say of 150 miles from Pensacola east has large outcroppings of various kinds of good clay. This part of Florida is considered good, natural clay working country. It is to be noted also that portions of the peninsular part of the state as Alachua, Lafayette, Levy, Marion cities and Lake counties are in the list, the latter count being noted for the most extensive and finest deposits of pure white kaolin in America. In the vicinity of the latter deposits are beds of a deep rich red clay as fine as the white kaolin, but as yet its nature has not been determined by analysis, however it is fit for any clay manufactured product where white is not desired in the result.

The kaolin lies in the Palatalakaha river district, a stream forming a tributary of Lake Harris. Villa City lies in the center of the interest. Mr. B. F. Adams, real estate agent of Jacksonville, Fla., will give all needed information and references to visitors, or inquiries by mail.

The kaolin deposits are well distributed along the streams of Lake county and their extent proves the sand theory as to Florida to be a myth, and all those starting in to investigate and learn facts will first of all, have to abandon the sand fallacy. This belief as to "nothing but sand" has been spread abroad by northern tourists who do not come here to search for clay, and it has handicapped and misled those who have purposed to come, but had "sand" thrown in their eyes and ears, so to speak.

Now as to the facts and prospects for parties whose interest it is to know ahead of their coming. The tourist season and tourists rates are at hand

and from two to four weeks visit and travel in the state will benefit the traveler and settle his choice of a location if he desires one, if not for himself, for some party whom he can interest.

There are openings for but a few large plants, and Jacksonville would be the main one. It is a metropolitan city, a sea port, and a supply depot for a large portion of the state. Good clay has not been developed there, and little investigation made to obtain it. Brick is the favorite building material, and the supply comes from Georgia, Alabama and Tennessee, in fact the bulk of the brick used in Florida comes from the three states named. Transportation by rail is so high in rate, that a five dollar per thousand brick in Atlanta, F. O. B. will reach from \$12 to \$15 delivered at Tampa. These figures hold good in proportion for other points more or less distant. It is the remarkably high railroad rates, and lack of home made material that has held down or almost excluded the industry, also lack of knowledge as to where clay existed, or when found as to its fitness for brick. Florida being a great pine country, lumber has been comparatively cheap and it is so now, but the brick era is at hand, and clay products are in demand with a preference, if to be had at prices that will afford handsome profits to the manufacturers. Small plants are needed and many of them.

Clay more or less mixed with sand is found all through the state, this is found near the surface and in varying colors and thickness of deposit. Generally under it, is found true clay or clays of different natures as phosphate cement, potters, fire and all others known to commerce.

Timber being plenty, fuel is at low cost and available everywhere. Good cord wood delivered at from \$1 to \$1.50 per cord. Labor is to be had in plenty. Wages run from \$1 to \$2 per day, the latter figure being the highest. Water is abundant as lakes and streams abound, and wells (driven) finds good supply at a short depth.

The winter season of six months is the "dry spell" and the ideal weather for open air drying. June, July and August is the "rainy season," with showers almost every day. Manual labor can be carried on all the year in the sunshine, as breezes prevail nearly all the time. Such was the case during all of this hot summer, and it is a part of my actual experience in the field.

Land is yet at a low cost, and in such abundance, that workmen can readily

acquire homes near their work and thus keep down the "labor problem" and strikes. Living is at figures low enough to satisfy any workman.

Speaking of workmen it is to be understood that the white man has as good a show to do open work in this climate as the negro, although so far south the suffocating heat of the north is not experienced. Put this down as another northern fallacy exploded.

A few words about sewer pipe, drain tile, etc. Untold thousands of acres of sugar lands and rich low lands are awaiting supplies for drainage purposes, but the material cannot be bought at the present high railroad freights. The small amount of stock consumed comes from as far as St. Louis.

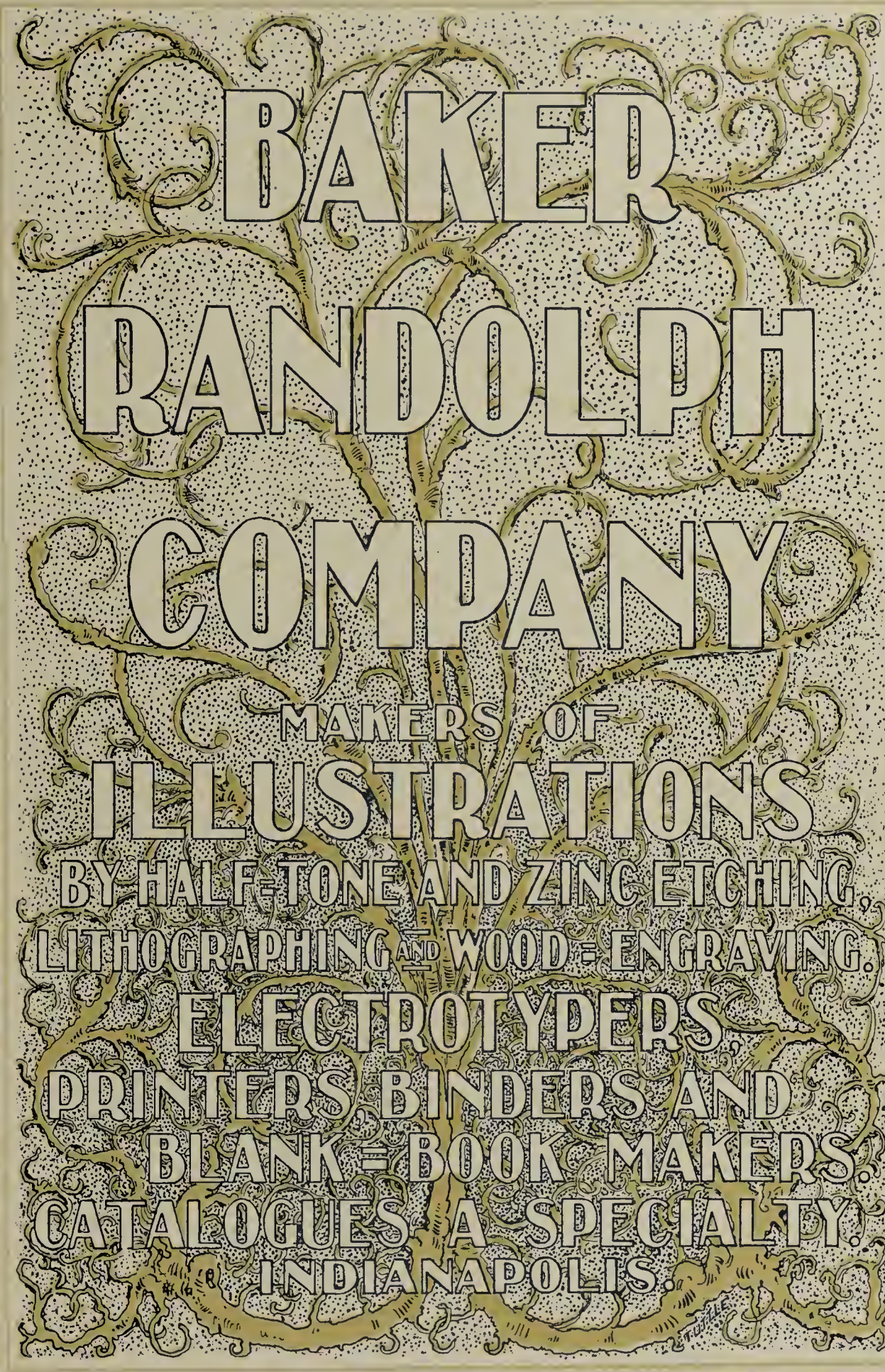
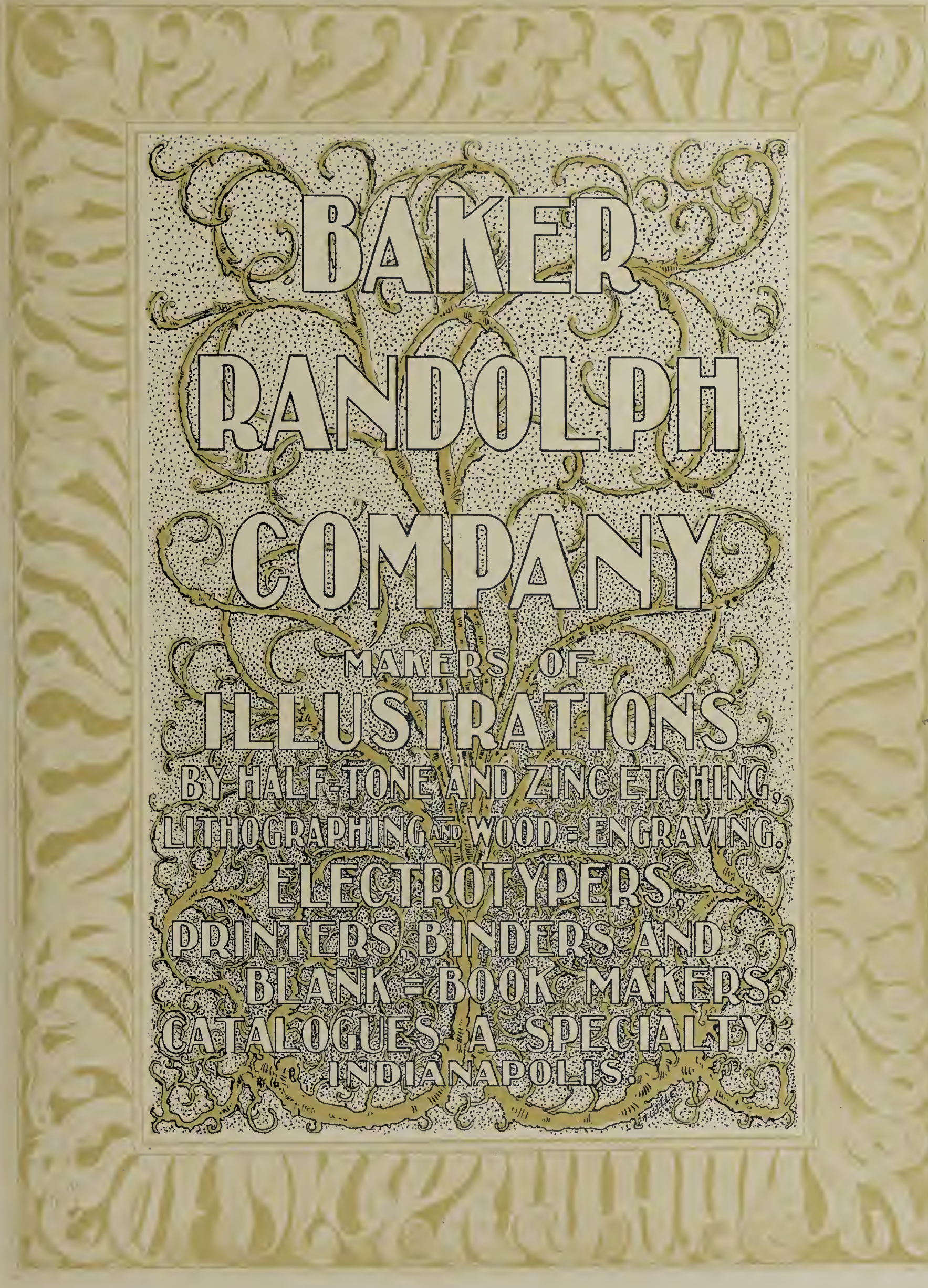
I will name as good towns to visit or investigate, Tallahassee, Lake City, Jacksonville, St. Augustine, Palatka, Starke, Waldo, Gainesville, Leesburg, Ocala, Dade City, Sanford, DeLand, Orlando, Brooksville, Kissimmee, Lakeland, Bartow, Fort Meade, Arcadia, Daytona, Rockledge, Lake Worth, Punta Gorda and Tampa. The latter city is the most promising one on the gulf coast, and its product would find not only a good local demand, but would afford a fine export trade by railroad and gulf shipment to many other points now in active demand for brick, tile, etc. Address Jones & Cooper, real estate, Tampa, for information.

A "tip" in conclusion; the hospitality of Florida people is proverbial so those who visit the "Land of Flowers" will do well to throw off reserve, and in each town visited, go direct for information or aid to the newspaper editor, the mayor, leading real estate agent, or merchant, and candidly state their object; the result will be courteous treatment and every assistance possible.

Herewith find a few addresses of parties to call on or address: Capt. E. Alerogo, Cordery, Fort Meade; James Cross Arcadia; J. H. Tatum, Bartow; Col. Roquomore, Lakeland; James Forrest, Kissimmee; Major Marks, Orlando; Col. Elliott, Sanford; Jones & Cooper, Tampa; B. F. Adams, Jacksonville; P. Priolean, Assistant City Engineer, Jacksonville; C. P. Huffman, Melrose; Dr. A. M. Hyer, New River; Dr. E. E. Dayton, Daytona; D. D. Rogers, C. E., Ocala.

I trust Mr. Editor that the foregoing communication will assist the hundreds of gentlemen who have written for information, and I strongly urge that those who can spare the time this winter, visit and tour the state if their stay is only for two weeks. D. E. RYAN.

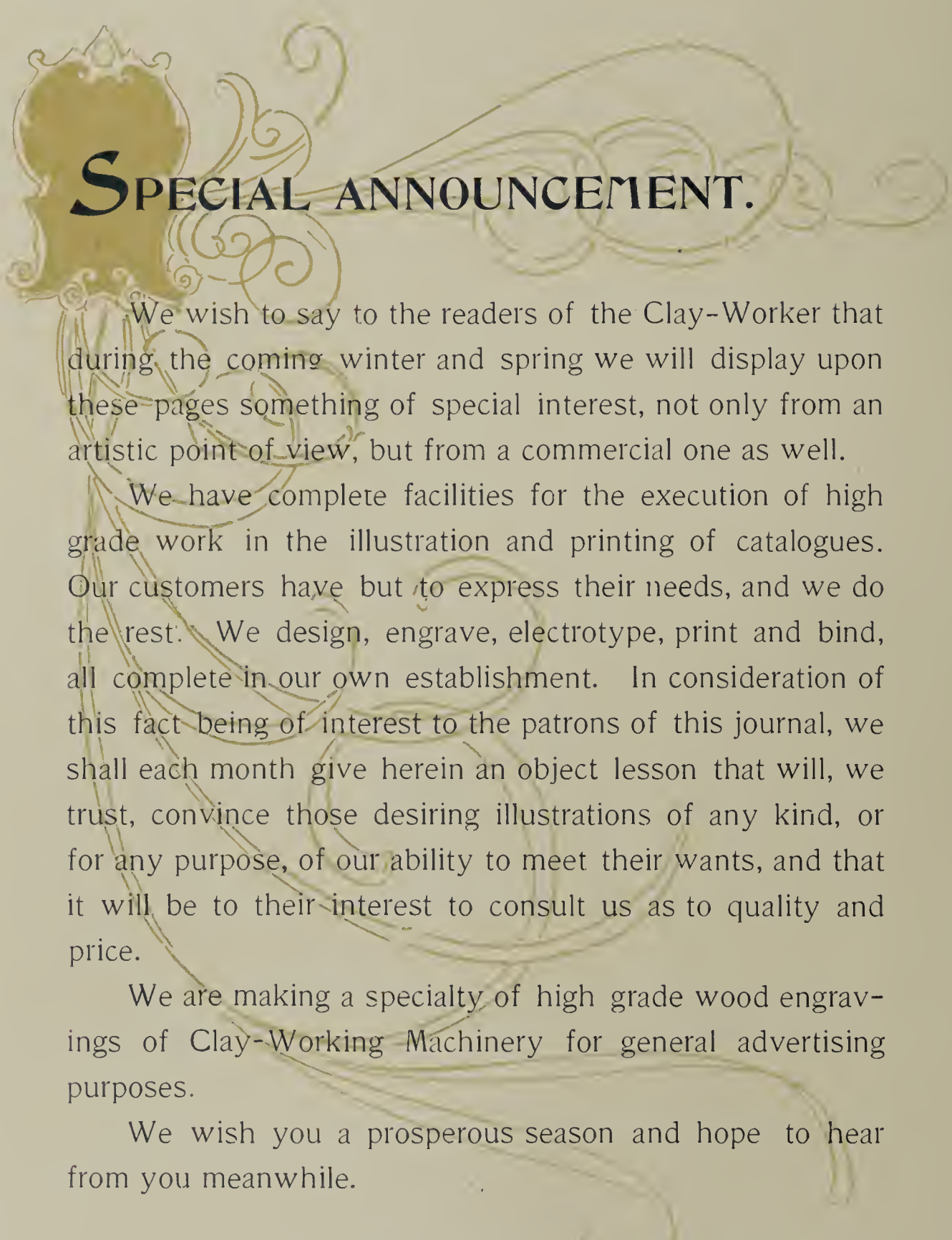




# BAKER RANDOLPH COMPANY

MAKERS OF  
ILLUSTRATIONS  
BY HALF-TONE AND ZINC ETCHING,  
LITHOGRAPHING AND WOOD-ENGRAVING.  
ELECTROTYPERS,  
PRINTERS, BINDERS AND  
BLANK-BOOK MAKERS.  
CATALOGUES A SPECIALTY.  
INDIANAPOLIS.





## **SPECIAL ANNOUNCEMENT.**

We wish to say to the readers of the Clay-Worker that during the coming winter and spring we will display upon these pages something of special interest, not only from an artistic point of view, but from a commercial one as well.

We have complete facilities for the execution of high grade work in the illustration and printing of catalogues. Our customers have but to express their needs, and we do the rest. We design, engrave, electrotypes, print and bind, all complete in our own establishment. In consideration of this fact being of interest to the patrons of this journal, we shall each month give herein an object lesson that will, we trust, convince those desiring illustrations of any kind, or for any purpose, of our ability to meet their wants, and that it will be to their interest to consult us as to quality and price.

We are making a specialty of high grade wood engravings of Clay-Working Machinery for general advertising purposes.

We wish you a prosperous season and hope to hear from you meanwhile.

**BAKER-RANDOLPH COMPANY,**

INDIANAPOLIS, IND., U. S. A.



## EDITORIAL NOTES and CLIPPINGS.

Catskill, N. Y., is to have a new paving brick plant.

A brick plant is to be established at Kingston, N. C.

Jno. Q. Mills has discovered a fine bed of terra cotta clay on his farm near Port Matilda, Pa.

Efforts are being made to secure the location of a brick and tile plant at Union, Iowa.

A large pottery of which Geo. Steiger will be proprietor is now being erected at South San Francisco, Cal.

The Rogers McDonald Press Brick Co. has been incorporated with a capital stock of \$250,000 at Chicago, Ill.

J. C. Steele & Son, of Statesville, N. C. write that they have an order for 70 dryer cars from The Pelzer (S. C.) Mfg. Co.

W. A. Wilford is building one his large continuous kilns for Phillip Weyer & Son; the leading brickmakers of Elmira, N. Y.

When writing to an advertiser, our readers will confer a favor on both the advertiser and publishers by mentioning the CLAY-WORKER.

The Wittmer Brick Co., Allegheny City, Pa., contemplate establishing a new and modern brick plant near Pittsburgh next season.

The Brady's Run (Pa.) Fire Clay Co. has closed down for the purpose of making some improvements, including the building of a dryer.

A large shale brick plant in which H. H. Cobb, is interested will be established at Coudersport, Pa. The firm will be known as the Monroe Brick & Tile Co.

The Ralston Brick Co. has been incorporated at Williamsport, Pa. R. H. Robertson, Jacob Green, C. S. Green, D. B. Allison and G. M. Wagner are interested.

The Druid Brick Co. is the name of a new firm that has been incorporated by N. J. Penniman of Baltimore, Md., for the manufacture of brick of different grades.

J. A. O'Bryan, H. R. O'Bryan, B. Boyner, J. F. Smith and C. D. Wilbur of Los Angeles, Cal., have filed articles of corporation of The California Ornamental Brick Co.

The firm of the Chattanooga (Tenn.) River Brick Co., has been dissolved by mutual consent, Mr. H. H. Spencer will retire and Jos. Moon will continue the business.

Fire at the Thistlewaite brick plant at Richmond, Va., caused a loss of \$600. The flames were confined to the drying sheds, the engine and machine rooms escaping damage.

The Potomac Terra Cotta Co., has been incorporated at Terra Cotta, D. C. A. G. Sufford, G. Y. Attie and W. L. Cole are incorporators, and have a capital stock of \$100,000.

While oiling a clay grinding machine at the Industrial Brick Works, May's Landing, N. J., Wm. Schenck was caught in the burr wheel and had one of his legs badly crushed.

The Standard Dry Kiln Co. of this city say they have booked several good orders within the past ten days and that the outlook for more in the immediate future appears to be good.

The immense plant of the Albany (Ga.) Brick Co., was totally destroyed by fire the 27th ult, involving a loss of between \$8,000 and \$10,000. The work of rebuilding will begin at once.

The work on the new brick plant of Messrs. Schmolz, Lorrison & Co., at Weatherly, Pa., will commence at once. The best of material will be used in the erection of same and will have a capacity of 25,000 daily.

The Lonhuda Pottery of Steubenville, Ohio, has been purchased by S. A. Weller, who will remove it to Zanesville, Ohio, where he will operate it in connection with his pottery already established at that place.

Jno. Sheppard a well known brick manufacturer of Ashland, Ohio, died very suddenly at the home of his son in that city on the 1st inst. Mr. Sheppard was 72 years old, but had always apparently been in the best of health.

The Don Valley Pressed Brick Co. of Toronto, Ont., says the Toronto *Empire* was awarded a fine gold medal for their splendid display of pressed brick, fire clay, fire brick and sewer pipes, etc., at the Industrial Exhibition in that city.

McCabe & Son, Rushville, Ill., in a recent communication say: "The past season has been one of the best we have known for several years, both for brick and tile, having kept our improved

Quaker machine which we purchased early in May, going up, the last of October. We don't see how we could make brick without the CLAY-WORKER, which is always a welcome visitor, and contains so many good articles that it is a great help to all clayworkers."

The Oliphant Pope Mfg. Co., of Trenton, N. J., have their new plant for the manufacture of paving brick very near completion, some of the necessary machinery, kilns and dryers are not yet in place. The company will turn out a high grade of vitrified pavers.

Messrs. Stevens Bros. & Co. of Stevens Pottery, Ga., have been awarded a premium on their exhibition of sewer pipe and other clay work at the "Great Dixie" Interstate Fair held in Savannah, Ga. The exhibit is said to surpass anything of the kind ever made.

Fire which originated in the dryer destroyed the entire plant of the Elwood (Ind.) Brick works, owned by Jno. Rodefer, the 20th ult, with the exception of three kiln sheds. The firm estimate their loss at \$20,000. The debris is already cleared away and work on new buildings will begin at once.

The entire force of men in the plaster department of the Perth Amboy (N. J.) Terra Cotta works have gone out on a strike. Last winter, when business was very dull a cut of 10 per cent. was made in their wages, and now that trade has improved, they demand a restoration of the old scale of wages.

Wm. Beam, formerly of Porter, Ind., writes that he has purchased the Dyas-Martin Co's brick plant at Sheldon, Iowa, and intends to equip same with new machinery as early in the spring as the weather will permit." The name of the new company will be The Sheldon Brick Works, and Mr. Beam expects when fully under way to make common, sewer, and repress brick, drain tile, hollow and sidewalk tile. He will be pleased to receive catalogues of improved machinery, dryers, kilns, etc.

J. W. Everal, Westerville, Ohio, president of the Ohio Brick, Tile and Drainage Association, recently left for a pleasure trip to the Pacific Coast. His health has been poor for some months past and he thinks that a winter in California will afford an opportunity for much needed rest and recuperation. Mr. Everal is so kindly and genial that he wins the respect and cordial good will



of every acquaintance. The brick and tile manufacturers of Ohio whom he has served faithfully for the past few years will be delighted to hear of his safe arrival and speedy recovery.

W. R. Cunningham, secretary of the Wallace Mfg. Co., Frankfort, Ind., writes "We are very well pleased with the volume of business that we have had during the past year, taking everything into consideration. We have recently shipped a Big Wonder with Automatic cutting table to Eagle River, Wis., a Big Wonder to Waukegan, Ill., a crusher to Fredericktown, Mo., and are now getting out an equipment for a large stiff clay plant, consisting of Big Wonder, Automatic cutting table, our large size pug mill, four roll crushers and a granulator, for the city of Milwaukee, Wis. Inquiries for brick machinery are quite numerous, which makes us feel that we are going to have some brick machine trade yet this fall and winter."

The most disastrous fire which has visited Berlin, Conn., for some time occurred at the New Brittain Art Terra Cotta works October 20th, almost the entire plant being destroyed. The loss on stock is estimated at \$30,000 and that on the building at \$20,000. The origin of the fire is a mystery. The safe which the bookkeeper is certain was left locked, was found open and its contents in ruins. The plant will be rebuilt on a more extensive scale immediately. Indeed, on the very day of the fire, clearing away of the ruins was begun and estimates secured from contractors for new buildings. The company had a large number of orders ahead and have rented part of the Yale Brick Co's plant, where they will "set up shop" and carry on business until their new plant is ready for them.

With this issue of the CLAY-WORKER the Valley Iron Works, of Williamsport, Pa., are with us. They are manufacturers of Economic Steam Power Plants, and while we are favored with their first advertisement in the clay-working trade, they are not unknown, having many hundreds of engines and complete steam power plants in use throughout the country, as well as in many foreign countries, among which we cite a few—England, China, Japan, Russia, Norway, Paraguay, Uruguay and India. This in itself should be sufficient evidence as to what is thought of the Valley Engines. They are driving a number of our largest and most com-

plete brick plants in the country. They make the claim and say that they will verify it where the opportunity offers, to be able to displace the older style steam plants, and operate them (the brick plants) to the entire satisfaction of the proprietors on from twenty-five to fifty per cent. saving in fuel. This is an item that cannot but cause brick manufacturers and other users of steam power to do some thinking as well as investigating. The Valley Works is a reputable establishment. It will pay you to send for their thirty-two page catalogue.

C. & A. Potts & Co., Indianapolis, say business is brightening up with them. The last week in October they booked orders for three complete plants, including their new Iron Horizontal Machine, Disintegrators, Mould Sanders, Elevators, Engines and Boilers. One of the above plants is for the Alfred Richards Brick Co., of Washington, D. C., this making

the second outfit put on this yard by C. & A. Potts & Co. this year. The Richards Brick Co. are making an excellent grade of common brick and the demand for them is such as to compel them to put in the second machine, which will double their capacity, and an artificial dryer that will enable them to run this winter. Messrs. Potts & Co. have the contract for the entire plant, including dryers and cars.

The plant of the Millhall Brick Co., near Lock Haven, Pa., was burned the 4th inst. Loss \$20,000 which is partly covered by insurance.

This is a good time to gladden the heart of the faithful editor by sending in your yearly subscription to the CLAY-WORKER. \$2.00 a year in advance.

FOR SALE—One five-mold Standard Press, one nine foot Dry P.n. Will guarantee same good as new. Price, \$3,500. Greatest bargain on earth, correspondence solicited. Address 11-1-d "Box 28, care Clay-Worker."

## FLOWER POT MACHINERY.

The day for hand-made Flower Pots has gone by. Better and cheaper Pots are now made with our machinery. No expert workmen required. Capacity from 1,000 to 6,000 seven to two inch Pots in ten hours.

Send for circular giving full particulars.

THE ROCKWOOD MFG. CO.,

We also make a cheap but effective CLAY GRINDER.

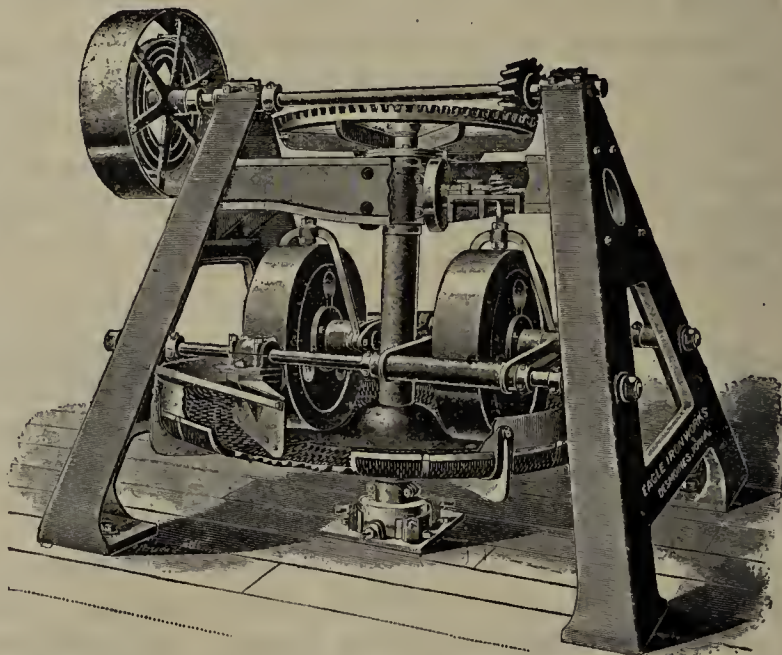
INDIANAPOLIS, IND.

## OUR NEW 9 Ft. IRON FRAME DRY PAN

SEND for catalogue and read up on our patented features of this machine. Our motto in its construction and design is

"NOT HOW CHEAP.  
BUT HOW GOOD."

EAGLE IRON WORKS, Des Moines, Ia.





 "DARTMUS." 

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## Single Streams vs. Multiple Streams.

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On page 356 of October CLAY-WORKER, a correspondent tells of trouble he has experienced in making stiff clay brick and asks for advice.

Dartmus's version, so far as the Cutting Table is concerned, is correct, for if the brick were cracked by the table running three streams, the brick would not all crack in the middle. We think the brick were cracked by uneven settling in the kiln.

Single stream automatic cutting tables offered to the trade heretofore would not correct this trouble if it was caused by the table, because all of them are operated with **friction belts**, which belt strains the bar of clay when too tight, the same as two streams running faster than the third.

Cunningham's Improved Single Stream Automatic Cutting Table is designed with Anti-Friction Roller bearings and runs so light that a single bar of clay will operate the cutting device without swelling the brick. This is the only Automatic cutting table offered to the trade that **will not strain the bar of clay**.

The Little, Intermediate and Big Wonder Brick Machines, are designed to deliver a single bar of clay by means of a double thread cone expressing auger. The three machines range in capacity from 20 M to 75 M brick per day of ten hours. Manufactured by

**The Wallace Mfg. Co.,**

See back inside cover page.

FRANKFORT, INDIANA.



## A THERMOSTAT.

IS a scientific instrument which is acted upon by the temperature. It is about the size, and looks very much like an ornamental, highly finished thermometer. It is connected electrically with the heating apparatus by concealed wires, and automatically controls any kind of artificial heat. It can be set to any degree by an indicator,

after which all you have to do is to let it alone. It does its work perfectly.

In this region where natural gas is used for fuel, it has proved most perfect and reliable.

It has been in use here the past six years and some of our best citizens testify, that with little or no care it has automatically controlled

their natural gas furnaces and other styles of heating apparatus so that all times they are comfortable, never too hot or too cold, but just right, for health and comfort.

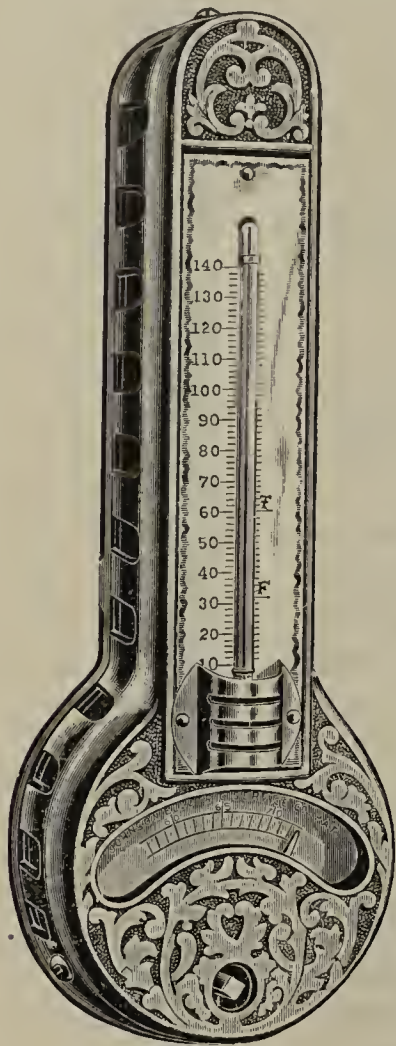
The Johnson system of electric heat regulations is being largely used in schools and public buildings, for instance Chicago has it to-day in over one hundred and twenty-five of their public schools.

The largest and finest office buildings, the new Stock Exchange 700 rooms, old Colony Building, 500 rooms; Rookery, 400 rooms; all steam heated are under this system.

The editor of this journal having investigated it is having it applied to his residence.

For full information address the Electric Heat Regulating Co., Builders Exchange, Indianapolis, Ind. In doing so please mention this journal.

For experienced help see the "WANTED, FOR SALE, ETC." columns.



## W. S. Ravenscroft,

LOCATES all kinds of clays. Tests, analyses, and general information furnished.

Factories planned and erected at lowest cost.

You have clay suitable for buff brick right at your door and do not know it, I will show you where it is. Write me.

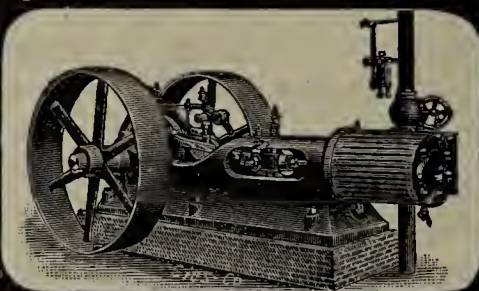
W. S. RAVENSCROFT, C. E.,

Ridgway, Penn.

Complete Steam  
Power Plants.

**VALLEY AUTOMATIC ENGINES**

HIGHEST EFFICIENCY.  
SUPERIOR CONSTRUCTION.

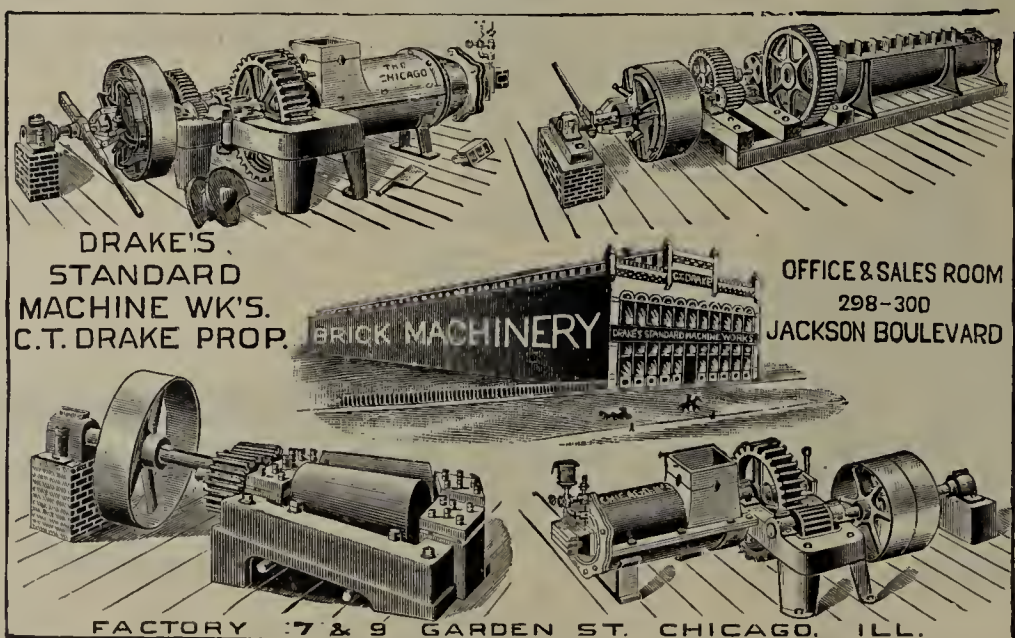


CLOSEST ECONOMY.  
— OVER —  
75,000 HORSE POWER  
— IN —  
OPERATION

VALLEY IRON WORKS WILLIAMSPORT, PENNA., U. S. A.

Save Coal  
Make Money

By Reducing Your Steam Consumption  
33 I-3 Per Cent.



DRAKE'S  
STANDARD  
MACHINE WK'S.  
C.T. DRAKE PROP.

BRICK MACHINERY

OFFICE & SALES ROOM  
298-300  
JACKSON BOULEVARD

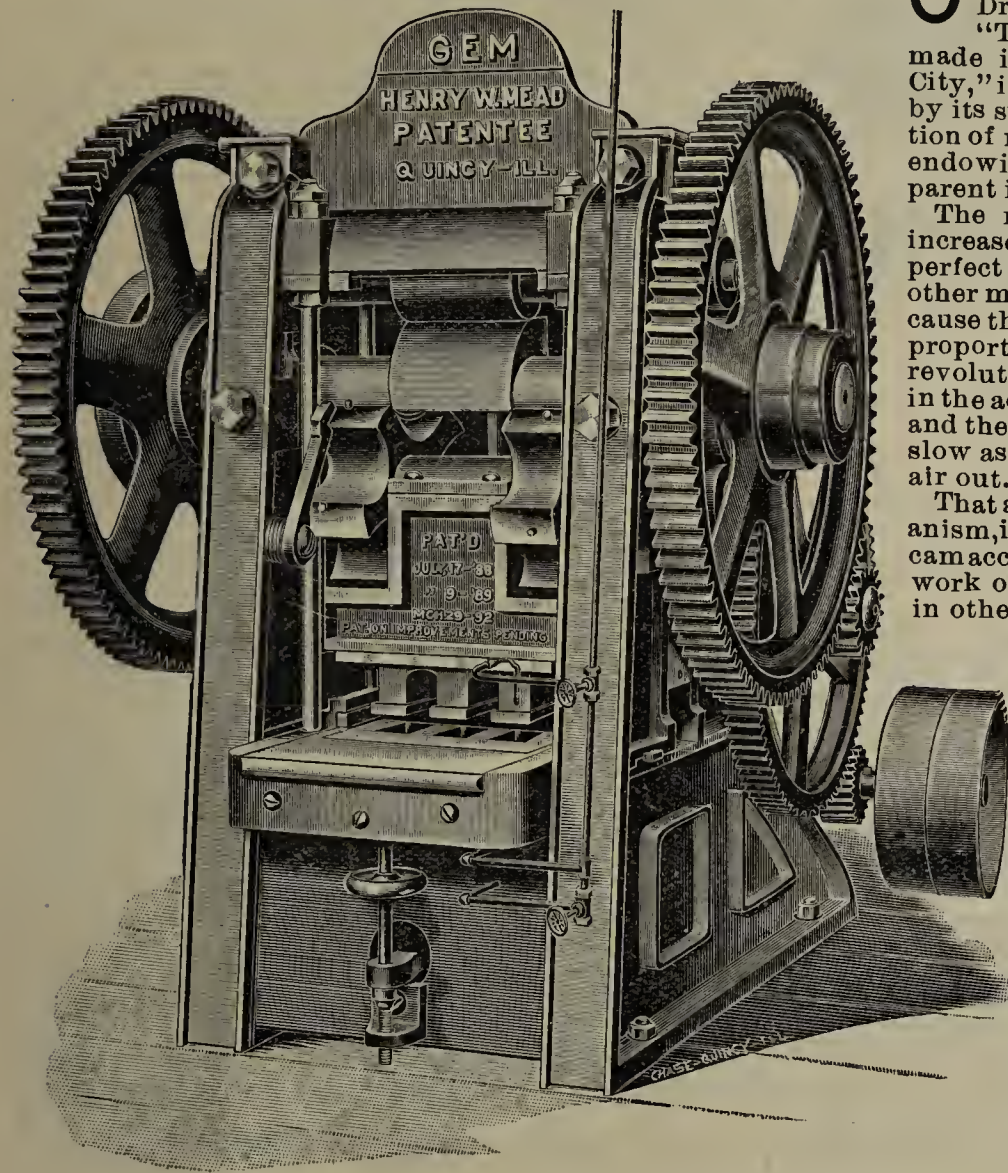
FACTORY 7 & 9 GARDEN ST. CHICAGO, ILL.



# 100,000 BRICKMAKERS

## THE EVOLUTION OF INVENTION

....Is Crudity, Complexity, and lastly, Simplicity....



To be relieved from being the slaves of the brick machine makers by a \$1,000 REDUCTION ON A 3-MOULD BRICK PRESS.

OUR new 3-mould Dry Brick Press "The Gem," made in "The Gem City," illustrates this by its simple adaptation of means to ends endowing it with apparent intelligence.

The reason of its increased output of perfect brick over other machines is because there is a larger proportion of each revolution employed in the act of pressing, and the latter part so slow as to let all the air out.

That acme of mechanism, its original star cam accomplishes the work of many parts in other machines.

The working parts are nearly all above the dust. Other machines have only steam heated plungers. "The Gem" has also steam heated moulds.

The motions of the plungers are such that moist clay can be used.

Its many advantages are covered by four new patents. It weighs 16,500 pounds of the best steel and iron.

### THE EVOLUTION OF TRADE

Also brings simplicity. We will not pay your fare to come and see it work here in our yard nor prostitute friendship or hospitality to make a sale.

The price is \$2,425 F. O. B., Quincy, Ill. Words cannot be arranged that would lessen this price.

This \$1,000 reduction is compelled by the fact that conscience (even in business) has not become quite extinct.

## The Orchardson Dry Brick Press Co.,

301 Chestnut Street,

QUINCY, ILL.

# Fire Brick

We make a special High Grade Fire Brick (all shapes) for Brick Kiln Construction.

**NOT EXCELLED**

By any. Our quotations will surprise you. We sell Fire Brick on their merits and

their use will prove **AN ECONOMY.**

GROUND CLAY IN  
.....BULK OR SACKS.

We solicit your favors.

Manufacturers of.....

High Grade Fire Brick for Every Purpose.

THE AMERICAN FIRE BRICK & CLAY CO.,

MINERAL POINT, OHIO.

MENTION THE CLAY-WORKER,

WHEN WRITING TO ADVERTISERS,

MENTION THE CLAY-WORKER

## FOR SALE, WANTED, ETC.

Advertising rates in this column 25 cents a line, or 4 cent a word, each. insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

FOR SALE. Chambers C. C. D. Brick Machine with crusher; good order. LAW & DEVENY, Chester, Pa. 11 tf d

FOR SALE VERY CHEAP. 100 Dryer Cars, 3 transfer bars, 3,000 steel pallets, nearly new, 3 turntables, steel and iron rails and all castings necessary for Sharer Dryer. Address, JOHN W. LEEDY, Harrisburg, Pa. 11 1 d

FOR SALE. 35 pieces of flanged spiral suction 5-inch pipe with returns, double gate valve complete; dry. Price \$100 00. 1 Potts Disintegrator, \$90.00; Martin machine, \$75 00; 26 feet 2 1/4 in. shafting with 3 pulleys, 42, 30 and 42, and 3 post hangers, \$50.00. Address, J. H. KENNEBREW, Columbus, Miss. 11 1 lp m

ENAMEL GLAZED BRICKS. Foreman and glaze and color maker seeks employment. Best hard once burn, white and all colors; also majolica.

TERRA COTTA AND FAIENCE (Architectural). Foreman, draughtsman and glaze and color maker, seeks employment; 20 years practical experience. J. P. NORMAN, 4155 Eaglefield St., Philadelphia, Pa. 11 2 c

WANTED. Situation by a practical man in sewer pipe, fire proof gas retorts, fire brick or paving brick. Sober, good references. Address, Box 23, Care Clay-Worker. 11 1 c

WANTED. Good second-hand Auger Brick and Tile Machine, also engine and boiler, 20 to 30 h. p. All must be in A 1 condition and a bargain. Address, giving price, WM. MCCUBBIN, Braymer, Mo. 11 1 c

FOR SALE. One soft clay steam power brick machine at Dunbar, Pa. One No. 6 brick machine with side cut board delivery table and side cut die, at New Orleans, La. One No. 6 brick machine with board delivery table and die and crusher, at Jacksonville, Fla. All for sale cheap. Write for particulars. NOLAN, MADDEN & Co., Rushville, Ind. 11 tf d

FOR SALE. Brickyard in center of thickly populated region, near town of 7,000 inhabitants. Eight acres of clay, 5 to 14 feet thick. Makes 15,000 to 20,000 finest red brick per day with improved Ohio machinery. Railroad siding, good kilns, steam dryer, cars, etc. \$7,000. Cost in 1893, \$16,700. J. S. MCALEB, Connelville, Pa. 11 1 2p.

I WANT a practical, experienced, and energetic foreman, who understands plain, upright, furnace and down draft kilns, and the manufacture of soft mud, repressed, front and ornamental, and dry pressed brick. Reply, giving full particulars. Address, Box 27, Care "Clay-Worker." 11 1 c

FOR SALE. One No. 7 Tile Machine with dies from 3 to 8 in. and endless belt cut-off table. Machine is new and in Chicago. Write for price. NOLAN, MADDEN & Co., E. D. Pugh, Receiver, Rushville, Ind. 11 tf d

SITUATION WANTED. By a man who is thoroughly posted in the manufacture of front and ornamental and common brick by either the dry clay or plastic clay methods. Have held the position as superintendent and foreman of three of the largest brick works in N. Y. State. Address, Box 24, Care Clay-Worker. 10 3 c



**FOR SALE.** "Little Wonder" brick machine, guaranteed capacity 20,000 per diem; at a big bargain. Apply to BORCHARDT & FENDIG, 94 c Brunswick Ga.

**SEND** your Chicago collections and legal business to *Saylor & Frazer*, Attorneys at Laws 171 LaSalle St., (N. Y. Life Building) Chicago, Ills., 6 12 L

**PARTIES** wishing services of expert in dry press process to superintend the erection of new or the reconstruction of old works, at a fair remuneration, please address PRESS, 8 tf d Care "Clay Worker."

**FOR SALE.** Several Miller hand presses for repressing Standard press brick. All in good working order. Address W. B. HARRIS & BRO., 10 tf d Zanesville, Ohio.

**FOR SALE.** Brick yard at St. Johnsville, N. Y. Large bank of clay; Pallet yard; fifty-horse-power engine. Sold on easy terms; nearest yard thirty miles; have lots of business; reasons for selling, poor health. Address Box 1. 11 tf d Care "Clay Worker."

**FOR SALE.** At easy terms, brick plant in a prosperous town of Iowa, located on four railroads. Good clay and good demand. Machinery in good shape. State will use 1,000,000 brick next season. Address, CEDAR, 11 tf d Care "Clay Worker."

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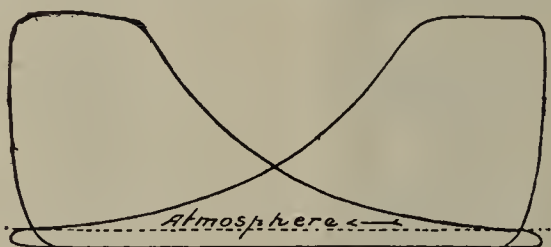
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The vacuum pump was not employed—neither did any cooling water assist to draw the exhaust steam through the pipes.

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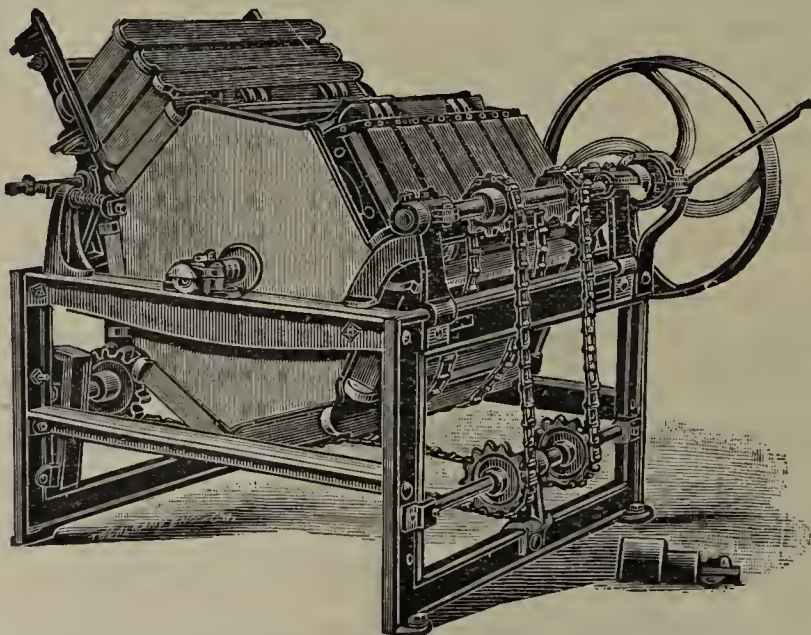
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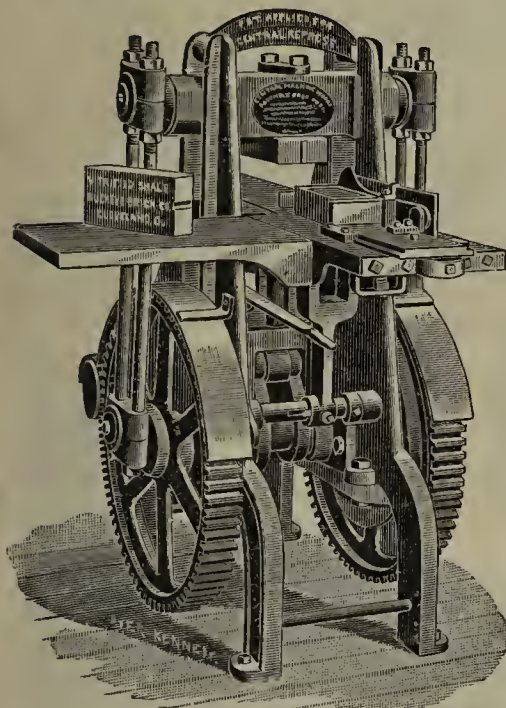
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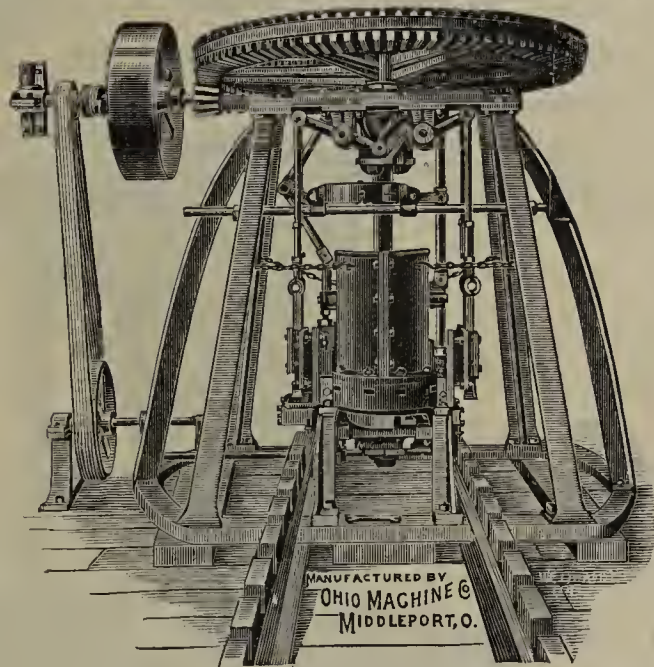
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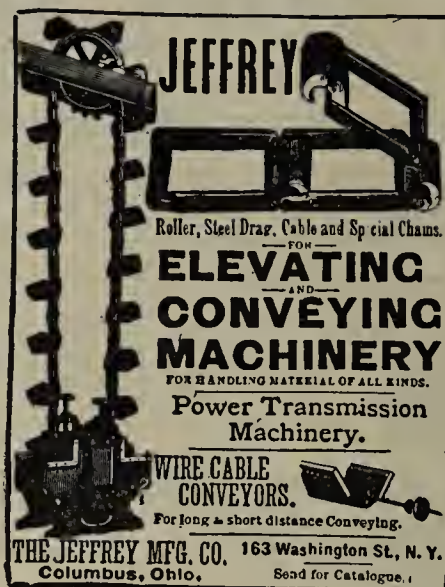
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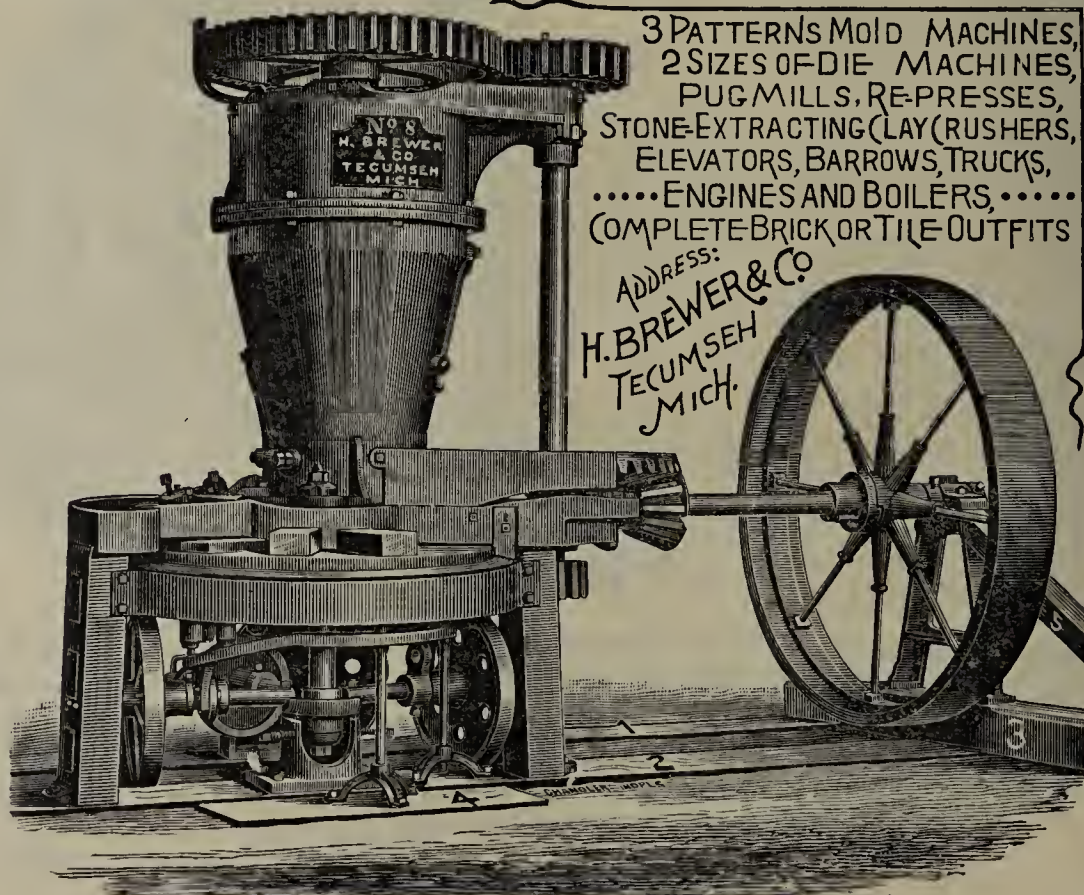
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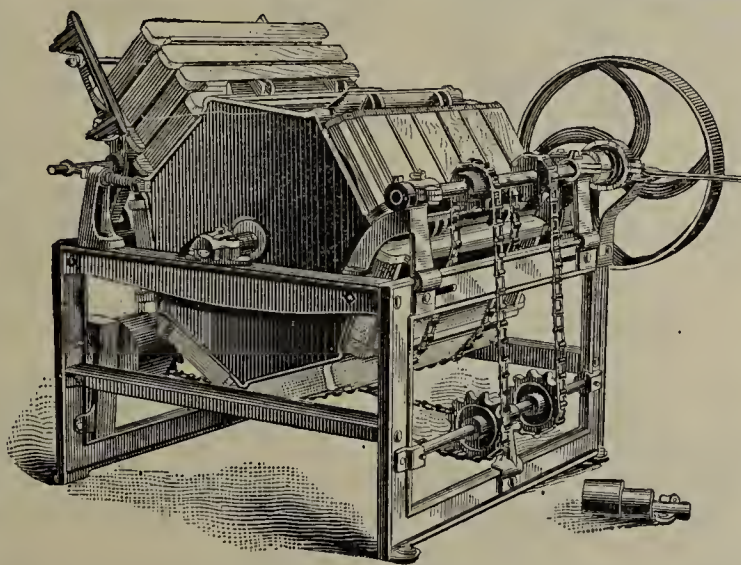
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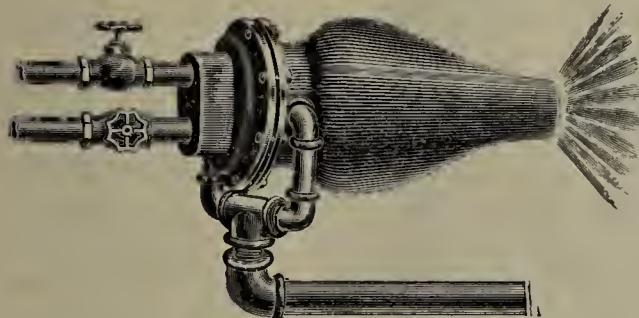
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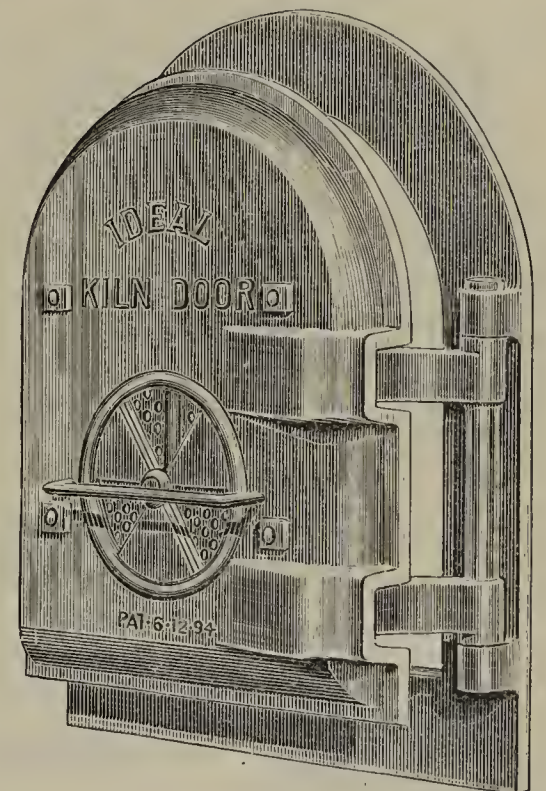
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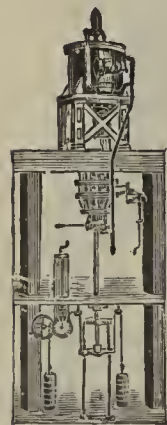
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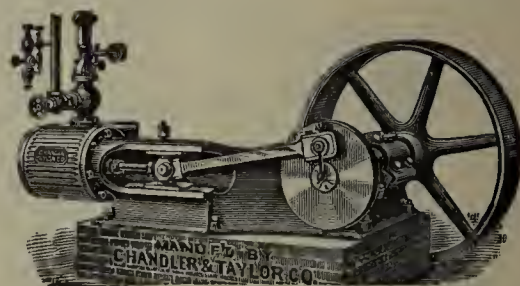
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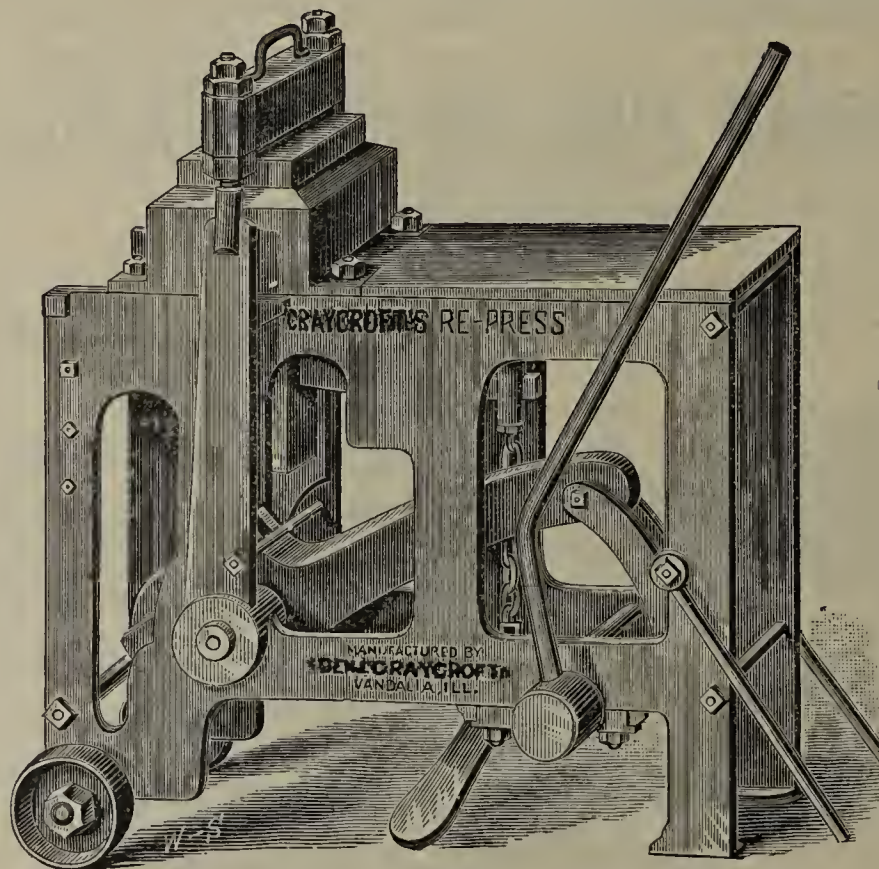
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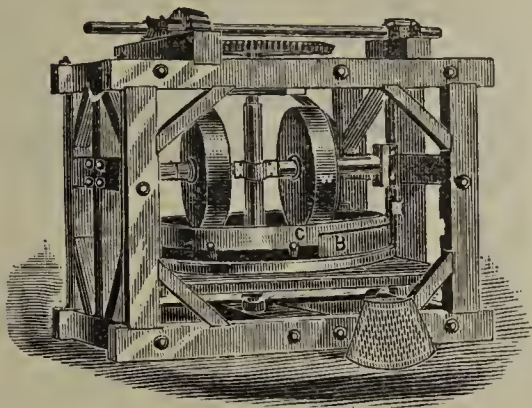
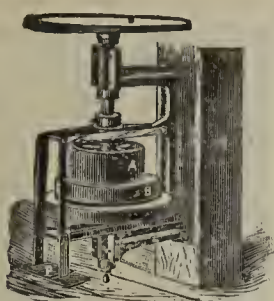
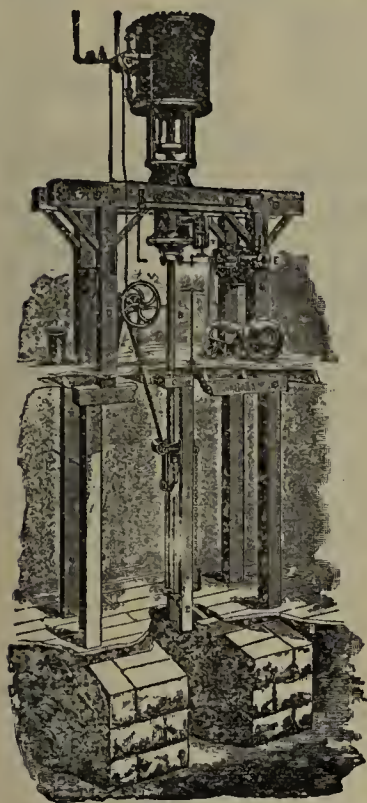


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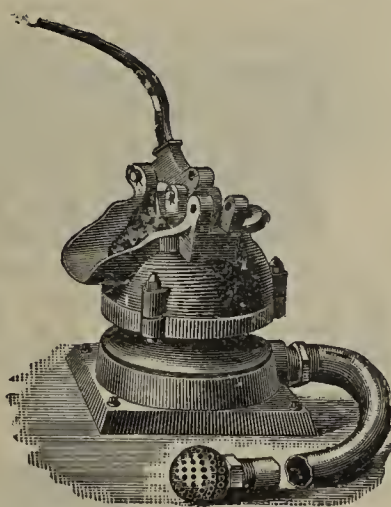
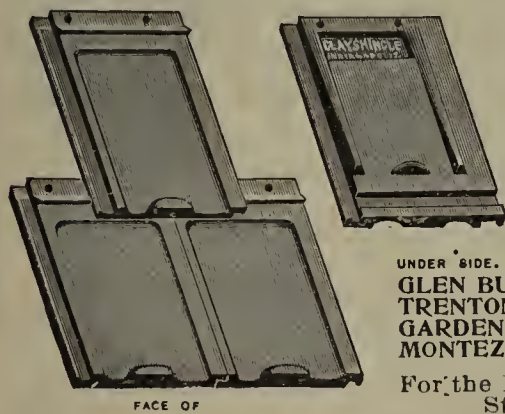
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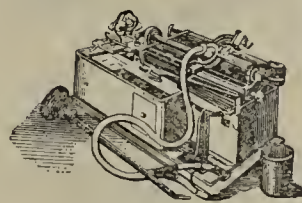
— FOR —

Kiln Building &amp; Boiler Setting.

Also Headquarters For

Cement, Lime, Plaster, Stoneware, Etc.

OFFICE &amp; FACTORY: Cor. Elm &amp; Water Sts.

**CINCINNATI, OHIO.****EDISON**IDEAL  
AMANUENSIS.

Saves time and money in your office. Affords an endless variety of entertainment in your drawing room. Let us have our representative call on you, or write for descriptive Catalogue.

**North American Phonograph Co.,**

CHICAGO.

NEW YORK.

Or, HOOSIER ELECTRIC CO., Indianapolis, Ind.

**VANDALIA LINE.**

	*Daily.	! Daily, except Sunday.
From Indianapolis	Leave.	Arrive.
St. Louis Accomodation...	! 7:30 am	! 7:40 pm
St. Louis Fast Line.....	*11:50 am	* 5:00 pm
Trains 21 and 20.....	*12:40 pm	* 2:35 pm
Terre Haute Ac'mo'tion..!	4:00 pm	!10:00 am
Evansville Express.....	*11:20 pm	* 3:35 am
St. Louis Express.....	*11:20 pm	* 4:40 am

Trains connect at Terre Haute for E. and T. H. points. Evansville sleeper on night train. Sleeping and parlor cars are run on through trains Dining cars on trains 20 and 21.

The F. F. V. Vestibule Limited via the Chesapeake & Ohio R'y, is the only Solid train with through Dining Car between New York, Philadelphia, Baltimore, Washington, Cincinnati and the West. Lighted with Electricity. Heated with Steam.

C. B. RYAN,  
H. W. FULLER, Ass't Gen'l Pass. Agent.  
Gen'l Pass. Agent, CINCINNATI, OHIO  
WASHINGTON, D. C.



## M. V. B. WAGONER'S

## SLIP CLAY { For Glazing of Pottery } WORKS

ESTABLISHED 1845.

Clay in stock in any quantity, in barrels and bulk by the carload.

Office, 20 Ten Broeck St., ALBANY, N. Y.

## Home-Seekers' Excursions South.

The Baltimore and Ohio Southwestern Railway has arranged a series of Home-Seekers' excursions to points in Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi and Louisiana at one fare for the round trip.

The dates of these excursions are as follows: November 6th and December 4th.

Tickets will be good for twenty days, with stop-over privileges in State to which tickets are sold.

A splendid opportunity to visit the Valley of Virginia and other points South.

For rates and further information apply to the nearest agent of the B. & O. S. W. Railway, or address J. Chisbro, General Passenger Agent, St. Louis, Mo.



## LOCAL TIME TABLE

In Effect Jan. 1, 1894,  
Solid Train Between  
Sandusky and Peoria  
—AND—  
INDIANAPOLIS and  
MICHIGAN CITY

Direct connections to and from all points in the United States and Canada. Trains arrive and depart from the Indianapolis Union Station as follows:

DEPART.	
No. 20 Passenger.....	7:05 a. m.
*No. 22 Passenger.....	1:20 p. m.
No. 24 Passenger.....	7:00 p. m.
ARRIVE.	
*No. 21 Passenger.....	10:30 a. m.
No. 23 Passenger.....	2:50 p. m.
No. 25 Passenger.....	6:20 p. m.

Trains not marked run daily except Sunday  
\*daily, †daily except Saturday.

No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. & A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west.

For time tables or any other general information call on any agent of Lake Erie & Western or Ft. W. C. & L. railroads, or address C. F. DALY, H. C. PARKER, General Pass Agt Traffic Manager, Indianapolis, Ind.

TAKE THE  
BIG 4  
TO  
ST. LOUIS

# VICTOR BICYCLES

OVERMAN WHEEL CO.

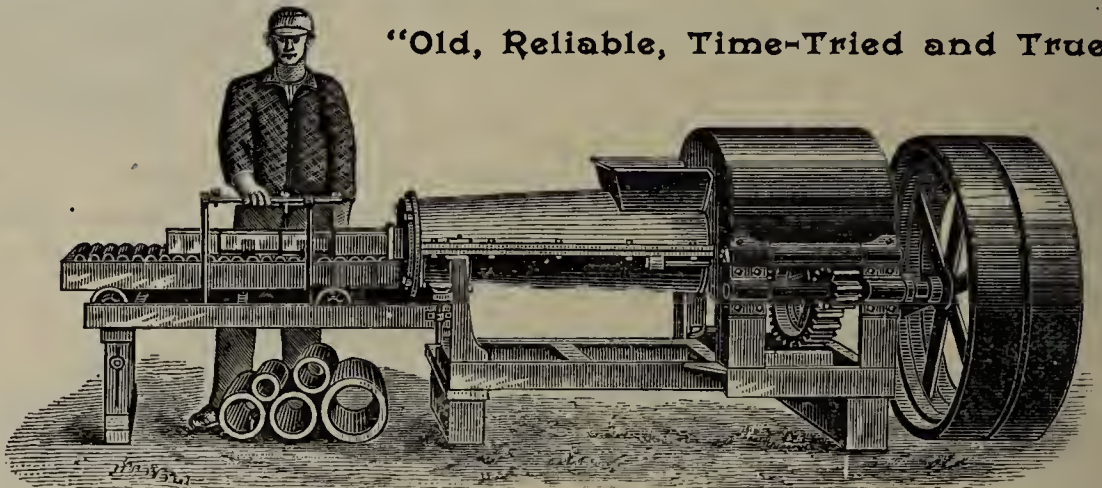
BOSTON NEW YORK PHILADELPHIA CHICAGO DETROIT DENVER  
PACIFIC COAST:  
SAN FRANCISCO LOS ANGELES PORTLAND

Victor Bicycles have more improvements and give better satisfaction than any other make.

A. NICOLI, ENGRAVER ON WOOD  
#12 S. MERIDIAN ST. TELEPHONE 655 INDIANAPOLIS IND.

## KELLS & SON'S IMPROVED BRICK AND TILE MACHINES.

"Old, Reliable, Time-Tried and True."



### P. H. Kells, the Original Inventor of the Auger Machine.

This machine works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. Patented June 22nd, 1880; and February 12, 1884. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

**We have had Twenty-seven Years' Experience in the Manufacture of Brick and Tile Machines.**

*We have made an improvement on our No. 1 Machine by which we can make tile from 3 inches up to 12 inches and on our No. 2 Machine we can make tile from 2½ up to 10 inches.*

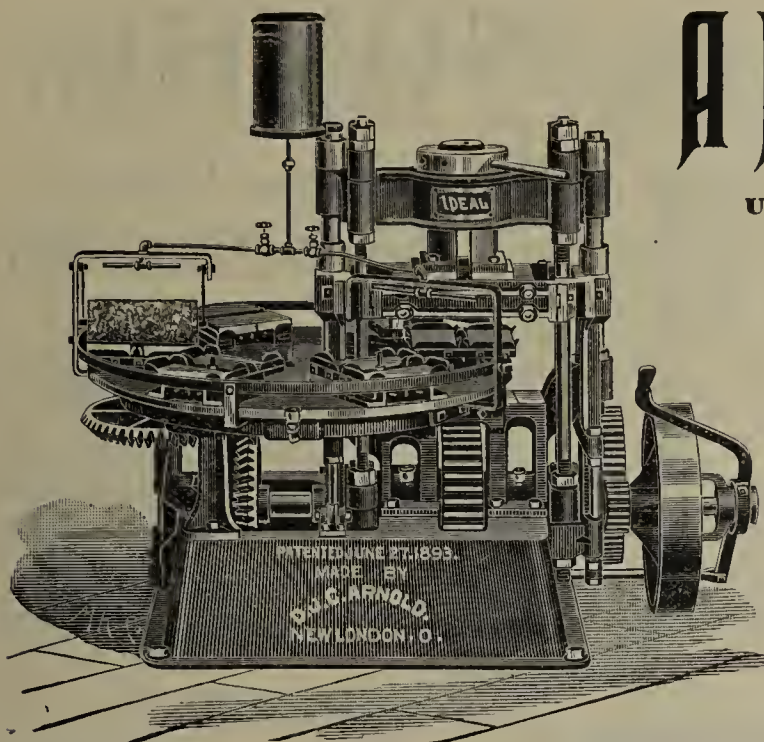
For Illustrated Circulars, Prices, Etc., address

**KELLS & SONS, Adrian, Mich.**

**H. C. BAIRD & SON,**  
PARKHILL, ONTARIO,

Sole Manufacturers for the Dominion of Canada of the above machines, also makers of the NEW QUAKER BRICK MACHINE.





# A NEW RE-PRESS

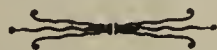
UP TO DATE. ~~~

ORIGINAL IN DESIGN.

Simple, Compact,  
Convenient to  
Operate.

New features not found  
in any other.

Find out all about it before  
you buy a repress.

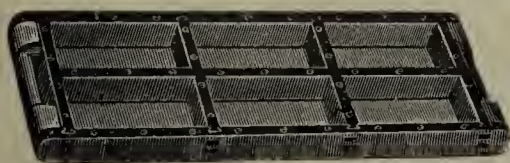


## BRICK MOULDS.

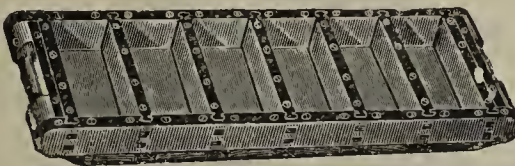
All kinds and shapes made to order. A large stock of Hand and Machine moulds of standard sizes on hand to fill orders immediately. Anything not in stock made promptly. Standard of quality, the very highest to be found anywhere. New ideas this year. Satisfaction guaranteed. Some odd sizes **cheap**. Send for list and prices, stating about sizes desired.



13 Brick Hand Mold.

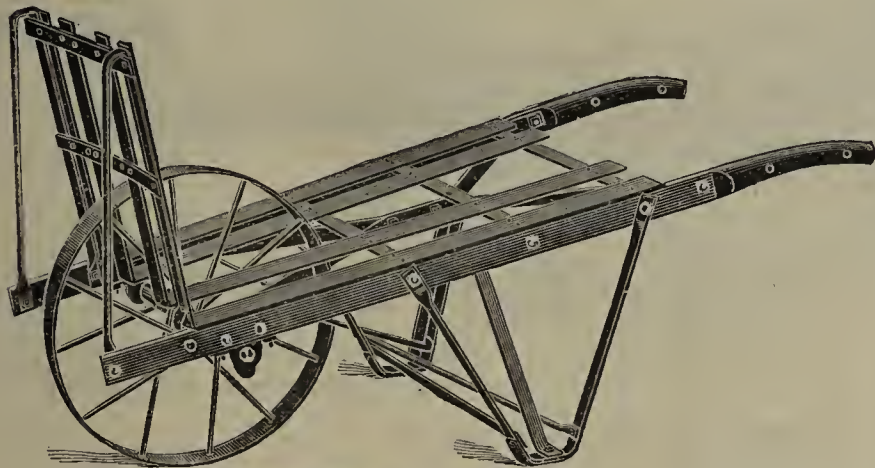


6 Brick Hand Mold



6 Brick Machine Mold.

## IRON BRICK BARROWS.

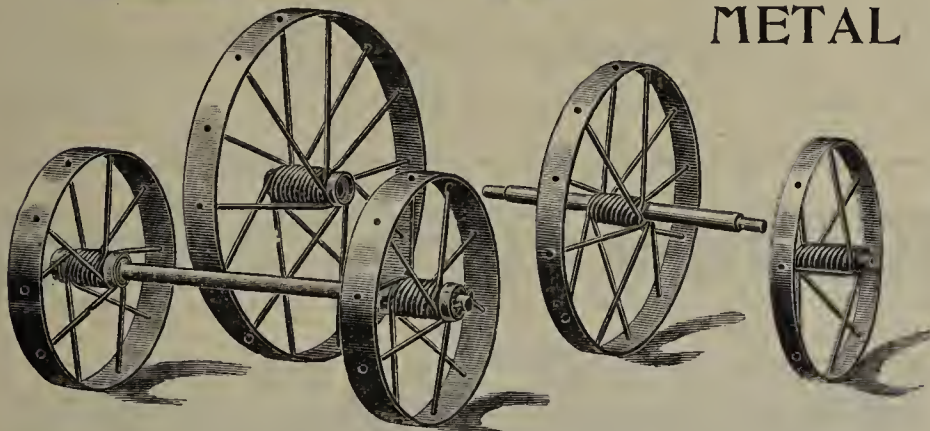


Not affected by  
the weather.

About the same  
weight of wooden  
barrows, and cost  
but little more.



## METAL WHEELS.



Specially adapted to  
use on  
Brick & Tile Yards.



STRONG

...and...

DURABLE

A Full Line of Brick and Tile Yard Supplies.

ADDRESS, **D. J. C. Arnold,**

**New London, Ohio.**

Send for Catalogue and Prices.

## 100 CITIES AND TOWNS WANTING INDUSTRIES

Is the title of a pamphlet issued by the Illinois Central R. R. Co. If you are thinking of making a change in location and are not well-informed as to the advantages of locating either in the West or South, write for a copy. If you want in a nutshell the

## SALIENT POINTS OF OVER 100 PLACES

on the line of the Illinois Central and Yazoo & Mississippi Valley Railroads, giving the population, city and county debt, death rate, assessed valuation of property, tax rate, annual shipments, raw materials, industries desired, etc., apply to the undersigned. Our line is in the shape of the figure "7" and runs from Sioux Falls, S. D., and Sioux City, Ia., to New Orleans, passing through South Dakota, Iowa, Minnesota, Wisconsin, Illinois, Indiana, Kentucky, Tennessee, Mississippi and Louisiana, and has

## NEARLY EVERY KIND OF RAW MATERIAL

used in manufacturing, together with populous sections which are large consumers of the manufactured product. To sound industries which will bear investigation, substantial inducements will be given by many of our places, and they will be welcomed heartily by the different sections traversed by the Illinois Central and Yazoo & Mississippi Valley Railroads. For all information on the subject, address **GEO. C. POWER**, Industrial Commissioner I. C. R. R. Central Station, Chicago, Ill. 11 5 T.



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Between  
INDIANAPOLIS  
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The Favorite and Best Line

With DINING CAR between

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Best Line to Cincinnati, Dayton, Lima  
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Through Cars Line between DECATUR  
SPRINGFIELD, QUINCY, KEOKUK and CINCINNATI.

Pullman Sleepers on Night Trains and Palace  
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Direct Connections without Transfer

IN **CINCINNATI**, FOR

Points in Kentucky, Tennessee, Alabama  
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Cincinnati, Ohio.



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## THE SHORT LINE TO CHICAGO

Milwaukee, St. Paul, Minneapolis,  
Duluth, Omaha, Denver,  
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AND ALL POINTS IN

### WEST AND NORTHWEST.

The only line running Solid Pullman Perfected Safety Vestibuled Trains.

The only line running Dining Cars between Indianapolis and Chicago.

Magnificent Pullman Sleeping and Parlor Cars  
For rates, maps, time tables, etc., apply to

**I. D. BALDWIN, D. P. A.,**

No. 2 West Washington St., Indianapolis, Ind.

**FRANK J. REED, G. P. A.,** Chicago.

# NEW ..AND.. NOVEL,

NO WASTE OF FUEL, LABOR  
OR TIME.

ALL PERFECT GOODS.

THOROUGH REGULATION OF  
HEAT.

OUTPUT UNIFORM AS TO TIME  
AND QUALITY.

The Best Kiln For Vitrifying  
Paving Brick and Glazing....



## The Columbian Pottery and Brick Kiln.

The fires remain in one division ONLY  
and are continuous.

Goods move on a ROTATING FLOOR  
to and from the fires.

Radiating heat and spare heat are used  
for drying and  
heating air for  
combustion.

A perfect and  
reliable factory  
Winter and Sum-  
mer.

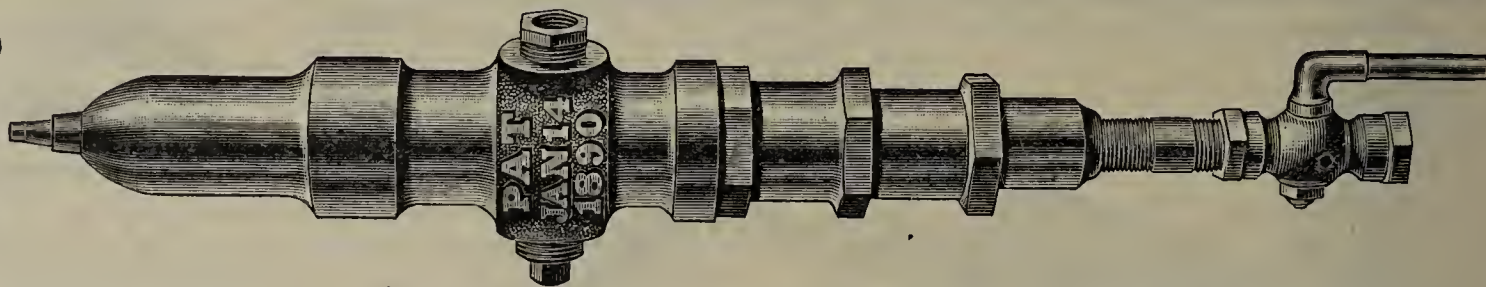
Kiln and dryer  
combined.

Full informa-  
tion on applica-  
tion.

**COLUMBIAN POTTERY & BRICK KILN CO.,**

Dexter B'd'g., 84 Adams St.,  
**CHICAGO, ILL.**

# GRAVES'



## PATENT (ADJUSTABLE) OIL BURNER

Office Waters Pierce Oil Company.

HYDRAULIC PRESS BRICK CO.,  
CITY.

ST. LOUIS, July 21st, 1894.

GENTLEMEN:—Thinking you would like to know, we advise you that the Graves Patent Fuel Oil Burner furnished us by you, effected a saving of about 16 per cent. in consumption of fuel oil over other burners we have been using and experimenting with. We will take pleasure in saying a good word for it whenever opportunity permits.

Yours truly, (Signed) A. M. FINLAY, Vice-President.

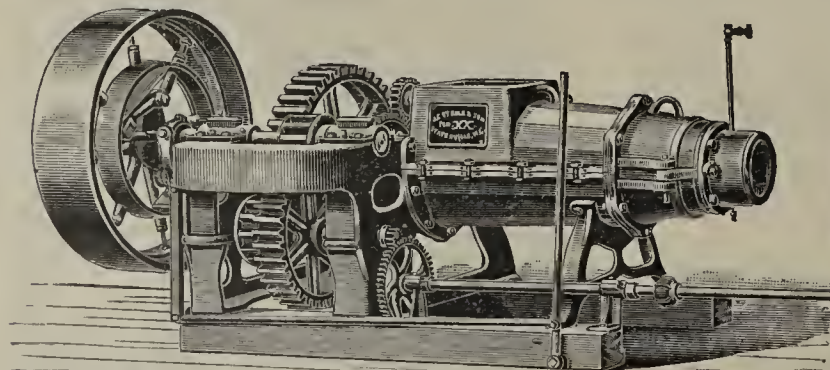
Used by Hydraulic Press Brick Companies at Findlay, O.,  
Chicago, Ill., Toledo, Ohio, Waters Pierce Oil Co., (Standard),  
St. Louis, Mo., and others.

For particulars write

**HYDRAULIC PRESS BRICK CO.,**

The Best and Most Economical Burner in the Market.

ST. LOUIS, MO.



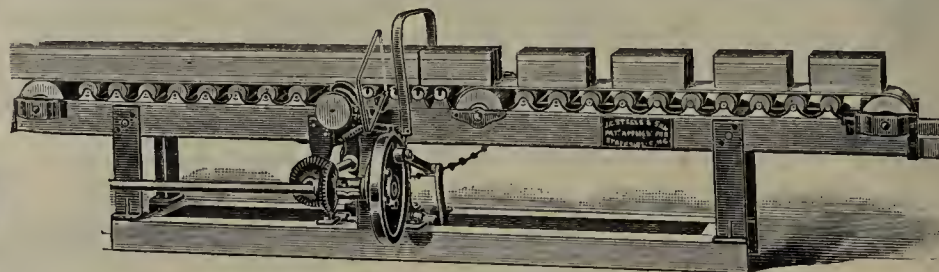
The New South XX.

[Mention the CLAY-WORKER.]

## THE NEW SOUTH

and Frogs, and our Improved

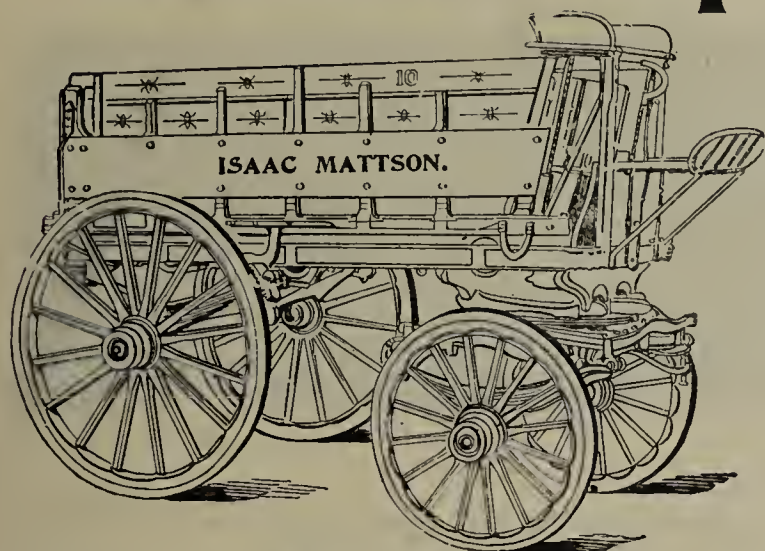
Write to us for catalogue and prices of our New South X and New South XX with or without our novel Automatic Cutting Table, and Steam Dies, also Winding Drums, Clay Cars, Crushers, Switch-Brick Truck or other Brickyard Supplies, Etc.



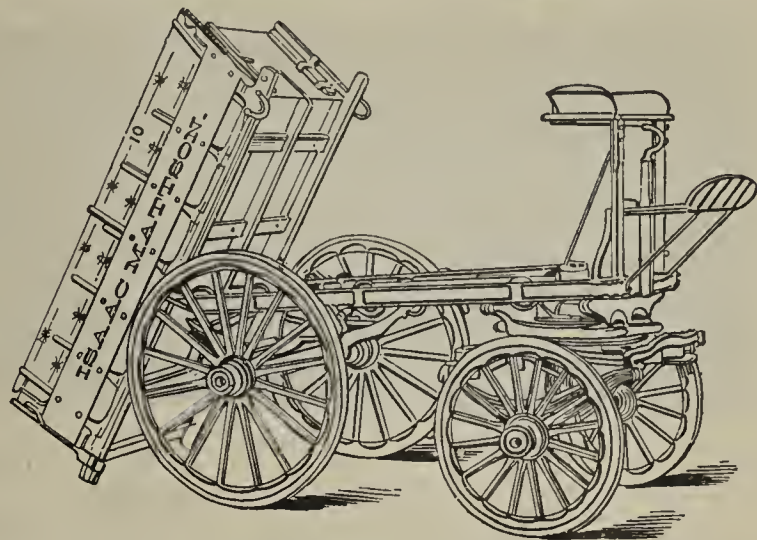
**J. C. STEELE & SON, Statesville, N. C.**



# Mattson's Improved Dump Wagons



FOR  
BRICK,  
STONE,  
LIME,  
SAND,  
Etc., Etc.



WEIGHT about 2,500 pounds, light running, strong and durable, consequently the best wagon made for brick. Made to carry from 1,000 to 2,000 brick and can be handled as easy as a two-wheel dump cart. The body runs back on rollers. Also manufacture a line of carts, wheelbarrows and brick yard supplies. Send for price list, etc.

ISAAC MATTSON, Wagon Builder, Northeast Corner Gray's Ferry Road and 30th St., Philadelphia, Pa.

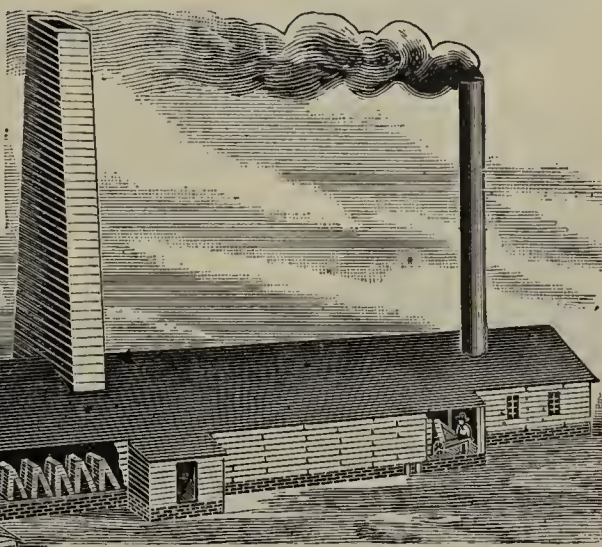
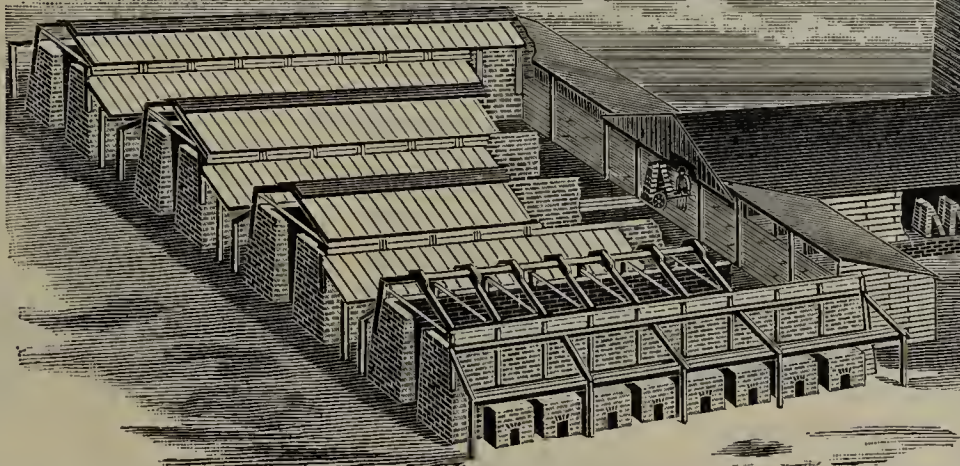
## The Mock Portable Rack and Pallet System FOR HANDLING BRICKS.

The Most Expeditious, the Safest and Easiest Method of Handling Brick from Machine to Kiln.

IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.

What Users say of the  
MOCK SYSTEM.

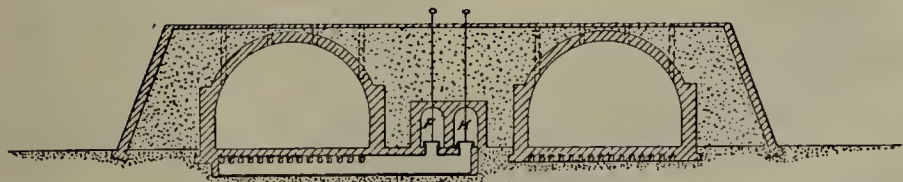
Mr. J. C. Adams, Indianapolis, Ex-Pres. of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for four seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."



WE are prepared to furnish complete plans and specifications for the erection of brick works of any desired capacity and solicit correspondence from those desiring further information relative to our system of handling brick.

MOCK BROS., Muncie, Ind.

## YOUNGREN'S IMPROVED CONTINUOUS KILN.



Marks a Great Advance in the Art of Continuous Burning

Accuracy of results reduced to a certainty.

Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.

Under ordinary circumstances the kiln pays for itself in six months.

Do not decide on kilns before making a thorough investigation.

Choose a kiln that is fully guaranteed as to results.

Read what some of the users say about Youngren's Continuous Kiln and be convinced.

PETERSEN BRICK COMPANY,

MANUFACTURERS OF PRESSED, ORNAMENTAL AND COMMON BRICK.

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR:—In reply to your inquiry as to the working of our Continuous Kiln we take great pleasure in saying that the same is a success in every respect. As you well know our people were somewhat doubtful as to ability of your kiln to burn first quality of pressed and ornamental brick, but we have now demonstrated to their satisfaction, that the same can turn out from 35 to 40 per cent. of the finest quality of pressed and ornamental brick the color of which is even superior to those we formerly burnt in the E—downdraft kiln. As to common brick will say that every brick comes out hard and of good color. Wishing you success, we remain,

Yours truly

SAN JOSE, Cal., Aug. 25, 1893.

PETERSEN BRICK CO.,

Per H. M. STAMMER, Superintendent.

For particulars address

P. L. YOUNGREN, Oakland, Cal.

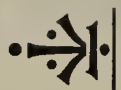


# The BOSTON BRICK ASHLAR

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

ROCK FACE.

TOOLED FACE.



FISKE, HOMES & CO., Boston.

NORTHWESTERN TERRA COTTA CO., Chicago.

LICENCEES.



**F. H. C. MEY** CHAIN BELTING  
ENGINEERING WORKS,

APPROVED APPLIANCES FOR

Elevating, Conveying & Transmission of Power

64 to 68 Columbia St., BUFFALO, N. Y.

Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed

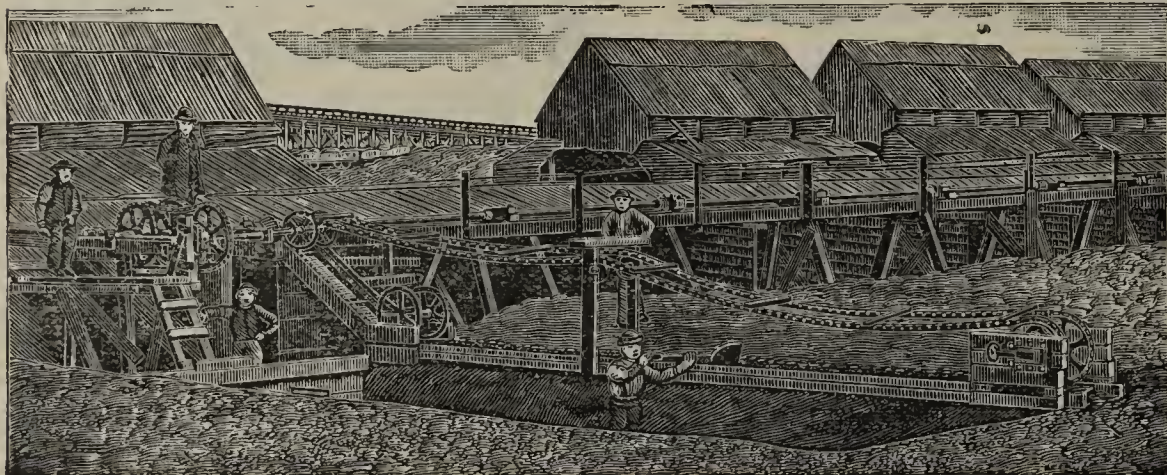
at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

**Make Many More  
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

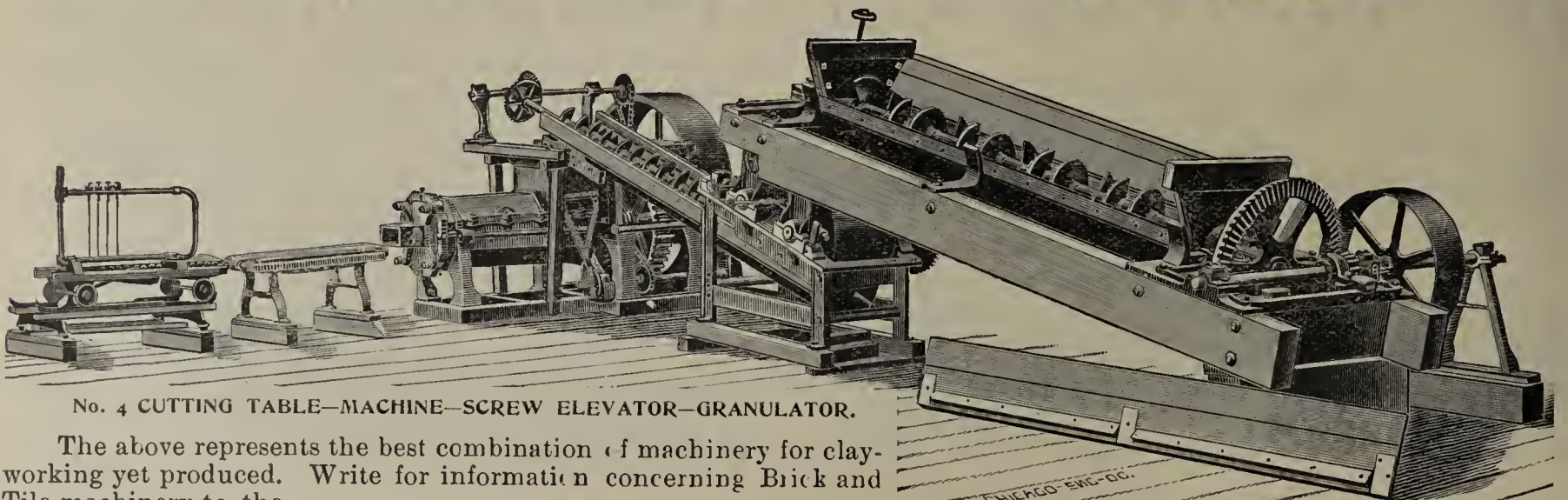
SEND FOR REVISED  
PRICE LIST.



Mey Patent Clay Elevator.



# ADRIAN BRICK AND TILE MACHINE CO.



No. 4 CUTTING TABLE—MACHINE—SCREW ELEVATOR—GRANULATOR.

The above represents the best combination of machinery for clay-working yet produced. Write for information concerning Brick and Tile machinery to the

ADRIAN BRICK AND TILE MACHINE CO., Adrian, Michigan.



# ARE YOU IN BUSINESS FOR PROFIT OR GLORY

If for profit buy STEEL CARS for economy's sake.

If for glory buy STEEL CARS for appearance' sake.

**BETTER AND CHEAPER THAN CAST IRON.**

~ MANUFACTURED ONLY BY ~

**The Ball-Bearing Car Wheel & Mfg. Co.,**

[Mention the CLAY-WORKER.]

 961-981 Hamilton St., CLEVELAND, OHIO.

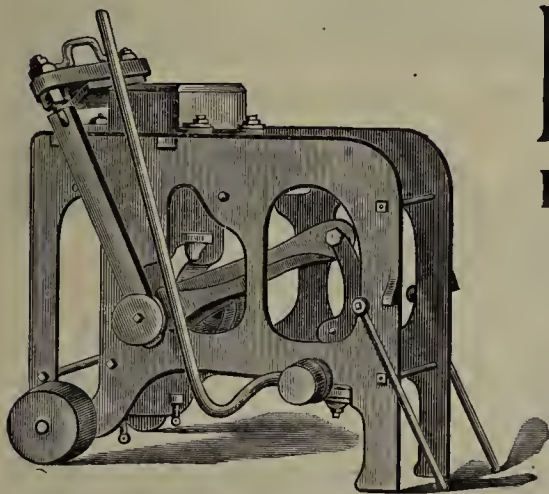
**Brick Machines,**  
**Pug Mills, . . .**  
**Disintegrators,**

...OF THE **L**ATEST  
TYPE. 

COMPLETE OUTFITS A SPECIALTY.

GET OUR PRICES AND EXAMINE OUR RECORD.

**JONATHAN CREAGER'S SONS, Cincinnati, Ohio.**



RED BRICK PRESS.

**GEORGE CARNELL,**

Nos. 1,819, 1,821 and 1,823 Germantown  
Avenue and Fifth Street,  
PHILADELPHIA, - - - PENN.

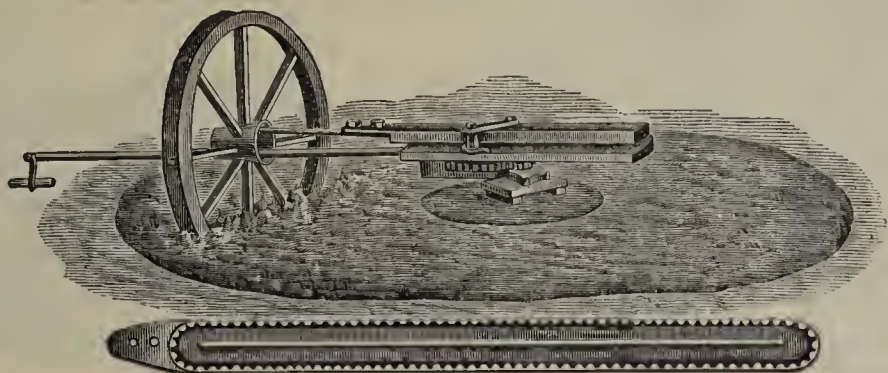
Send for Circular and Price-List.

**PHILADELPHIA BRICK MACHINE WORKS**

Fire and Red Brick Presses all sizes.

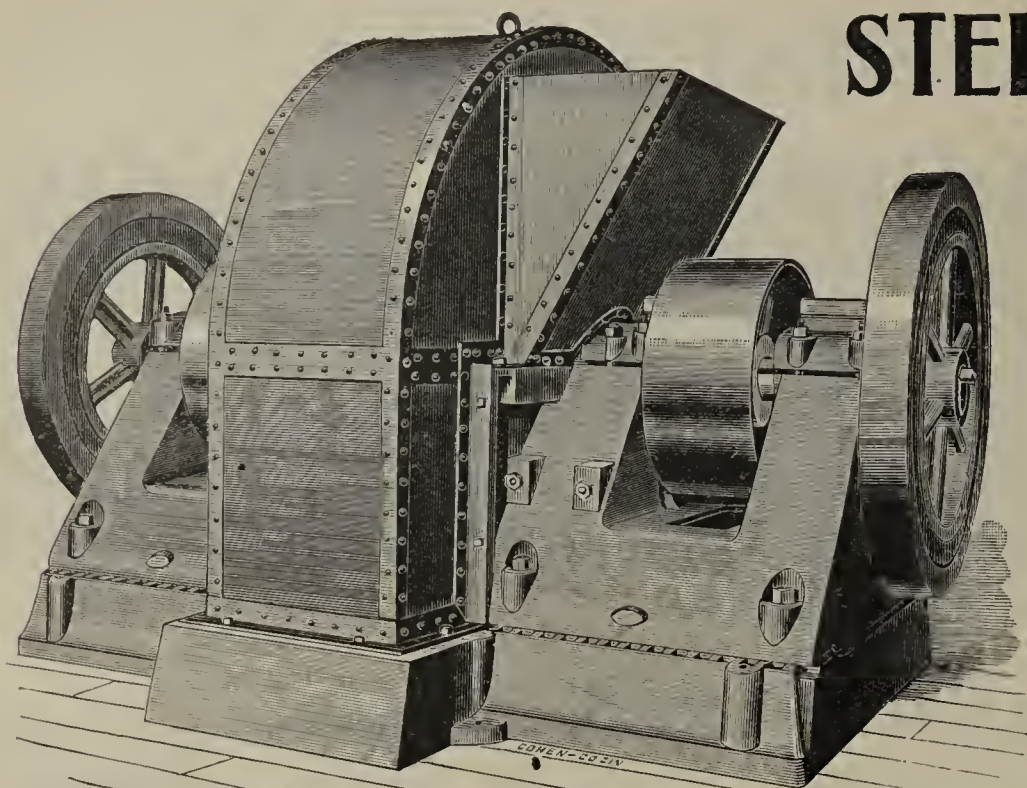
....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.





## STEDMAN'S IMPROVED CLAY DISINTEGRATOR

For Thoroughly  
Pulverizing Clay in a  
Dry, Semi-Dry or  
Damp Condition

Its construction is such that it will not clog  
in pulverizing damp clay, and the journal bear-  
ings are constructed dust proof.

Write for catalogue, giving full description,  
references and testimonials. Address,

Stedman's Foundry & Machine Works,  
Aurora, Ind.

## THE STANDARD BRICK MACHINES

—MANUFACTURED BY—

# A. M. & W. H. WILES,

Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



## BRICK

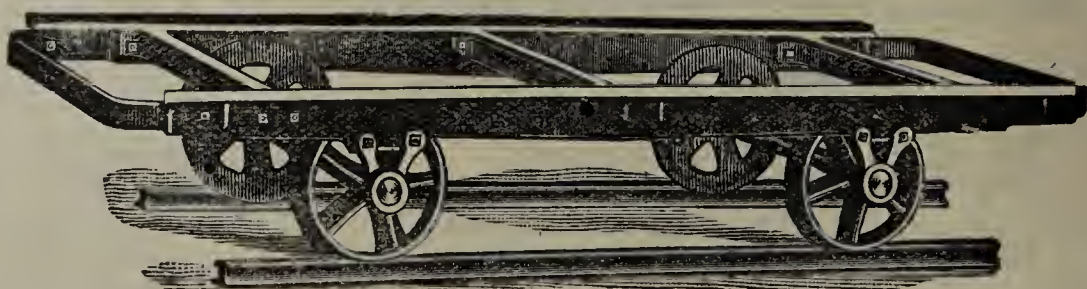
48 Styles.

Also  
Turn Tables,  
Transfers  
Kiln Doors,  
Grate Bars,  
T Rails and  
Iron Pipe.



## ARS

Send For Price List.



STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG. CO.,  
Cleveland, O.



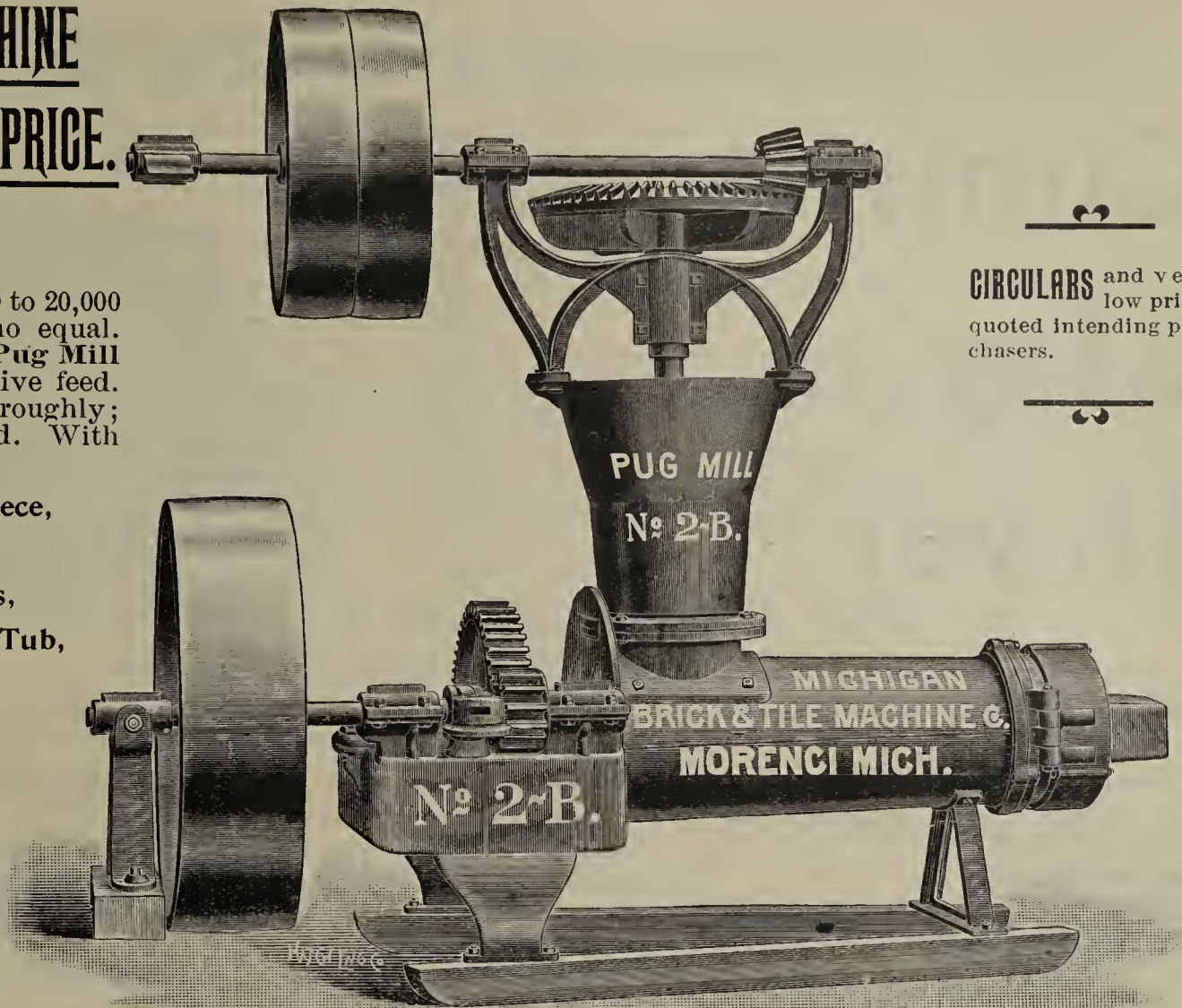
## A SMALL SIZED MACHINE AT A VERY LOW PRICE.

FOR a daily output of 12,000 to 20,000 first class brick it has no equal. For tile it is superior. With Pug Mill as shown in cut it has a positive feed. Mixes and pugs the clay thoroughly; making the output unexcelled. With

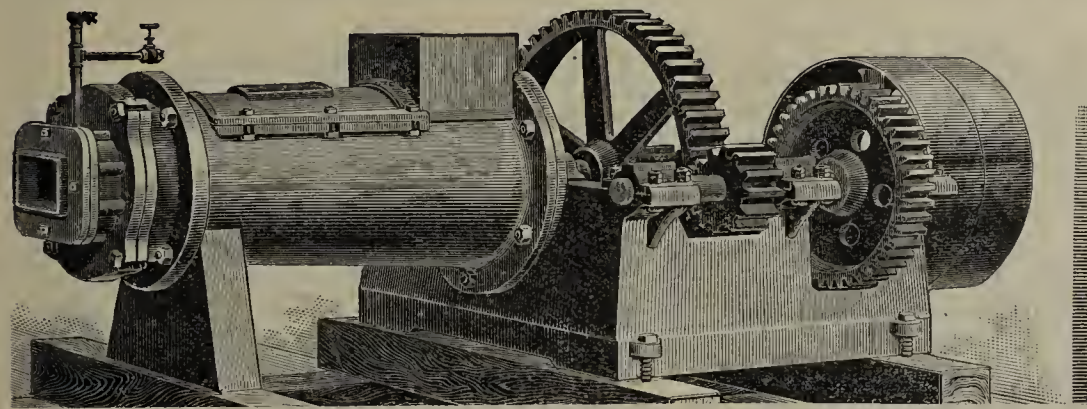
Safety Hinged Nose Piece,  
Steel Shafts,  
Extra Long Bearings,  
Solid Main Frame and Tub,

And many other important improvements; it is a very desirable machine to have. Address the Manufacturers,

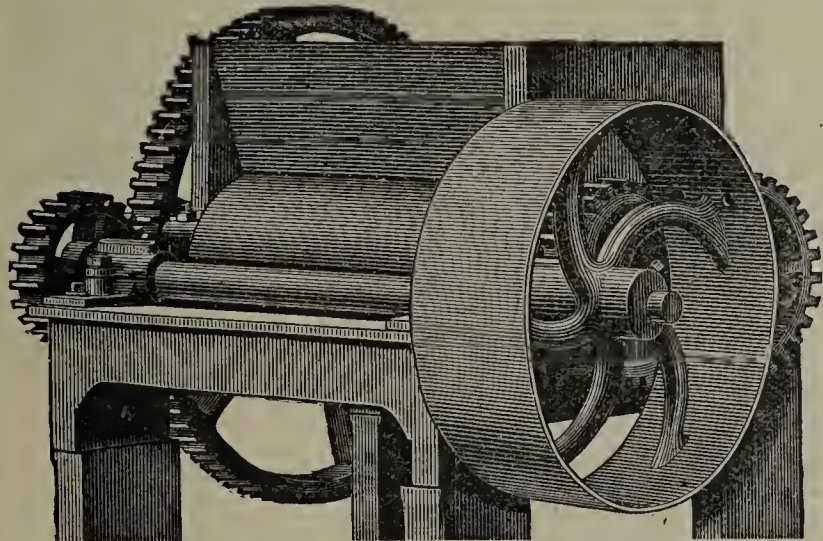
MICHIGAN BRICK AND  
TILE MACHINE CO.,  
Morenci, Mich.



CIRCULARS and very low prices quoted intending purchasers.



WE have a number of 5, 6 and 7 Machines, with tile or brick dies, that we are going to sell at once. Write for prices and particulars.



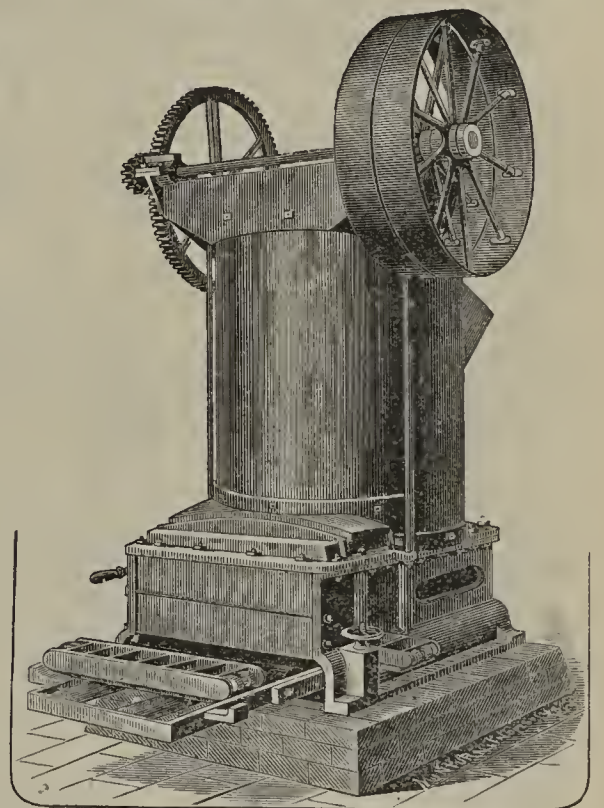
SEND for prices on the best Crusher and Disintegrator made.

Nolan,  
Madden  
& Co.,

E. D. Pugh,  
Receiver,

Rushville,  
Ind.

## BRICK MACHINERY.



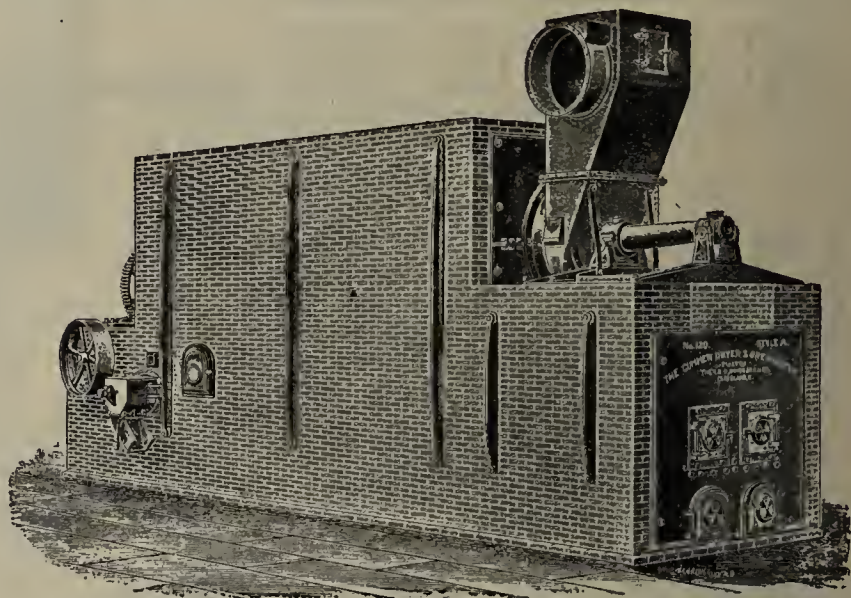
WE have six of these Machines for horse-power and six for steam-power. These we will sell regardless of cost.

Write for prices and particulars.



LABOR DISPENSED WITH; VERY LITTLE FUEL USED; NO BREAK DOWNS; SUPERIOR PRODUCT OBTAINED: CLAY DRIED SUMMER AND WINTER, RAIN OR SHINE, ARE A FEW OF THE SPECIAL ADVANTAGES OBTAINED BY USING THE

# Cummer Clay Dryer



## SIX SIZES MADE.

Prepares from 3 to 20 tons of clay per hour for dry pan or pulverizer. The clay is handled mechanically (without men) from bank to press or other machines.

### NEW METHODS.

#### DRIES

Phosphate, Sand, Earths, Paint Stocks, Peat, Coal, Salt, Marl and Clay for Cement making, Chalk, Cereals of all kinds, Tankage, Night Soils, Animal Manure, etc., etc.

#### CALCINING AND ROASTING MACHINERY

for Gypsum, Ores of all kinds, Phosphate, Paint Stocks, etc., etc.

## THE F. D. CUMMER & SON CO.,

613-616 Arcade,

CLEVELAND, OHIO, U. S. A.

SEND FOR  
OUR NEW CATALOGUE.

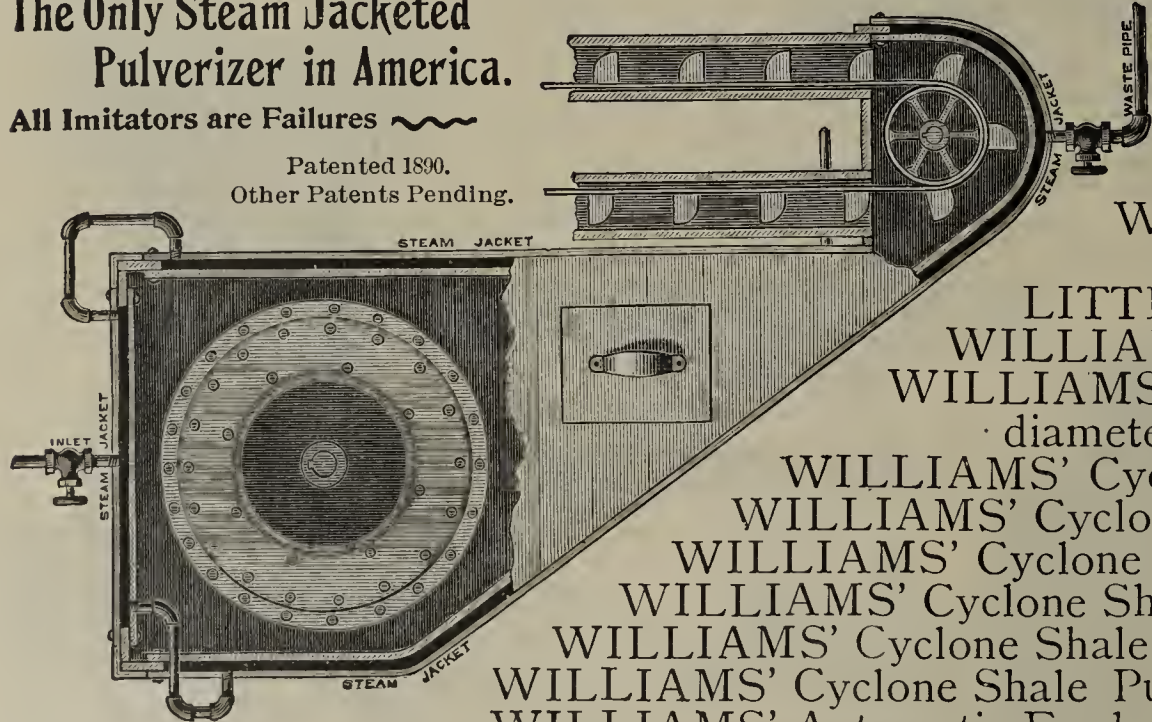
CHARLES ERITH & CO., No. 70 Grace Church St., London, E. C.

# WILLIAMS' CLAYWORKING MACHINERY.

The Only Steam Jacketed  
Pulverizer in America.

All Imitators are Failures

Patented 1890.  
Other Patents Pending.



WILLIAMS' Clay Elevators.  
WILLIAMS' Triple Roll Clay  
Crushers.

WILLIAMS' Brick Trucks,  
Three sizes.

WILLIAMS' Revolving Clay  
Screen.

LITTLE'S Steam Jacket for Pulverizers

WILLIAMS' Clutch Pulleys and Couplings.

WILLIAMS' Cyclone Clay Pulverizer 30 in.  
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.

WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.

WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.

WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.

WILLIAMS' & LITTLE'S Patent Steam Clay Screen.

WILLIAMS' Pony Pulverizer for Testing Clay and Shale.

WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Clay Cultivators.

WILLIAMS' Clay Bunchers.

WILLIAMS' Brick Barrows.

WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO.,** 2705 and 2707 N. Broadway. **ST. LOUIS, MO.**





# "Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago.

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our clats of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,  
WM. H. ASHWELL.

## MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }  
120 Park Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

**Thompson's Water-Proof Belt Dressing for**  
**Leather, Rubber and Canvas Belting.**

**No user of Belting can afford to be without it.**



the End.

MANUFACTURERS OF  
IMPROVED

# CLAY WORKING MACHINERY

OF EVERY DESCRIPTION

## TAPLIN RICE & CO.

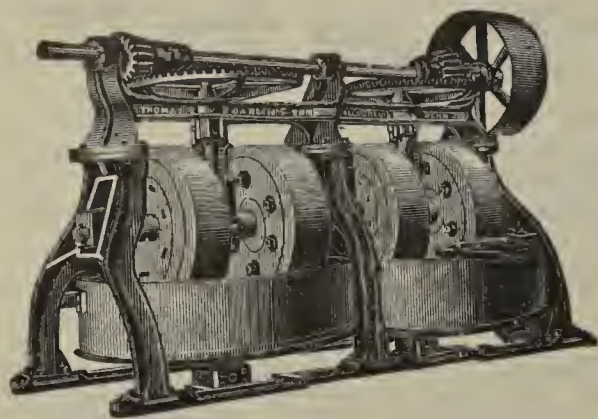
CLAY MILLS,  
STEAM SEWER PIPE PRESS,  
DRY & WET PANS, DIES, CLAY BLOCKERS,  
POTTERS' WHEELS AND  
MACHINERY OF ALL KINDS.

### AKRON, OHIO, U.S.A.

PROMPT ATTENTION  
& DISPATCH GIVEN  
TO ORDERS

SEND FOR  
CATALOGUE





OUR SPECIALTY.

# GRINDING AND MIXING PANS

Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,  
 ENGINES AND BOILERS, HOISTING ENGINES,  
 DERRICKS AND DUMP CARS.

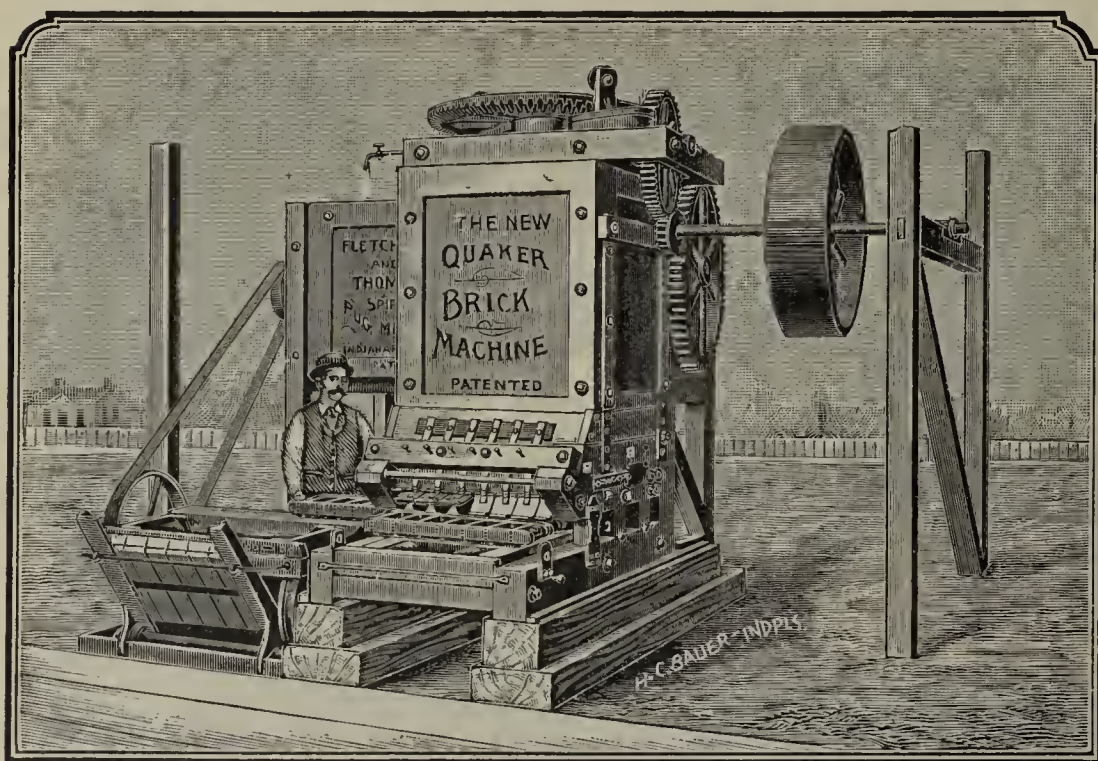
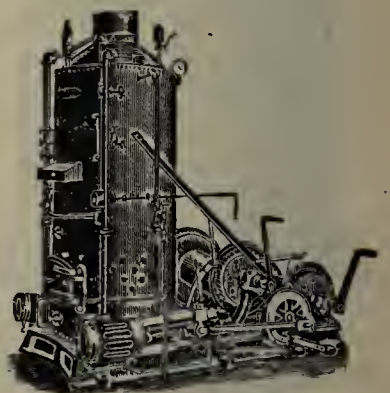


Thomas Carlin's Sons,  
 ALLEGHENY, PA.

One 1½ yard Marion Steam Shovel.  
 One 1½ yard Bucyrus " "  
 One ¾ yd. Little Giant " "

IN STOCK:

Twenty-one Dump Cars.  
 Seven Standard and Narrow Gauge  
 Locomotives.



EXTRA HEAVY, COMBINED OUTFIT CAPACITY 40,000 TO 50,000 PER DAY.

LATEST IMPROVED

## Brick Machinery and... Brickmakers' Supplies.

SPECIALTIES:

The NEW QUAKER and MONARCH

Tempered Mud Machines and

The NEW DAYTONIAN

Stiff Mud Brick and Tile Machines.

Paving Brick, Fire Brick, Building Brick,  
 Repress Machines, Disintegrators, Pug Mills, Mold  
 Sanding Machines, Molds, Barrows, Trucks, Engines,  
 Boilers, Shafting, Pulleys, Belting, etc., Dump Brick  
 Wagons, Clay Carts, Kiln Doors, Grate Bars, Steam  
 Pumps.

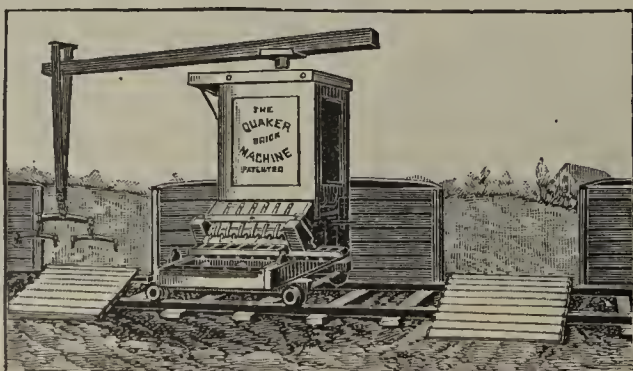
THE NEW MODEL

### QUAKER

HORSE POWER.

The best machine for  
 the man of moderate  
 means ever used.

Capacity 15,000 to  
 20,000 per day.



WE CONTRACT TO ERECT AND EQUIP

PLANTS COMPLETE IN EVERY DETAIL.

Send for Illustrated Catalogue and Special prices before placing  
 your order, as we can save you money.

### S. K. FLETCHER, General Agent,

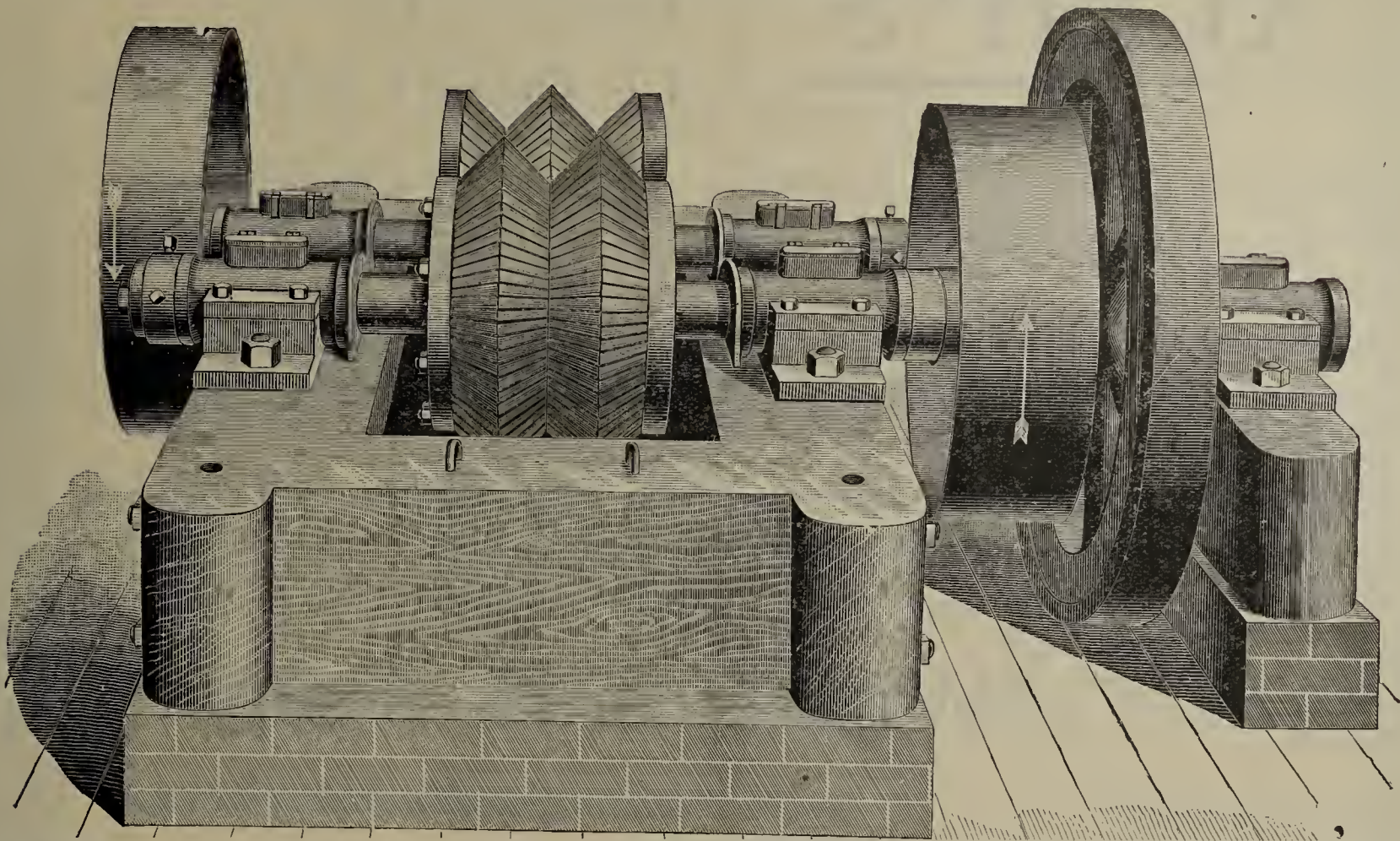
Successor to FLETCHER &amp; THOMAS,

INDIANAPOLIS, IND.



# NEWELL IMPROVED CLAY PULVERIZER

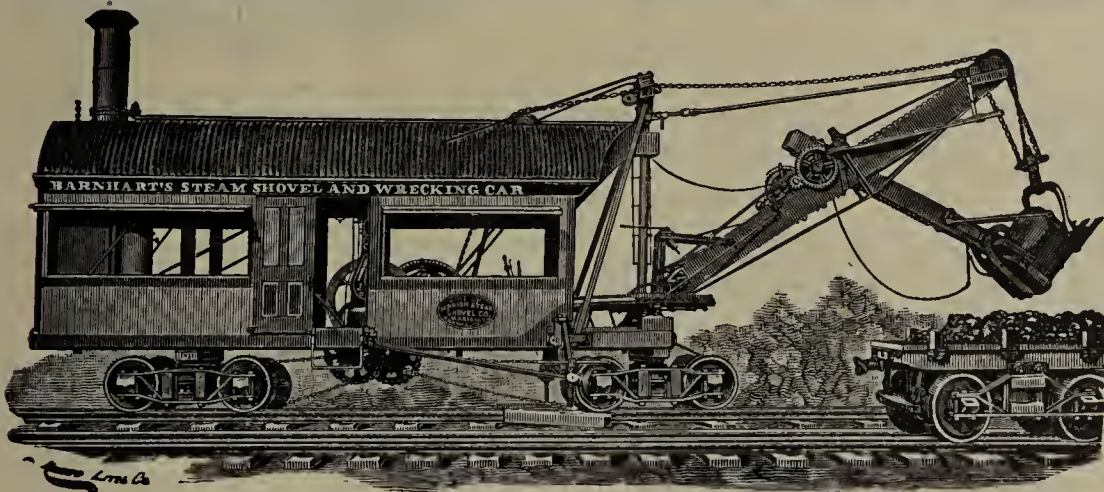
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

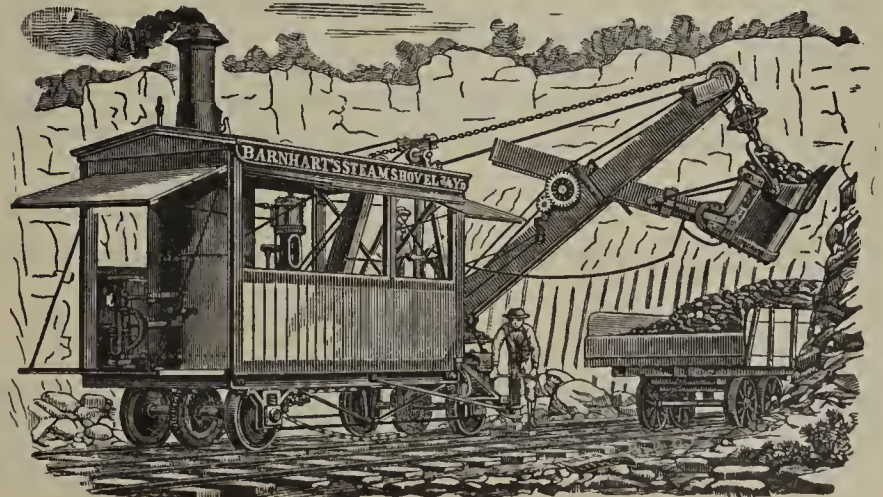
NEWELL UNIVERSAL MILL CO., Room 710, Haremyer Building, New York, U.S.A.  
26 Cortland and 21 Dey Streets,

## STEAM SHOVELS FOR BRICKYARDS.



STYLE A—1½ YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. We also have men elsewhere of different capacities. The accompanying cut represents our style "A" (1½ yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (¾ yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to



STYLE C—¾ YD

**The Marion Steam Shovel Co.,**  
603 West Center Street,  
**MARION. . . . OHIO.**



# ALSIP'S



## LATEST IMPROVED DOWN AND UP DRAFT KILN

It Has Been Thoroughly Tested, and Every Kiln is Giving Perfect Satisfaction.



Why take any chances when you can buy a kiln that will burn the ware uniform from top to bottom, from side to side, and from end to end? This is just what the Alsip Kiln does.

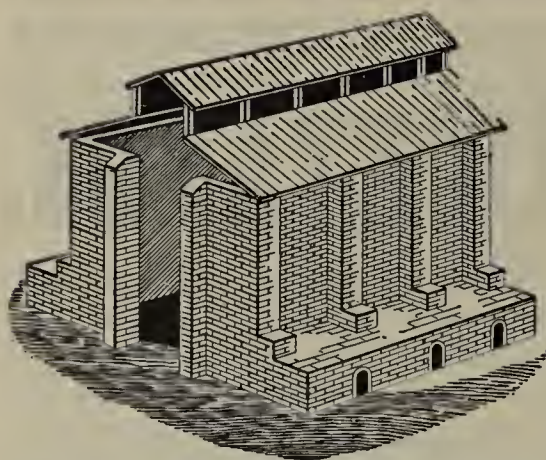
It will save **time, labor and money**, if you will thoroughly investigate our Latest Improved Kiln before deciding on any kiln.

For descriptive circular and further information, address

### Wm. & S. H. Alsip,

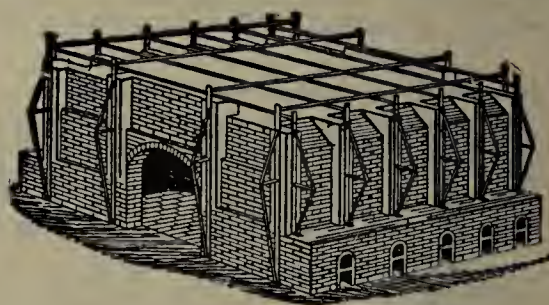
MENARD, ILL.

[Mention the CLAY-WORKER.]



### LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be **THE BEST KILN IN THE MARKET.**

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

**MOST DURABLE, COMPLETE AND EASILY MANAGED**

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

.. .. VITRIFIED PAVING BRICK. .. ..

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

### TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }  
NEVADA, Mo., July 17, 1892. }

H. REPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK CO., Office, 5,218 St. Louis Ave. }  
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,  
COTE BRILLIANT PRESSED BRICK CO.,  
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

### LOUIS H. REPELL,

1,913 Indiana Ave.



KANSAS CITY, MO.



HOLDS FIRST PLACE EIGHT YEARS.

# Morrison's Improved — Kiln,

WITH LATE IMPROVEMENTS, .

The Best Up=draft Kiln in Use.

Who says so?

Let us see what W. H. Perot, the largest manufacturer of fine pressed and ornamental bricks and terra cotta in the City of Baltimore, Md., who has used them eight years, says about our kiln. In a letter received from him under date September 15, 1894, asking for plans with which to put up a new kiln, he closes as follows:

“Your plan of kiln is the only one I use, as I like it better than any I know of.”

Will you not write us and learn more about a kiln that wears so well.

 No stamp required.

Address **R. B. MORRISON & CO.,**

P. O. Box 335.

**ROME, GA., U. S. A.**



# Important Improvements

IN BURNING ALL KINDS OF BRICK.

**B**RICKMAKERS before deciding upon putting in new kilns or altering old ones, should write to the following address for information. We control the Patents of the **W. A. WILFORD CONTINUOUS KILN**, which holds the lead, also, our Up and Down Draft to meet the requirements of all Brick and Tilemakers. They can be built for one half the cost of any other kiln of the same capacity, and, burns all of uniform hardness and color, and with from 50 to 75 per cent. less fuel. Easy and simple to handle, as every brick can be seen by the burner while burning, therefore, leaving no excuse for bad burns. Results are guaranteed or no money. The leading Brickmakers are using our Kilns with complete success. Our charges are low. We keep expert builders and burners for same.

OFFICE OF

**BRUSH BROS.,**

MANUFACTURERS OF

**ALL KINDS OF BUILDING BRICK.**

OFFICE: No. 2 Builders' Exchange.

WORKS at East Buffalo.

BUFFALO, N. Y., Oct. 29, 1894.

*Wilford Patent Kiln Co., Toronto.*

*W. A. Wilford, Man.*

DEAR SIR:—In answer to your enquirers, how we like the continuous kiln you built for us would say, that we have burnt it round twice, about 800,000 bricks, and have found no waste, as all the bricks are alike in hardness and color, from top to bottom, and side to side. There seems to be no wear upon the kiln, which is an item to us. It is simple to handle. The saving to us in fuel is wonderful, and would say in conclusion, that it meets our entire satisfaction, and does all you claim for it. We shall be pleased to answer any enquirers respecting your kiln, for you have the best kiln we have ever seen.

Yours truly,

BRUSH BROS.

See what the Prize Winners for Brick and Terra Cotta at the World's Fair, Chicago, who are using our Kilns, say:

Office and Show Rooms,  
60 Adelaide St., East.

Telephone 2997.

—OFFICE OF—

**Don Valley Pressed Brick Works,  
TAYLOR BROTHERS,**

*Manufacturers of Fine Grade Pressed Bricks, in all Colors and Designs.*

Fire Clay, Fire Bricks, Sewer Pipes, Etc.

CAPACITY UNLIMITED. (Copy) TORONTO, August 6th, 1894.

*The Wilford Patent Kiln Co., Toronto, Ont.*

*W. A. Wilford, Mgr.*

DEAR SIR:—We are thoroughly satisfied with the results we have secured from your Continuous Kiln, and have got out of it Vitrified Paving Bricks that are fully equal to anything on the market. We have looked into the matter of your Downdraft Kilns, and have decided to put in four of them for the purpose of burning our Ornamental and Terra Cotta wares, and enclose herewith amount of your fee for same. If you can so arrange, kindly let us have one of your foremen right away, as we are anxious to have them ready as soon as possible. Shall be more than pleased to give any information to your prospective clients regarding the Continuous Kiln we got from you. You deserve every success, as you have undoubtedly the best in your line.

Yours truly,

TAYLOR BROS.

**Elmira Paving Brick Works.**

PHILIP WEYER & SON, Proprietors.

ELMIRA, N. Y., September 25, 1894.

*W. A. Wilford, Wilford Patent Kiln Co.,*

DEAR SIR—We have examined your continuous kiln as it is in operation at the works of Messrs. Brush Bros., at Buffalo, N. Y., and as a result we remit you the license fee and request that in response to the enclosed signed contract you will at once come on and erect a kiln for us.

For over a year we have been looking for the best kiln for our shale material and we believe we have found at last, what we have been looking for. Kindly use all expedition in getting it running for us.

Yours very truly,

PHILIP WEYER & SON.

**Stengel & Cook,**

WHOLESALE DEALERS IN

**LUMBER AND COAL.**

GEN'L SALES AGENTS

FOR  
NATIONAL BRICK & TILE CO.'S  
PRESSED & ORNAMENTAL BRICK.

GENERAL OFFICE,

NO. 9 BUILDERS' EXCHANGE  
YARD AND TRESTLE,  
157 FILLMORE AVENUE

BUFFALO, N. Y., October 3, 1894.

*W. A. Wilford, Esq., Toronto, Ont.*

DEAR SIR—Having investigated kilns for brick works on Grand Island, I have decided to put in yours, and herewith remit license fee with your contract signed and would request you to commence building as soon as possible.

Yours truly,

J. F. STENGEL.

Write us for Information and Testimonials.

**The Wilford Patent Kiln Co.,**  
*Correspondence Solicited.* **TORONTO, CANADA.**

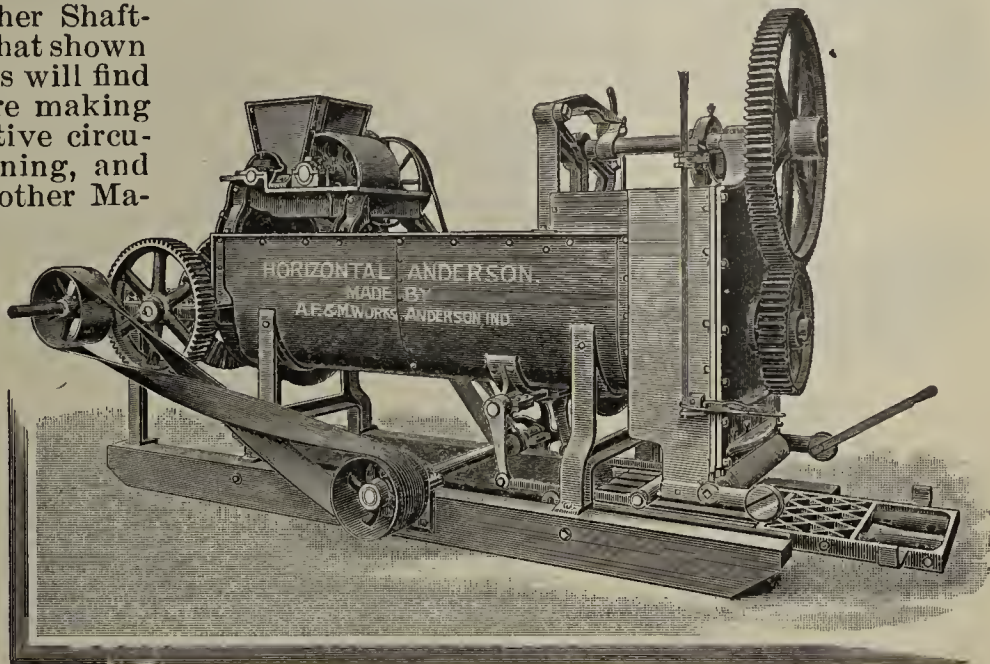


# A New Departure in Brick Machinery

## THE HORIZONTAL ANDERSON

OUR latest and most complete combination of Brick Machine, Pug Mill and Disintegrator for the price of one Machine. No outside Plunger with bothersome Gibs and Plates. A Machine that will run for years without requiring any adjustment and never leak. **UNEXCELLED** for **GRINDING** and **PUGGING CAPACITY**; simple in construction and durable.

This Machine is self-contained and requires no other Shafting, Pulleys, Hangers or even Foundation, other than that shown in cut. Manufacturers of Brick by the soft mud process will find it to their interest to investigate this Machine before making their contracts for new Machinery. Write for descriptive circular, prices, etc. We can save you money in the beginning, and make you happy in the end. Capacity equal to any other Machine on the market. We extend a cordial invitation to all prospective purchasers to pay us a visit and allow us to show them the Machine in operation.

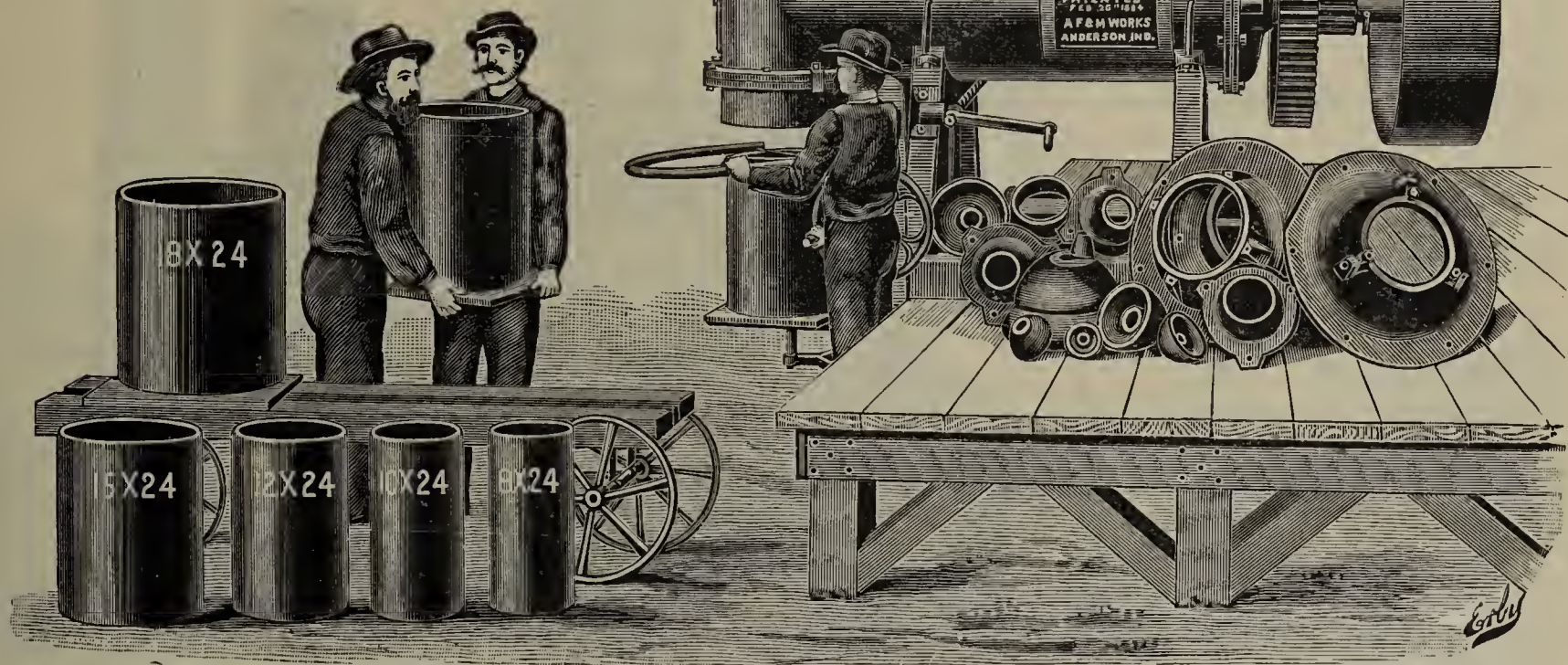


INDIANAPOLIS, IND., March 20, 1894.  
ANDERSON FOUNDRY AND MACHINE WORKS,  
Anderson, Ind.

GENTLEMEN:—It affords us much pleasure to state that the Horizontal Anderson Brick Machine purchased of you last season has given us the best of satisfaction. We have owned and operated eight different Brick Machines previous to this one, and we do not hesitate to pronounce the Horizontal Anderson superior to any and all of them.

We operated the machine during the extremely dry weather of last season and found that no matter how dry and hard the clay was when taken from the bank, the machine thoroughly pulverized and pugged it to the proper consistency for making first-class brick, and at the same time dispose of all stones, of which, unfortunately for us, we have a great many to contend with.

We are willing at all times to show the Horizontal Anderson to our competitors who are in the market for new machinery.  
A. BRUNER & CO.,  
Willis Privett, Manager.



## THE GREATEST ON EARTH

We have imitators but no competitors. The NEW DEPARTURE makes all sizes of tile from 3 inches to 24 inches in diameter in a manner that defies competition.

DOWN DELIVERY FOR LARGE TILE.

SIDE DELIVERY FOR SMALL TILE.

THE ANDERSON FOUNDRY & MACHINE WORKS, - - Anderson, Indiana.





# Fisher Engine, Foundry and Machine Works.

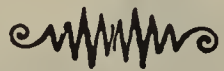
WM. FISHER, PROP.

Pittsburgh, Pa.

## Standard Dry Grinding Pans.

ALL SIZES,  
FOR

Red Brick and  
Fire Brick Clay,  
Limestone, Lime,  
Sand, Phosphates,  
Bones and other  
refractory materials.



## Wet Pans,

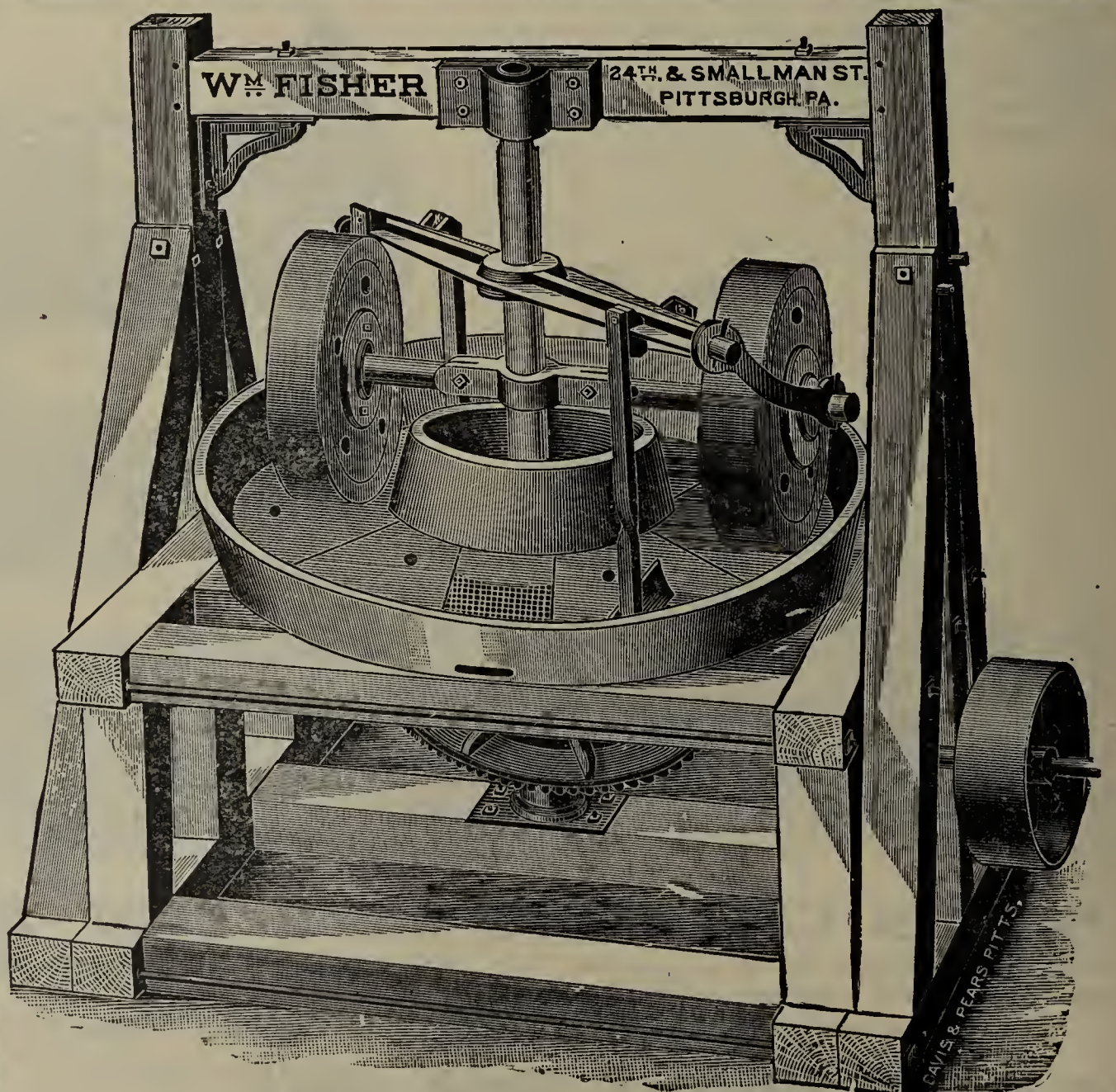
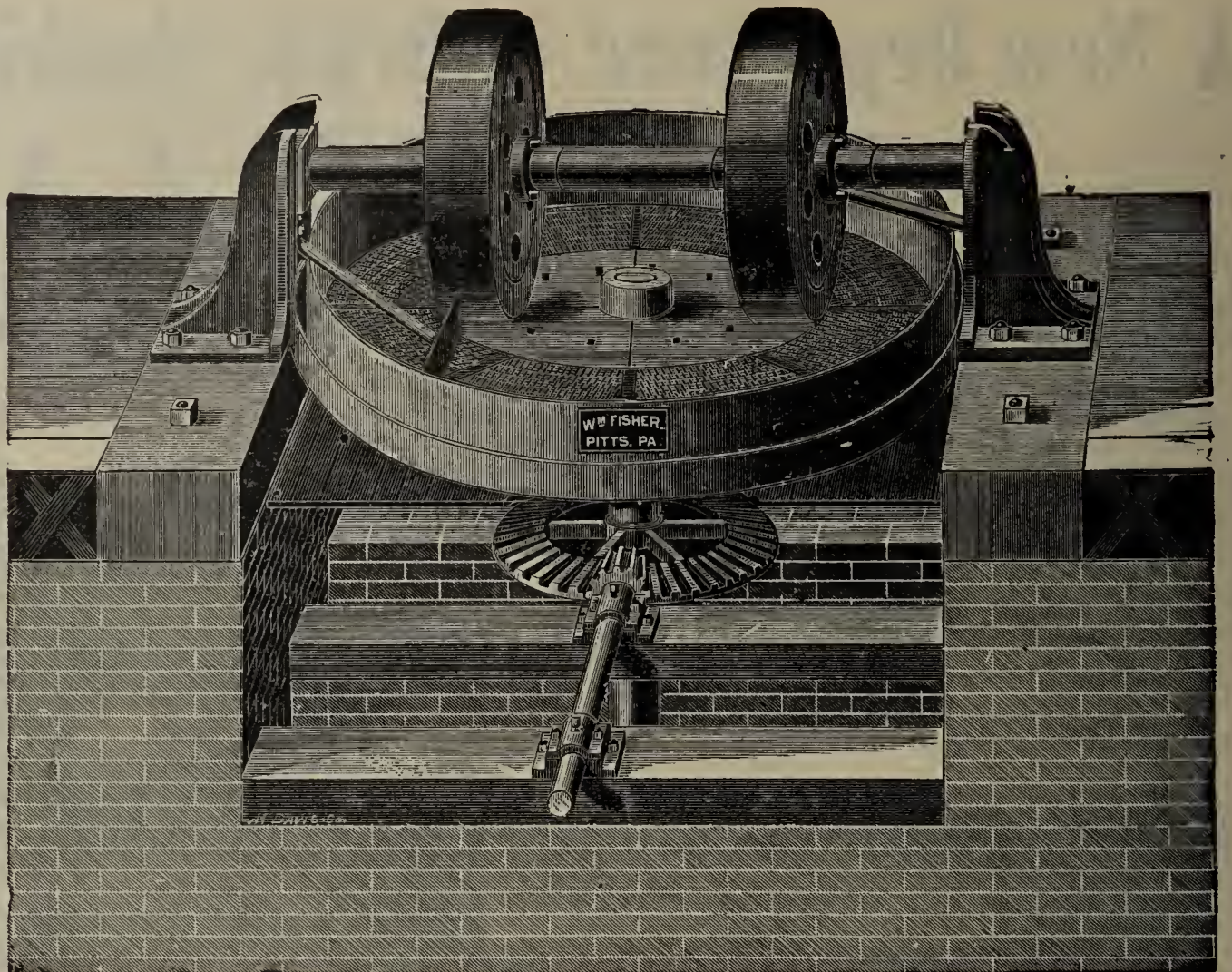
STATIONARY and REVOLVING,

FOR

Brick Works,  
Steel Works,  
Glass Houses,  
Rolling Mills  
and Paint Works.



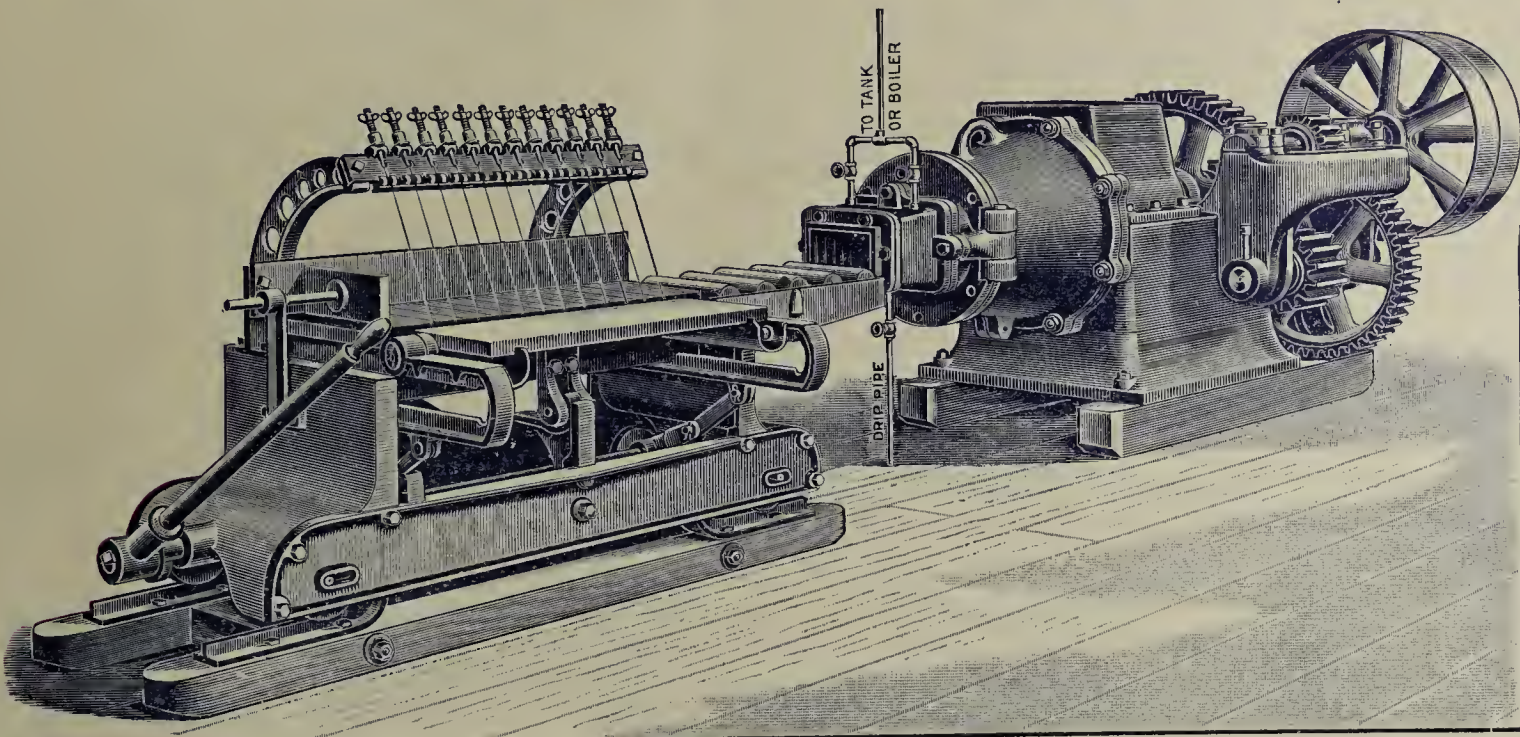
PUG MILLS,  
BLAKE CRUSHERS,  
BRICK PRESSES.



☞ When writing for prices, state kind of material and capacity required.



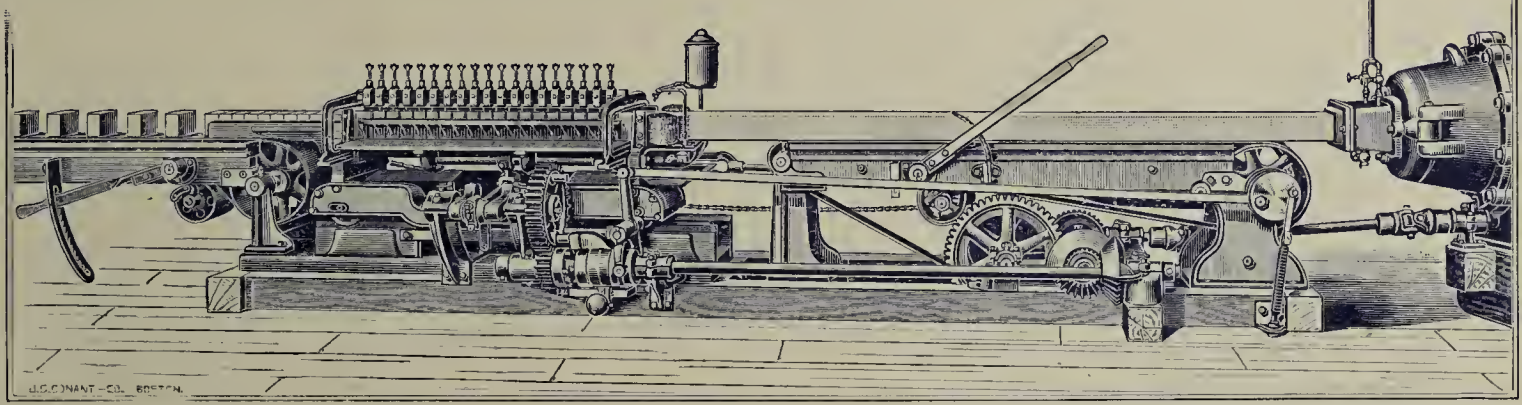
# New Brick Machinery



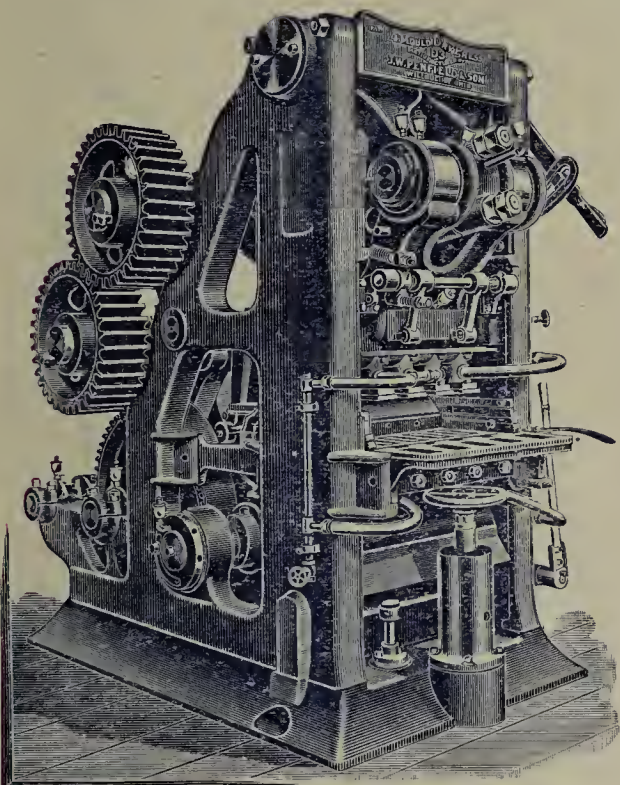
For  
**1894**  
and  
**1895.**

(Penfield No. 6 Auger Brick Machine and No. 8 Down Cutting Board Delivery Table.)

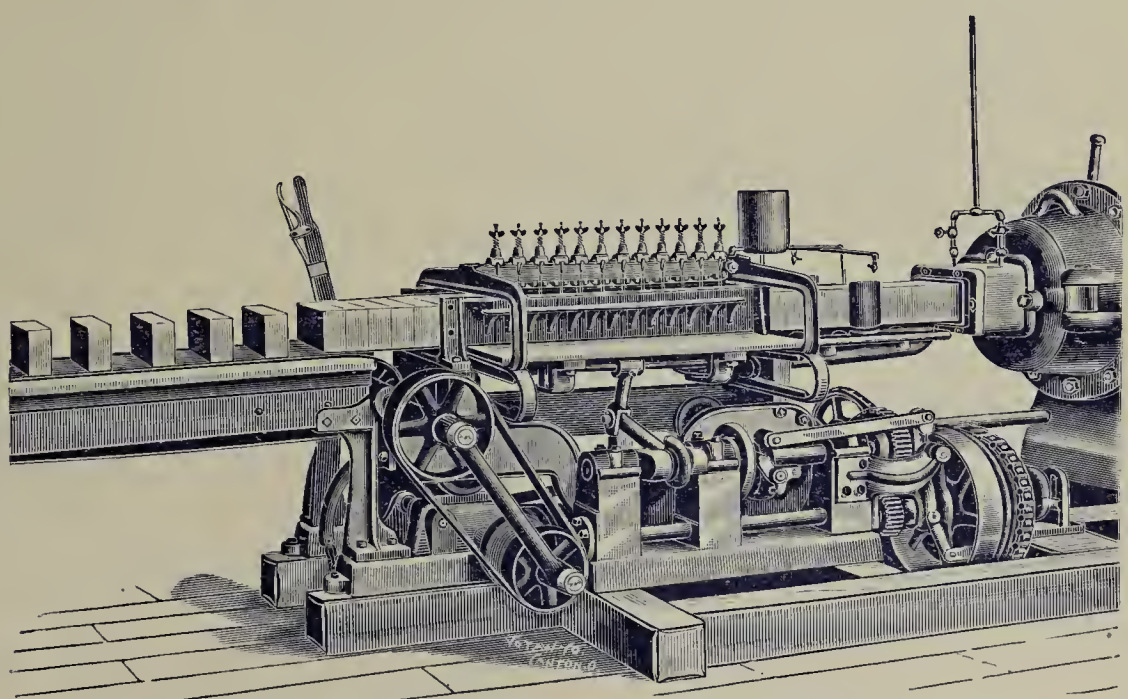
Send  
For  
Details.



(Penfield Automatic Cutter and Separator for Side Cut Brick.)



(Penfield 4-Mold Dry Press Brick Machine.)  
(D-3 Model.)



(Penfield Semi-Automatic Power Cutter for Side Cut Brick.)

FOR FULL PARTICULARS, ADDRESS

**J. W. PENFIELD & SON,** Clay Working Machinery of all Kinds. **Willoughby, Ohio, U. S. A.**



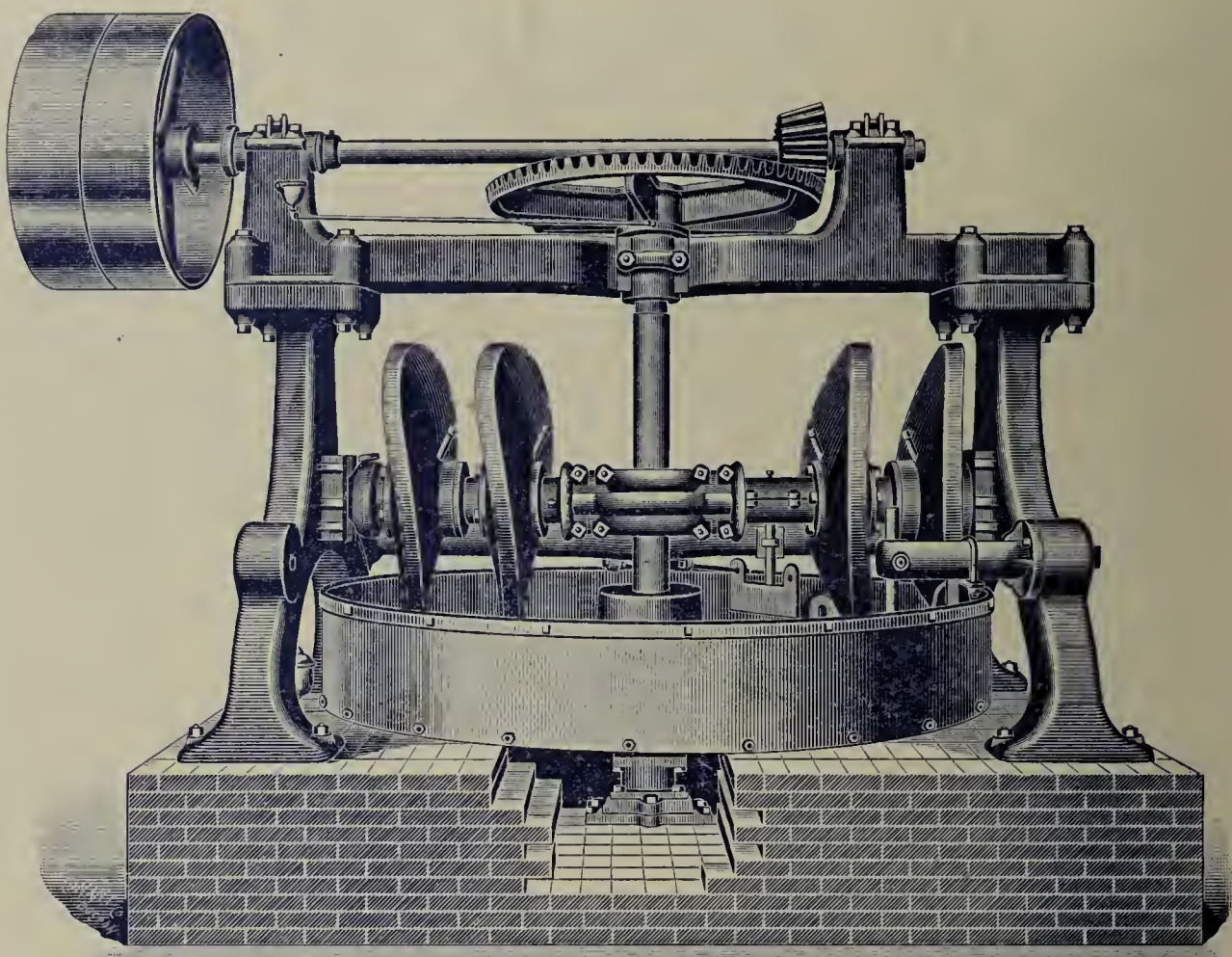
# The March of... Progress,

We don't follow it;  
We LEAD the van!

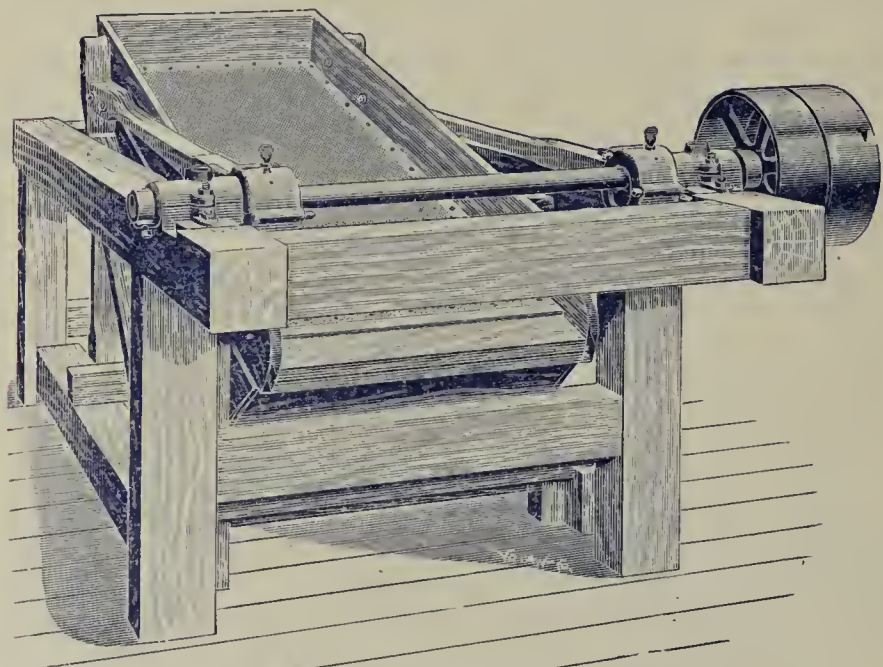
**D**URING the past year, we have added to our list more new and improved Clayworking Machinery than any other concern in existence. Furthermore, we expect to continue enlarging our list from time to time, as improvements may suggest themselves or the demands of the trade require.

## Our Aim

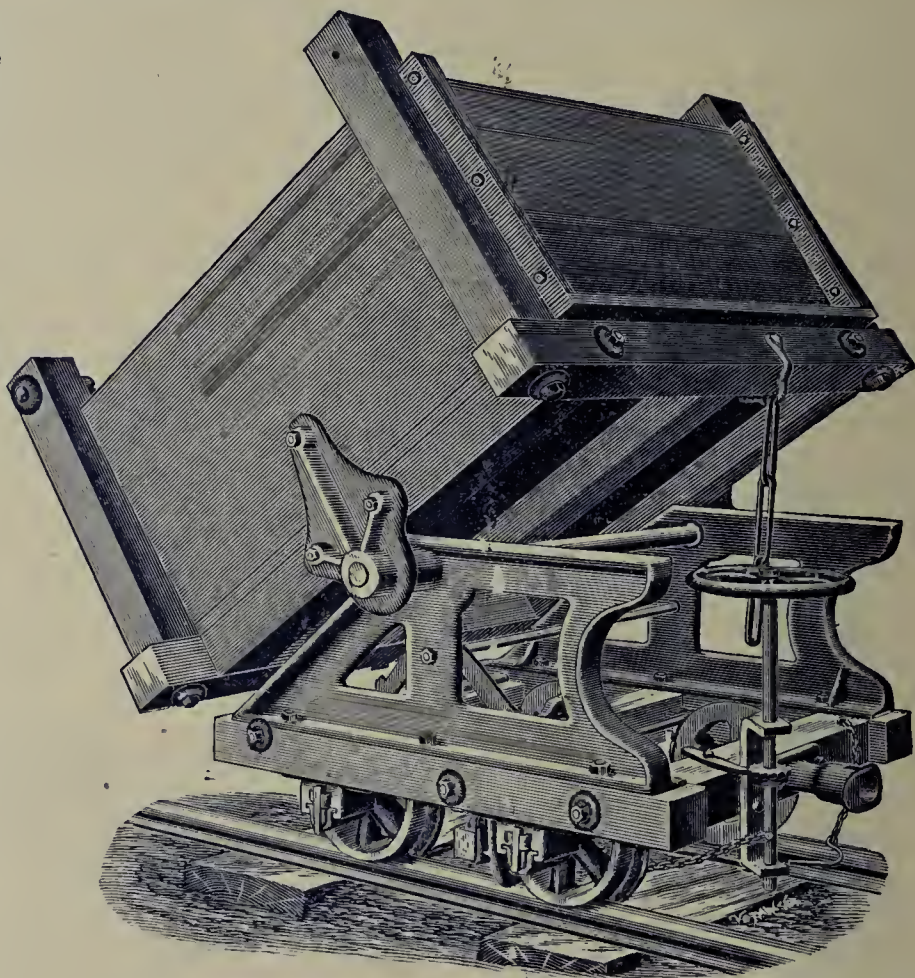
Is to be able to equip any clayworker with anything and everything required for the manufacture of brick from any kind of clay suitable for brickmaking purposes. The large number of complete plants we have equipped for brick-making by the different processes is one of the best evidences of our success in realizing this object.



(Penfield Special Clay Grinding Mill.)



(Penfield Vibrating Screen.)



(No. 3 End Dumping Clay Car.)

## IF YOU WANT

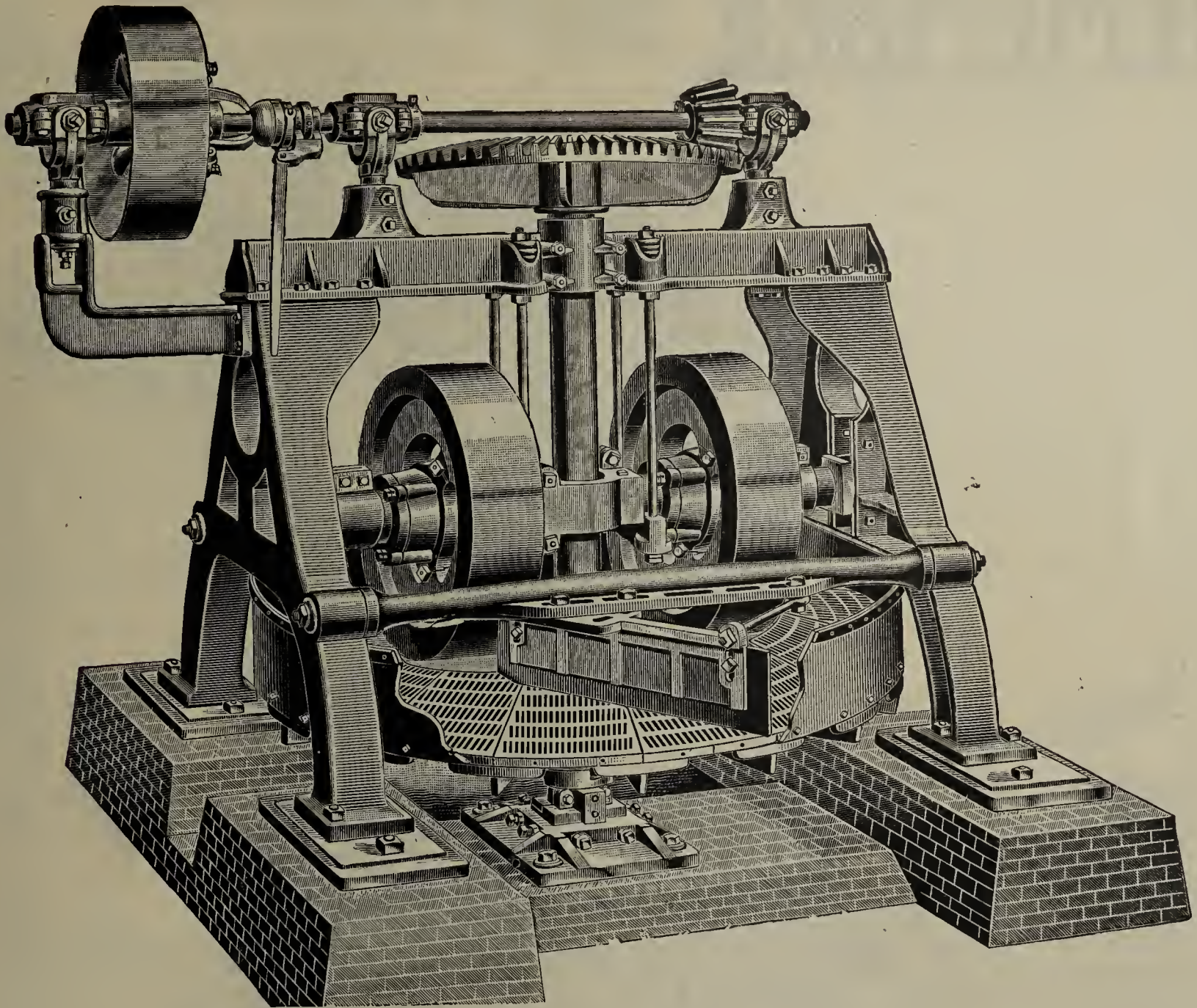
Unprejudiced advice and first class goods, the latest and best, address, for particulars,

**J. W. PENFIELD & SON,**

Send for Catalogue.

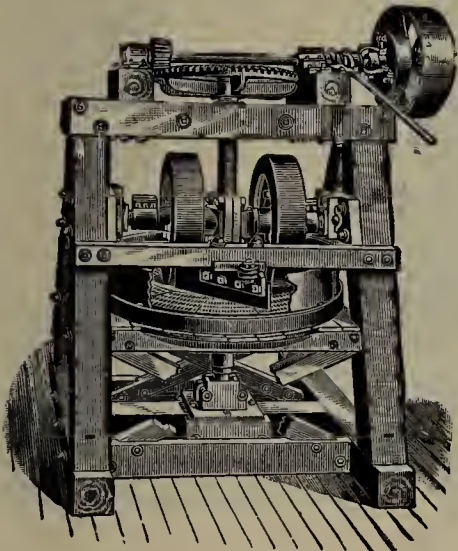
**WILLOUGHBY, OHIO, U. S. A.**





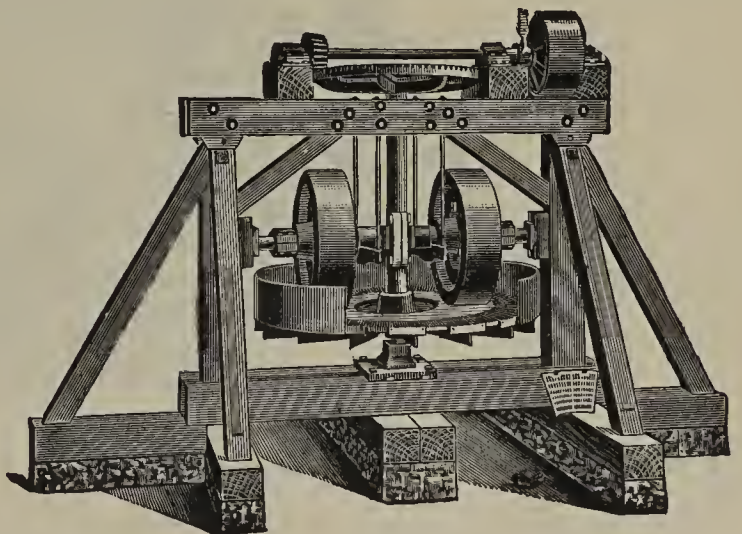
OUR SPECIALTY IS

**DRY PANS.**



IRON FRAMES,  
WOOD FRAMES.

~~~~~  
All Sizes and Price
to suit
Any Size Plant.
~~~~~



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

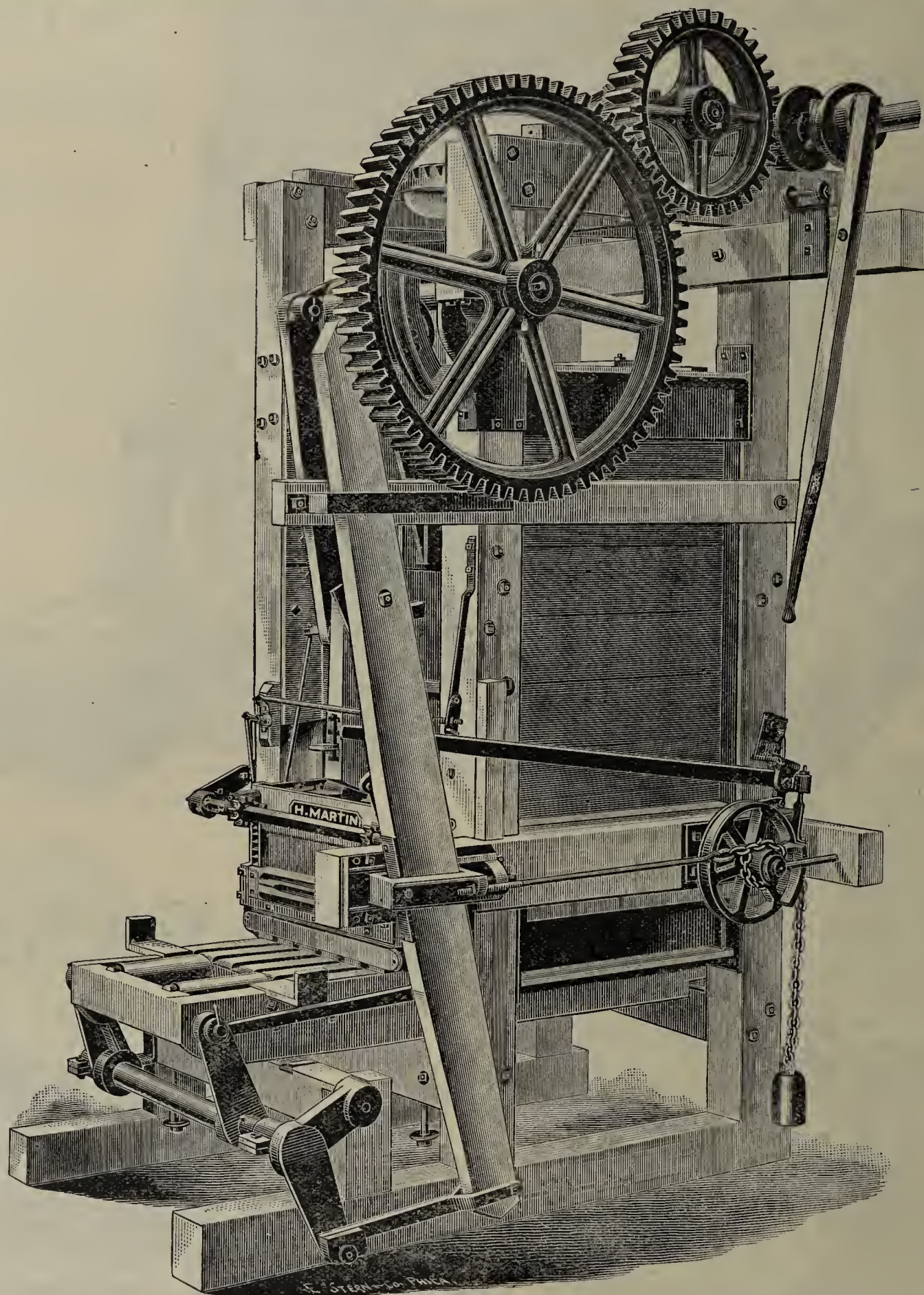
**FROST ENGINE CO.,** Galesburg, Ill.,  
U. S. A.



# REMEMBER

That the Martin  
....Machinery is Reliable

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*Practical Brickmakers Pronounce Our Letter "A" a Perfect Success.*

— FULL INFORMATION ON APPLICATION —

**THE HENRY MARTIN BRICK MACHINE MFG. CO.,**

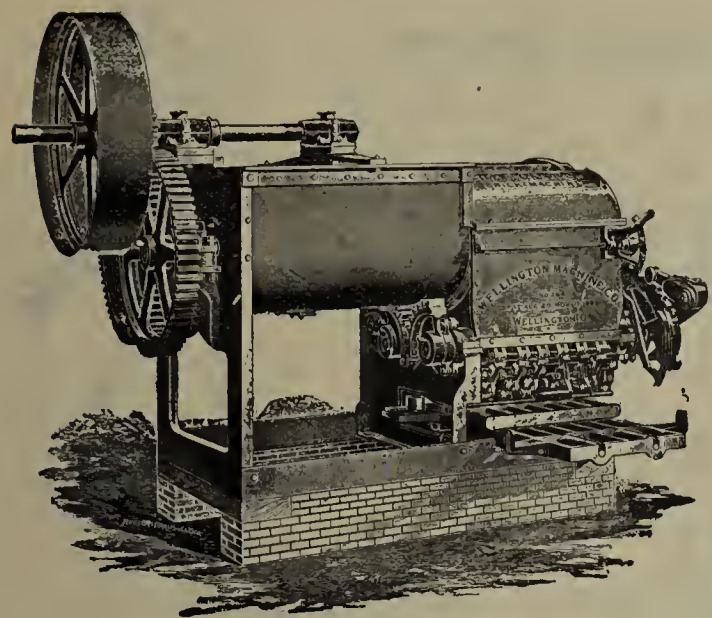
INCORPORATED.....

**LANCASTER, PA.**



# THE "MONARCH"

## Brick Machine.



ALL iron and steel. Takes clay from the bank. Double pug mills. 14 feet. "Up one side and down the other." Most thorough tempering. Presses are entirely "in the mud;" this is the greatest idea of all, for all wear, leakage and friction in the press box is entirely done away with. All bearings outside and "stuffed." Only four gears and none bevel. The acme of simplicity. Runs with much less power than any other of its class. Four years in use and thoroughly proven. Used by 50 of the very best manufacturers. Send for list and "go and see."

THE MOST ECONOMICAL and LONGEST LIVED MACHINE MADE.

# THE "QUAKER"

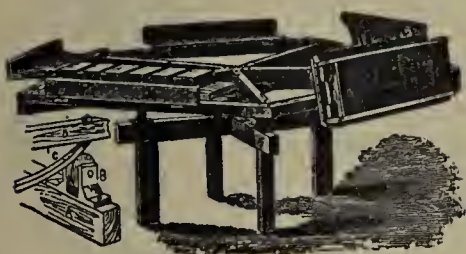
Family of Machines, are the Most Used of Any Single Make of Machine.

## The "New Model Quaker" Horse-Power Machine.

Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



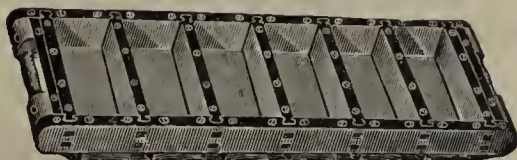
## Two Sizes of Steam Power "Quaker" Machines.



Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

**The Wellington Machine Co.**  
Wellington, Ohio.



FOUNDERS AND MACHINISTS.)





# YOU CAN'T MISS IT!

.....WHEN YOU PURCHASE A.....

## POTTS HORIZONTAL STOCK BRICK MACHINE

They Do All Claimed For Them

You Take No Chances of an Experiment.



York Corner, Maine, July 30-1894  
C. & A. Potts & Co  
Gentlemen

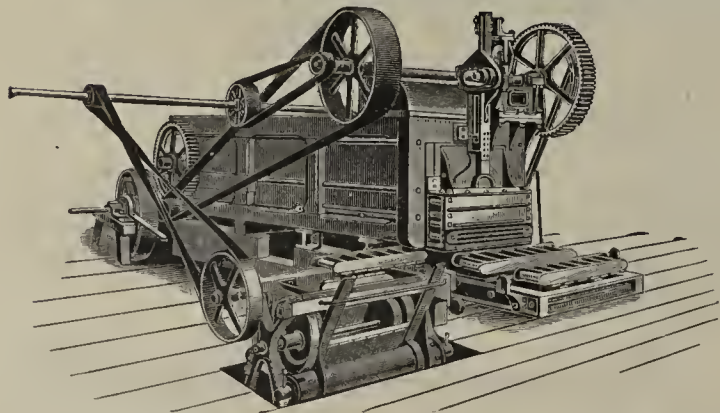


It gives me pleasure to inform you that the two Brick Machines you put in for me, are doing the work satisfactorily.

I am making 40 # per day on each machine. I dump them on pallets and put them in racks and when there, they are the same shape as the molder. They are molded in perfectly straight and sharp corners, and this is all any mud machine can do, so I have not any reason to complain.

Very truly yours  
J. P. Norton

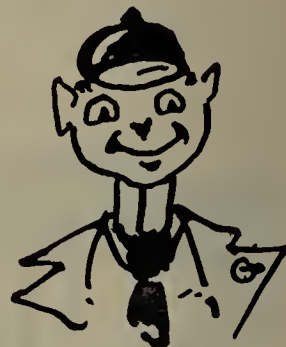
They Have  
No Equal For  
STRENGTH,  
DURABILITY,  
QUANTITY  
and  
QUALITY  
of Brick  
Made



If you will put in the outfit shown here

We are confident that we can please you

And that you will always greet us with a.....



Smile.

The Potts Horizontal Brick Machine will work any clay direct from the bank. It does not require an extra Pug Mill. The brick made will have clean, sharp corners and smooth surfaces. This is the strongest and heaviest machine on the market. It has imitators but no competitors.

For prices and terms, write

C. & A. POTTS & CO., 420 W. Washington St. INDIANAPOLIS, IND.



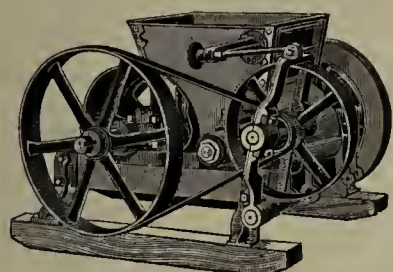
WE ARE



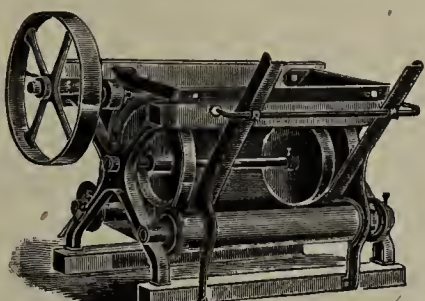
YOU.

AFTER

We make every thing used on the brick yard. We can save you money. No commissions to be paid. We are manufacturers.



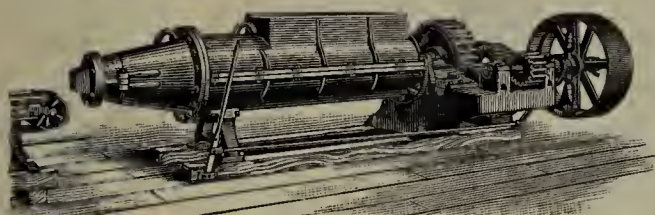
DISINTEGRATORS and STONE  
SEPARATORS. 12 Sizes.



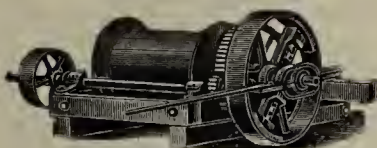
MOULD SANDERS.



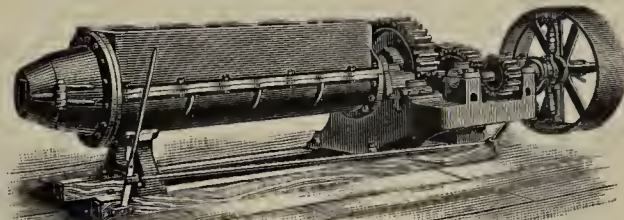
ELEVATORS and CONVEYORS.



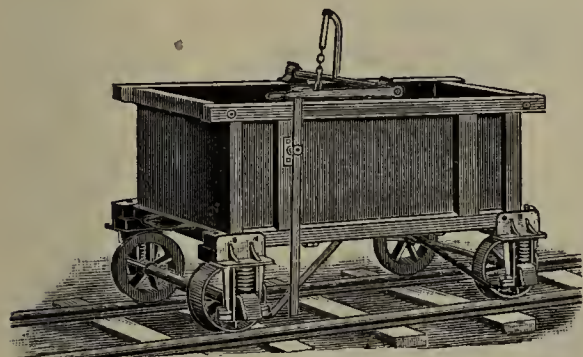
AUGER BRICK and TILE MACHINES.



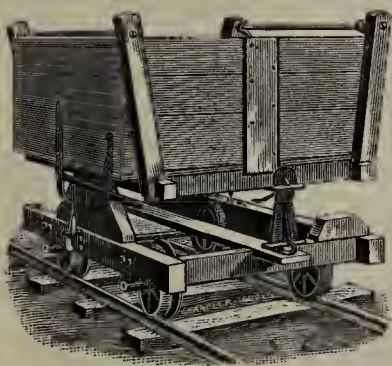
WINDING DRUMS.



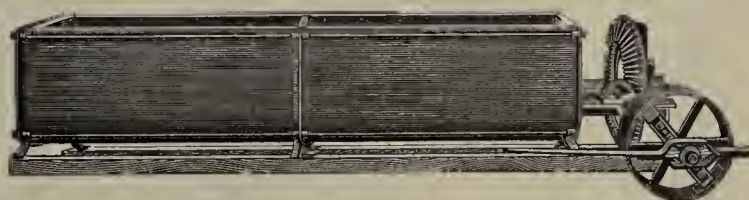
EXTRA HEAVY PUG MILLS and GRANULATORS.  
Capacity 50,000 to 125,000 Brick.



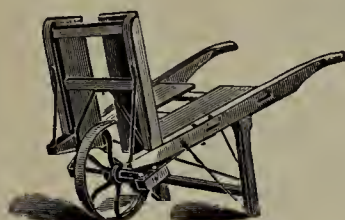
AUTOMATIC BOTTOM DUMP CARS.  
Having Chilled Wheels.



SIDE DUMP CAR.  
Having Chilled Wheels.



PUG MILLS For Soft Clay.



BARROWS For Brick or Tile.



BRICK MOULDS,  
For Either Machine or Hand.



TRUCKS, One or Two Wheels,  
For Brick or Tile.

WE will be pleased to hear from you and to quote prices.  
We are prepared to make estimates on complete plants of any desired capacity.

C. & A. Potts & Co.,

420 West Washington St., - INDIANAPOLIS, IND.

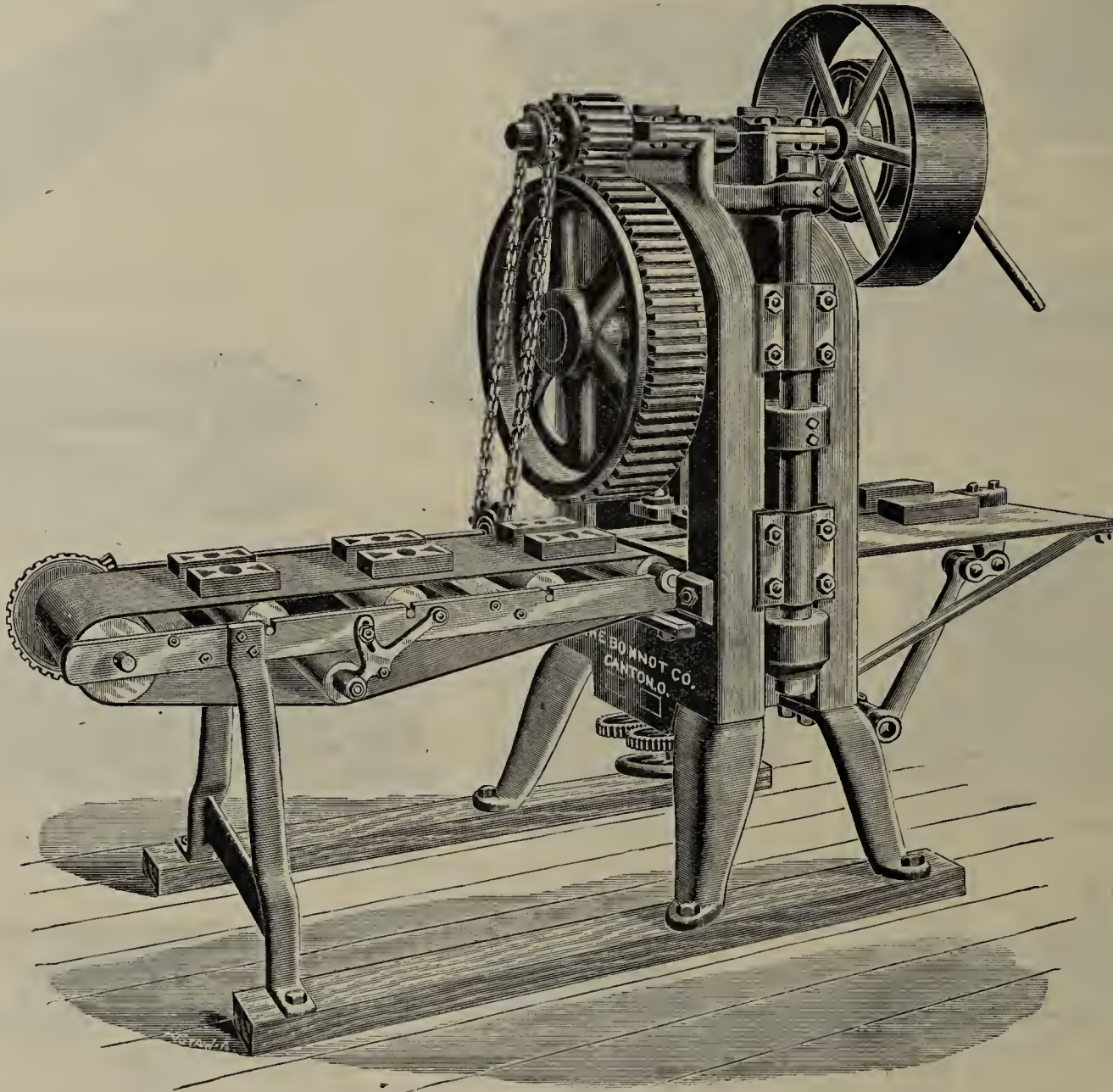




# A Re-press Simple in Mechanism.

POWERFUL THE LATEST AND BEST DURABLE

*Possesses The Greatest Convenience.*



**T**HIS Machine will do what no other Re-press has been able to accomplish. It will **ACTUALLY REPRESS THE SIGH** that rises in the bosom of weary brickmakers, caused by inferior machinery. These machines are fully guaranteed. Address,

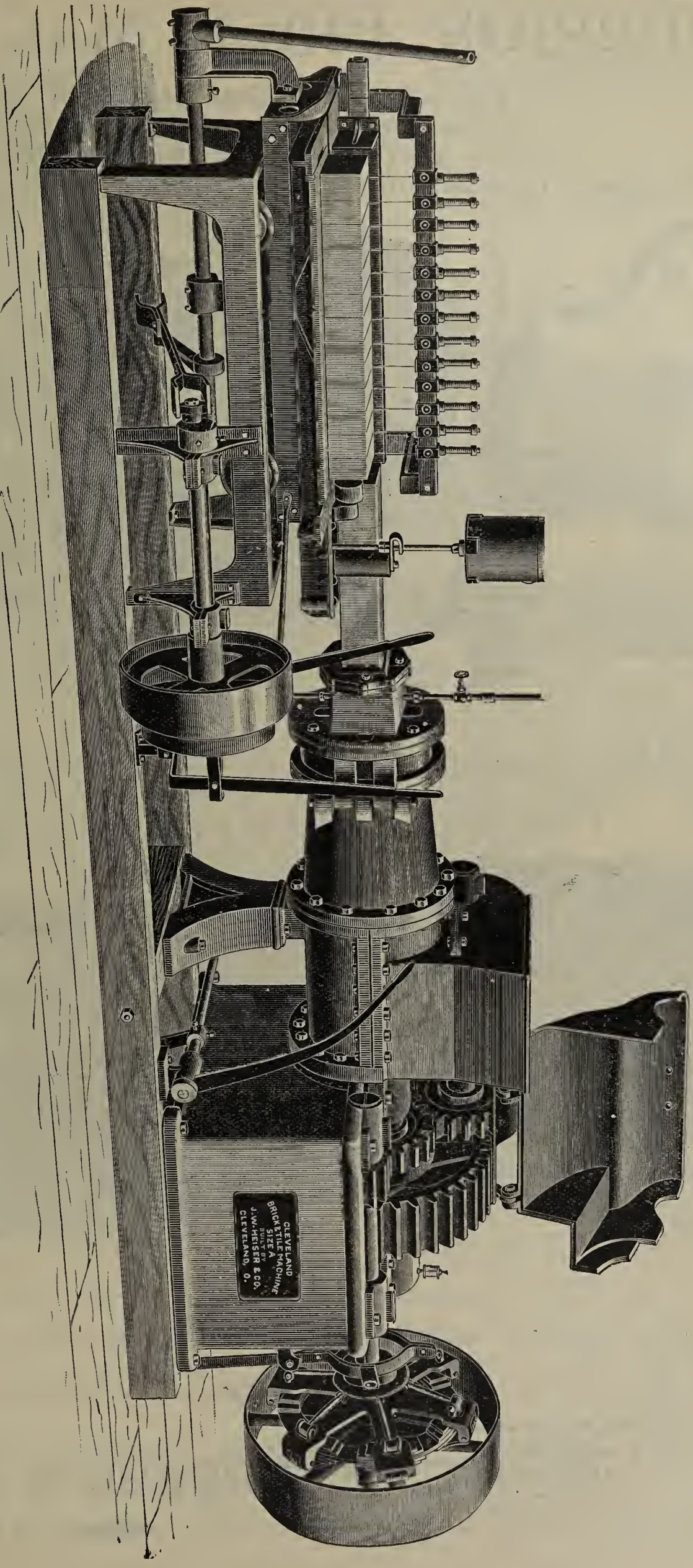
**THE BONNOT CO.,**

*Canton, Ohio.*

[Mention the CLAY-WORKER.]



# The "CLEVELAND" CLAY WORKING MACHINERY.



Size "A" Machine with Patent Board Delivery Power Cutting Table. Capacity from 25,000 to 40,000 Brick per day.

ALL OF OUR MACHINERY IS BALL AND PIN BEARING AND....  
GUARANTEED FOR ONE YEAR AGAINST WEAR OR BREAKAGE.

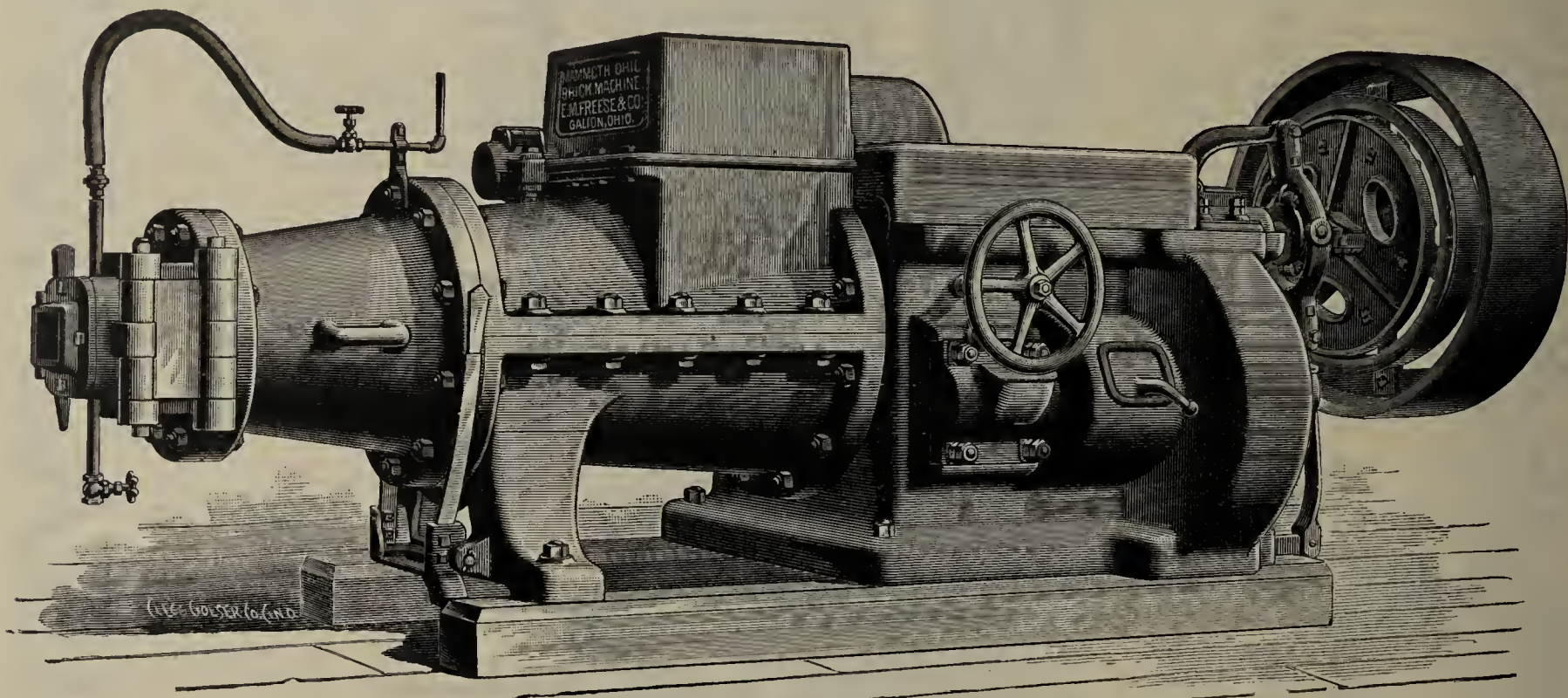
If you want superior machinery, improve your product, save money and have a balance on the right hand side of your Ledger, write to us for Catalogue and description of our machinery.

**J. W. HEISER & CO.,** Manufacturers of CLAYWORKING MACHINERY, **Cleveland, Ohio.**



# SUPERIOR BRICK MACHINERY.

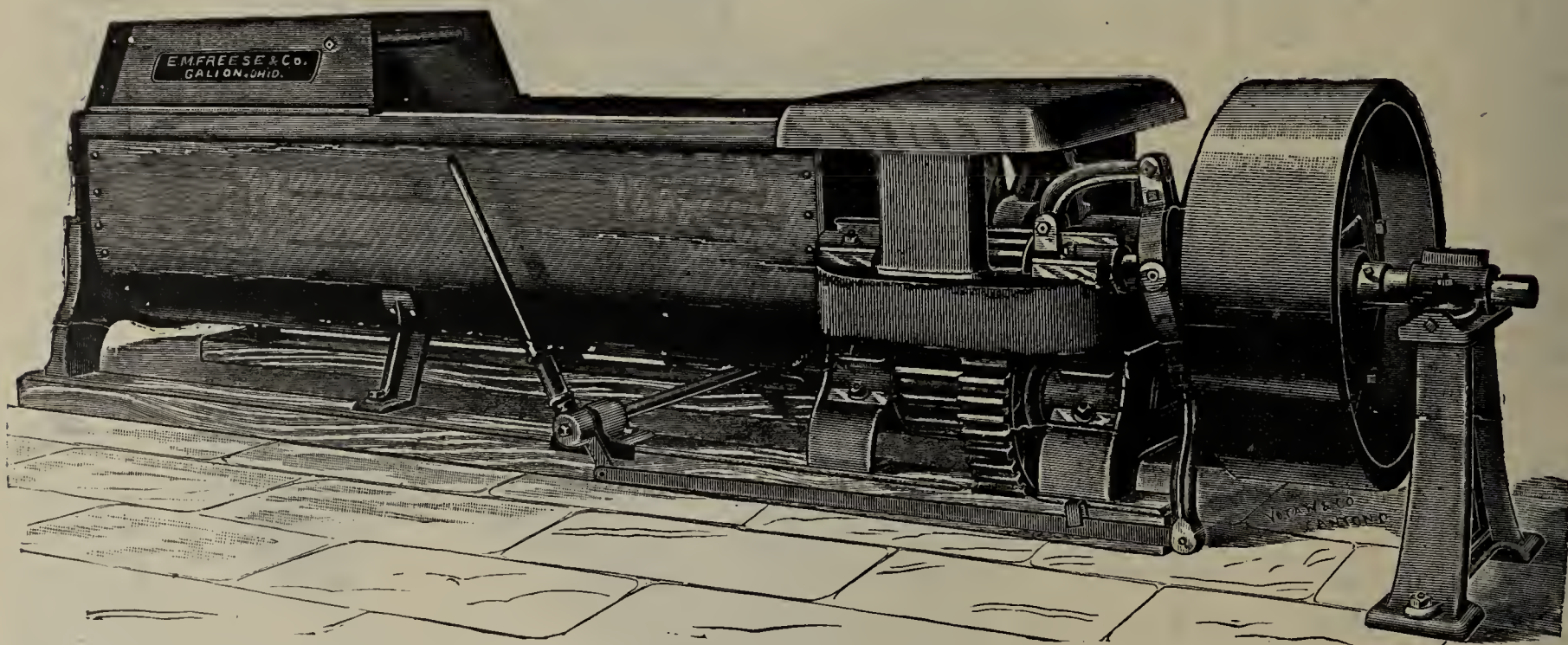
*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

## PUG MILLS THAT PUG THE CLAY.



These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

Don't fail to look up our very complete line of Clay Working Machinery.

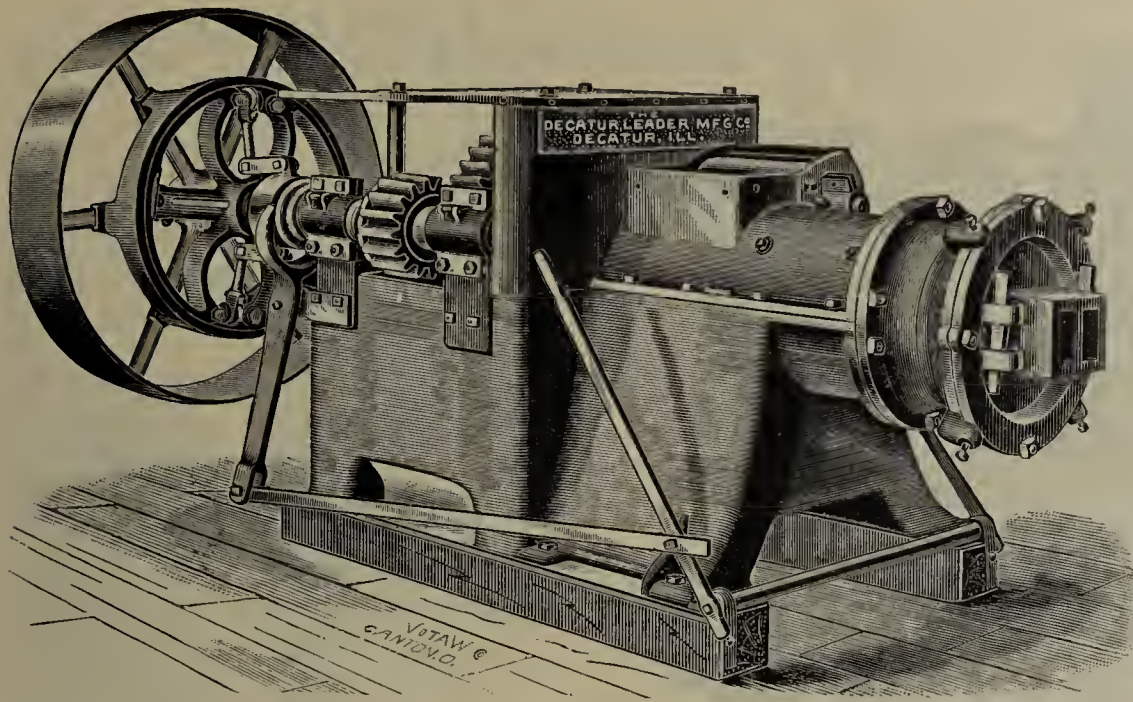
IT WILL PAY

ADDRESS

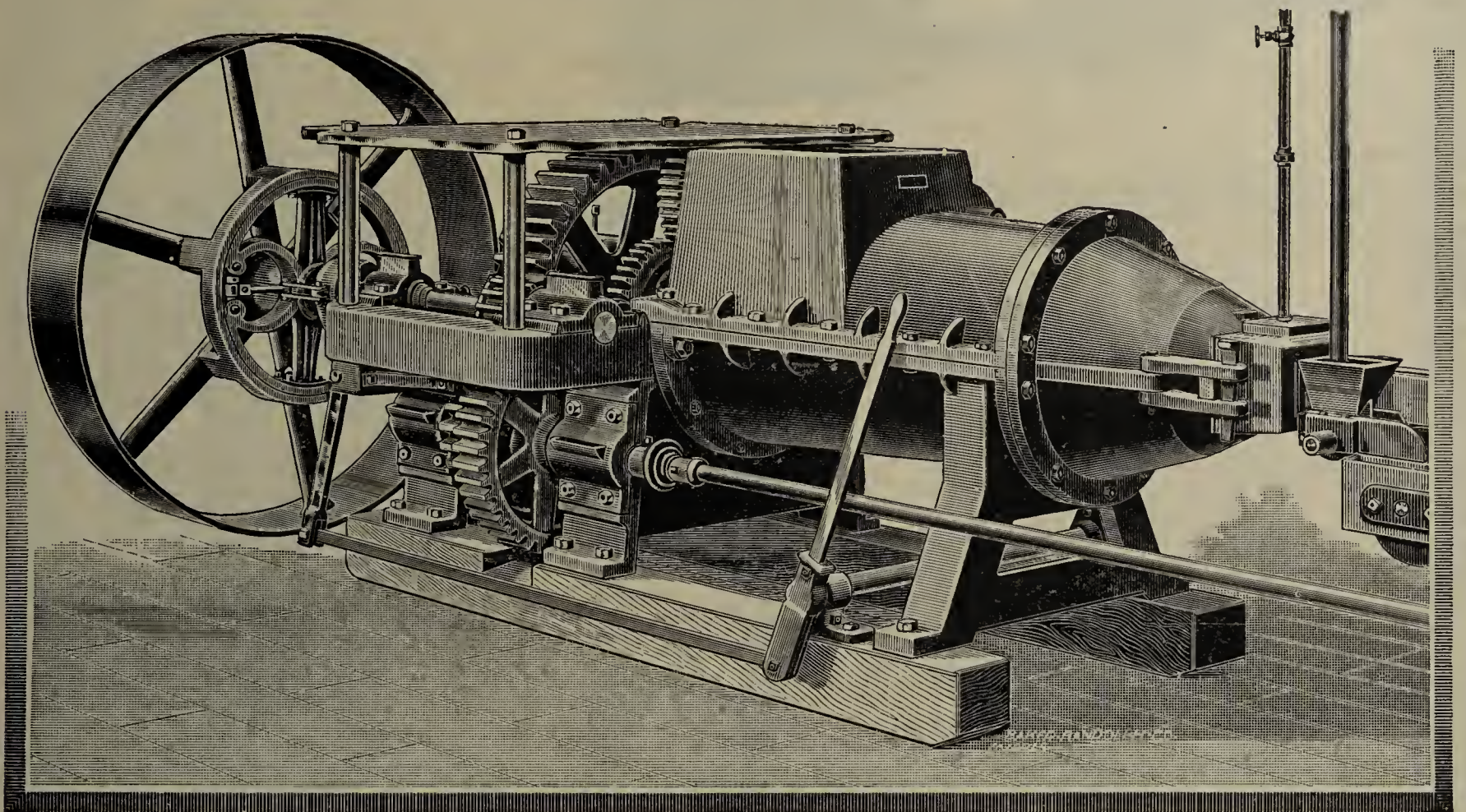
E. M. FREESE & CO.,

GALION, OHIO.





Several  
Sizes.



Auger Brick Machine.

Brick Machines,  
Crushers,  
Complete Outfits,

Automatic Cutters,  
Pug Mills,  
Disintegrators.

—Circulars Free.—

THE DECATUR LEADER MFG. CO.,

[Mention the Clay-Worker.]

Decatur, Ill., U. S. A.



# NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

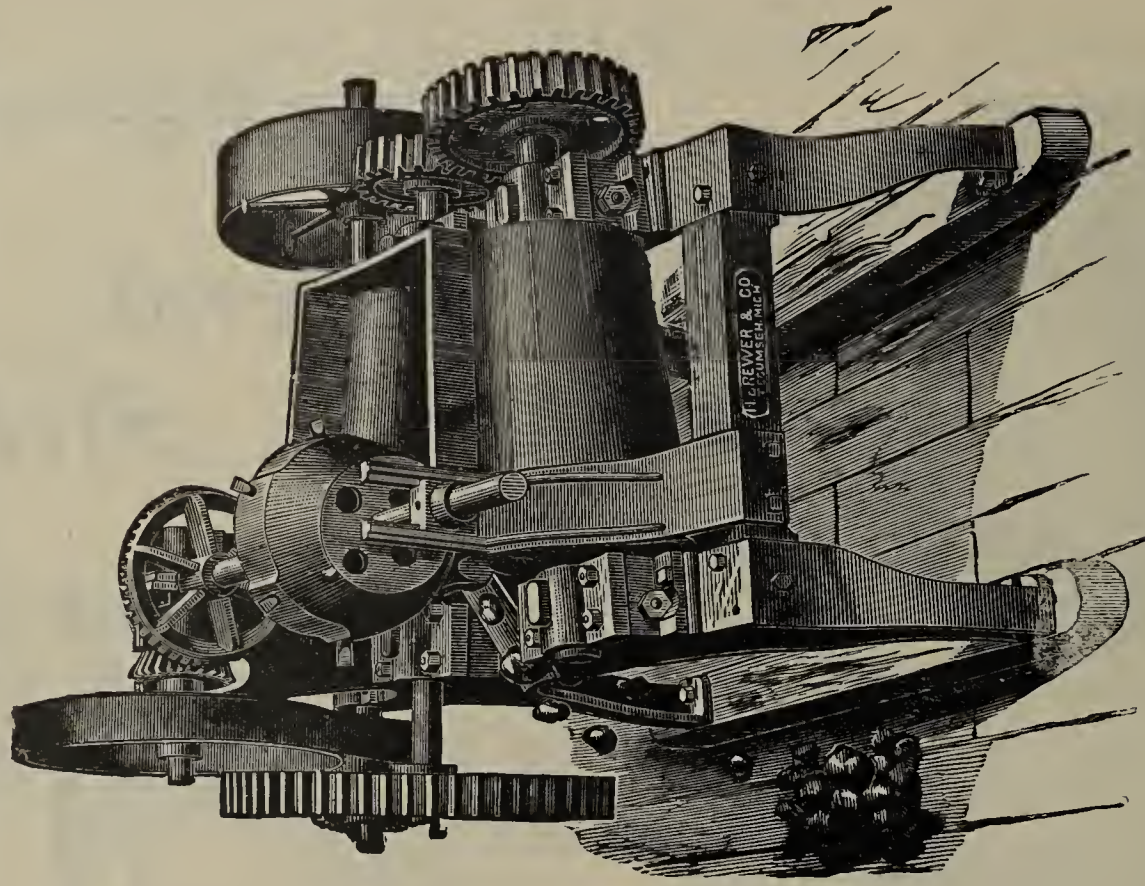
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

## H. BREWER & CO.,

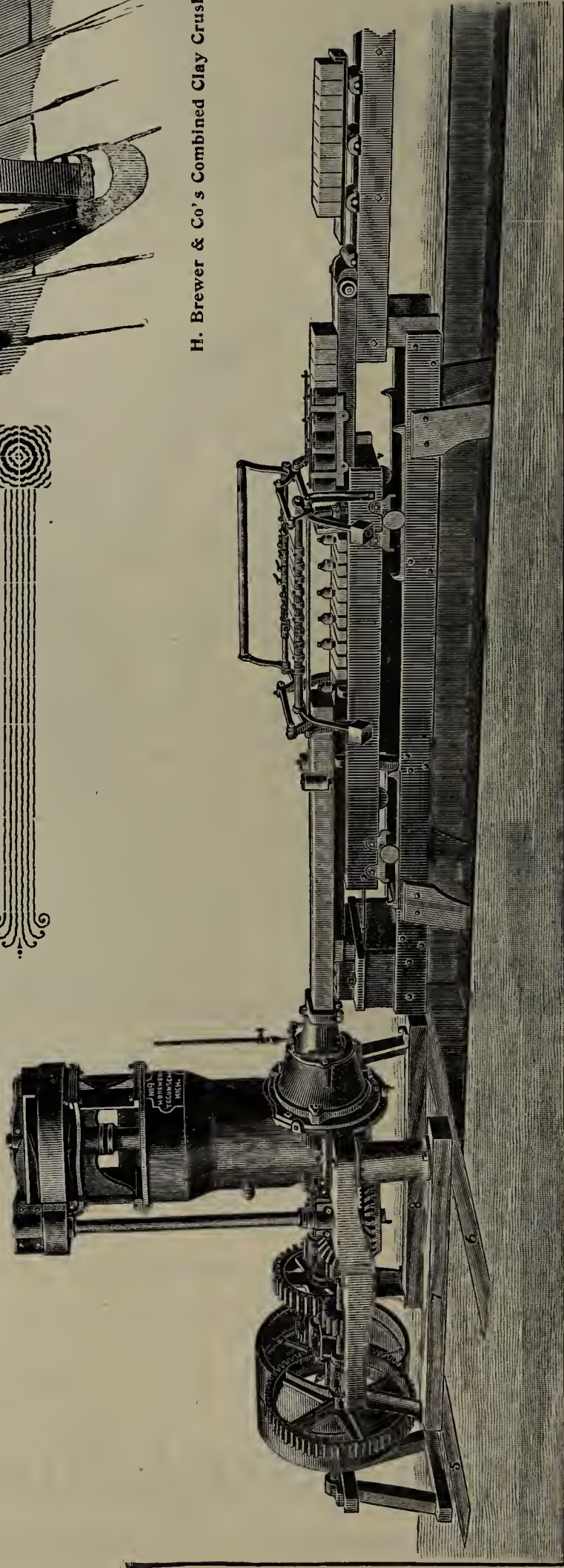
*Tecumseh, Mich.*

[Mention the CLAY-WORKER.]



H. Brewer & Co's Combined Clay Crusher and Stone Separator.

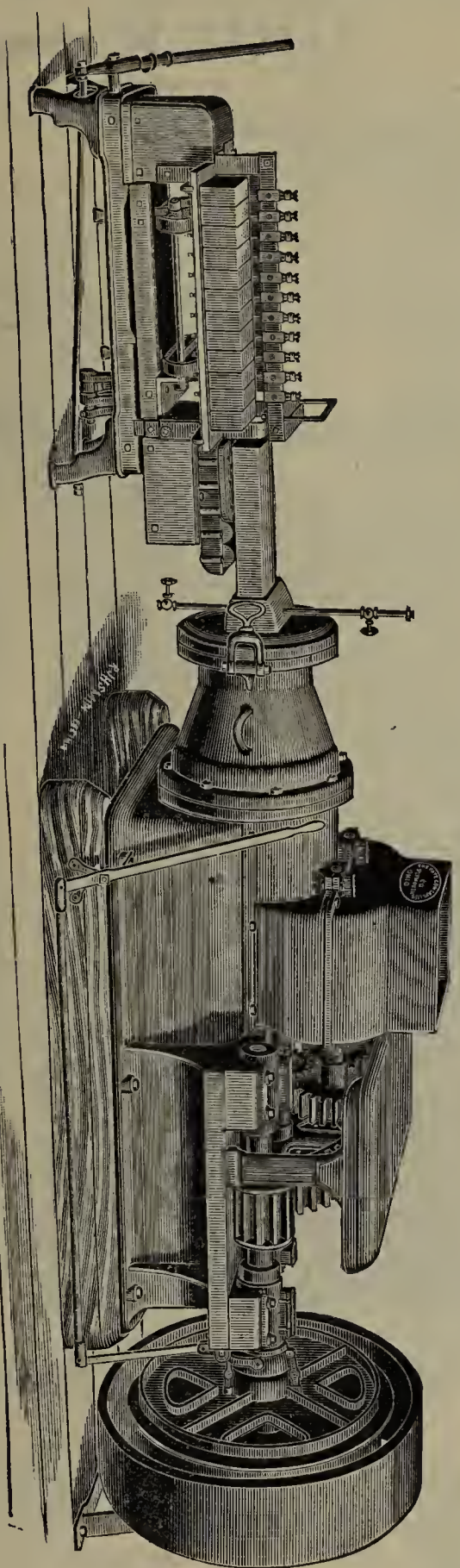
The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



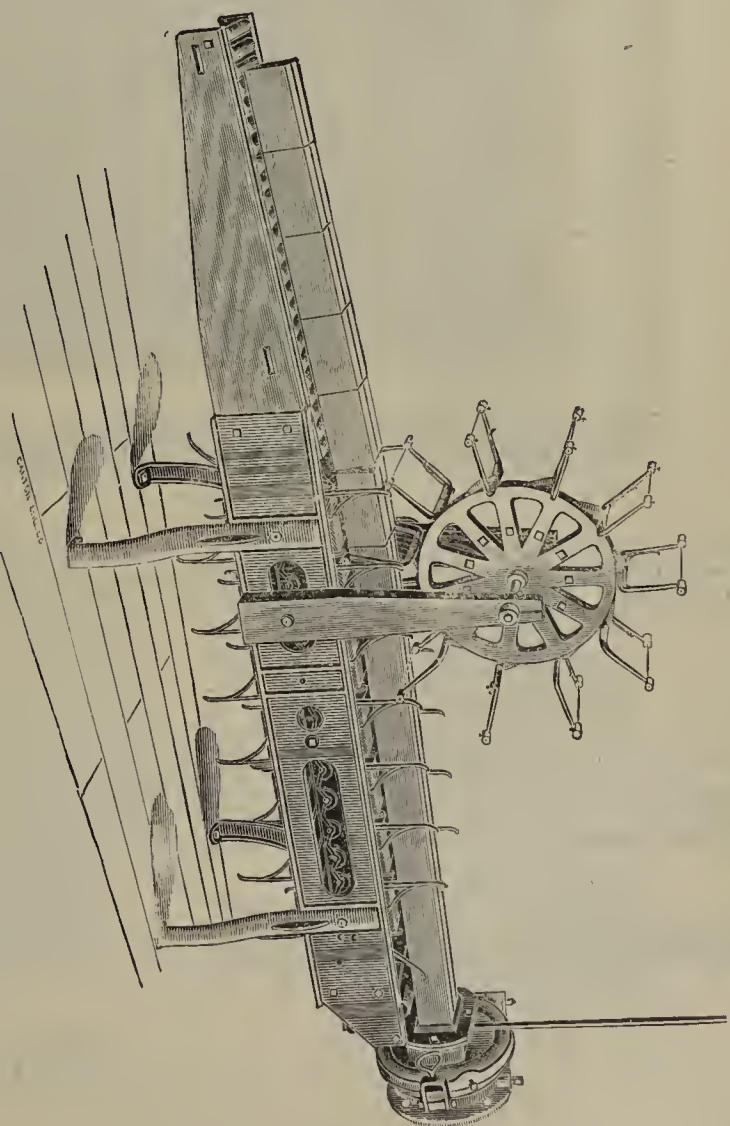


# “PLYMOUTH”

Look at it!  
 You can rely on it!  
 Many have tried it!  
 Operates perfectly!  
 Until worn out!  
 Try one yourself!  
 How soon shall we ship?



“A” size Brick Machine, with Board Delivery Cutting Table.



New Automatic End Cut Brick Table.

• • **SUCCESS** • •

“Nothing Succeeds Like Success.”

Correct in principle  
 Strong in construction  
 Easy of Operation

Let us hear from you.

THE FATE-  
 GUNSAULLUS  
 COMPANY,

Plymouth,

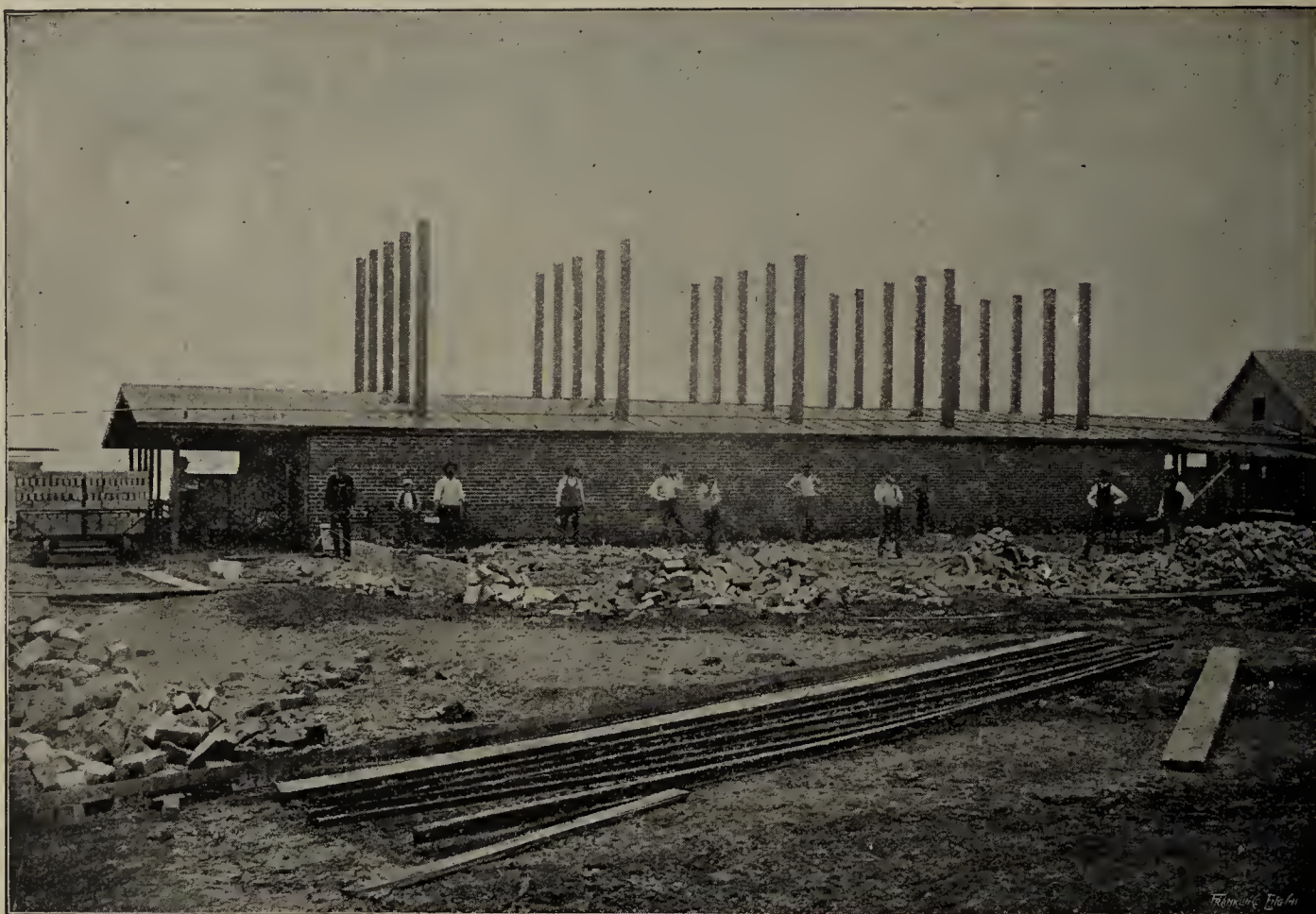
Richland Co., Ohio.



# The BUCYRUS STEAM TUNNEL DRIER

*It Has Never Failed, Nor Never Will!*

**WHY?** Because it distributes its radiation with the same uniformity as the sun's rays. It only differs from the heat of the solar body in its intensity. This is the principle upon which we construct the Bucyrus Steam Tunnel Drier, and it is useless to argue that it is not the correct principle, for no experienced clayworker can or will deny that the sun's rays, direct or indirect, is not the best mode of drying clays. Its only weakness is its inability to do the work rapidly. We substitute the Bucyrus Steam Tunnel Drier, using natural principles only, adding thereto sufficient heat to do the work in the minimum amount of time.



THE FREY-SHECKLER CO., BUCYRUS, OHIO.

NEW CASTLE, PA., December 26, 1893.

GENTLEMEN:—I have been endeavoring to write you for some time as to the satisfactory results of the Tunnel Dryer you put in for me about two years ago. It does all I could expect of it. It makes 15,000 brick per day (that is the capacity of my dryer). I have not stopped one hour on account of my brick not being dry. I think the cost of drying by it is cheaper than any other process I have seen.

Yours truly,

M. S. MARQUIS.

THE FREY-SHECKLER CO., BUCYRUS, OHIO.

GALESBURG, ILL., January 10, 1894.

GENTLEMEN:—The Dry House at our works, put up for us last June, has been another of those perfect things constructed by the Frey-Sheckler Co. Constructed and adapted to the use of our exhaust steam during the day time and live steam during the night, it has been a perfect dryer. Contemplated to hold our brick forty-eight hours, it has been the very best dryer in the country, and made a saving in cost of fuel to us of 50 cents to 60 cents per 1,000, paying the cost of Dryer in one year. With addition of extra steam for daytime we can dry 125,000 in twenty-four hours. We take pleasure in testifying to the virtues of the Dryer.

With respect,

GALESBURG BRICK & TERRA COTTA CO

Per Albert Warren, Sup't.

**We Solicit Correspondence From All Brickmakers**

## THE FREY-SHECKLER CO.,

— BUILDERS —

Send for Catalogue.....

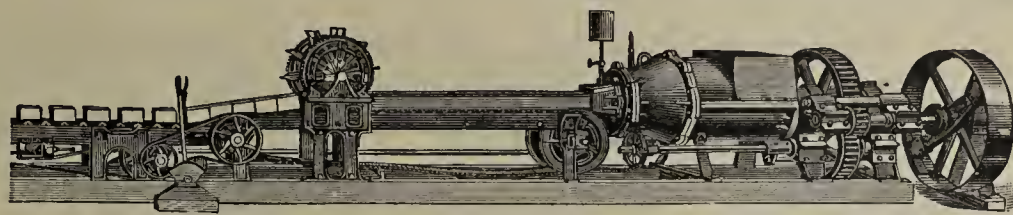


*Bucyrus, Ohio, U. S. A.*



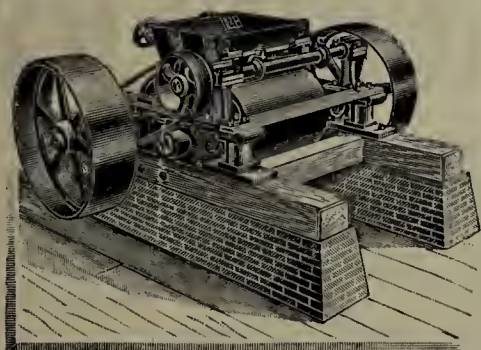
# WE STUDY TO PLEASE.

## A FEW SAMPLES

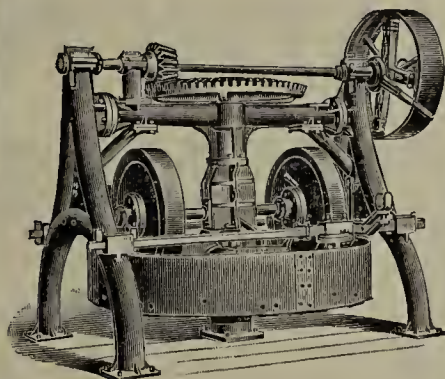


No. 1 Giant Machine and Automatic Table.

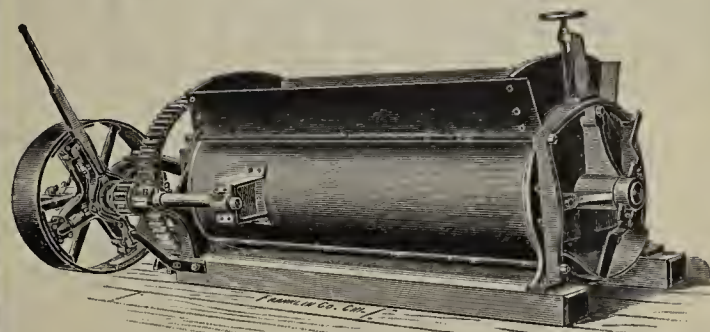
Just to give you  
an idea. That's  
All.



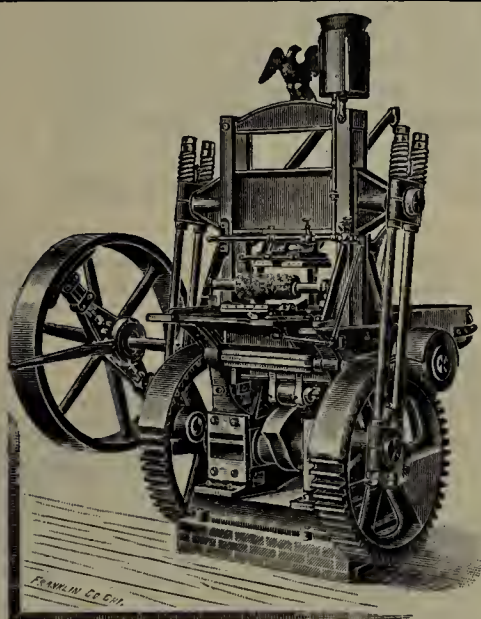
Improved Tailings Crusher.



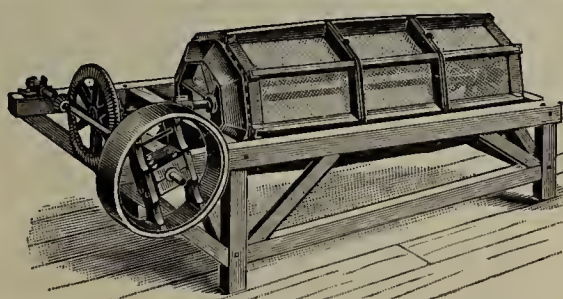
Dry and Wet Pans.



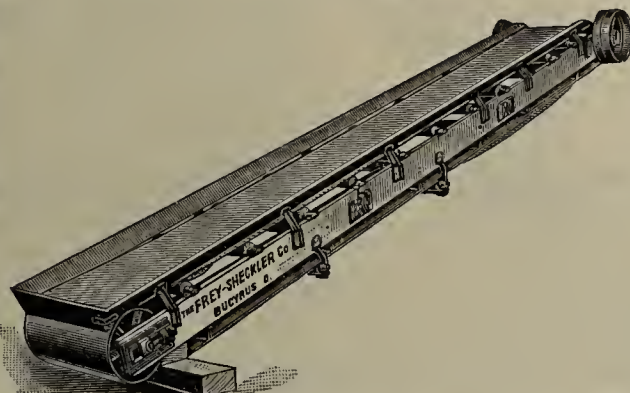
Pug Mills and Granulators.



Eagle Steam Power Re-Press.



Octagon Revolving Clay Screens.



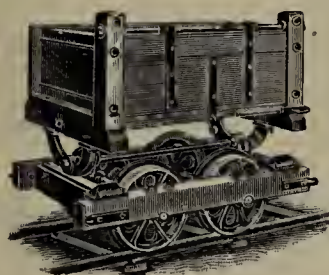
Clay Conveyors.



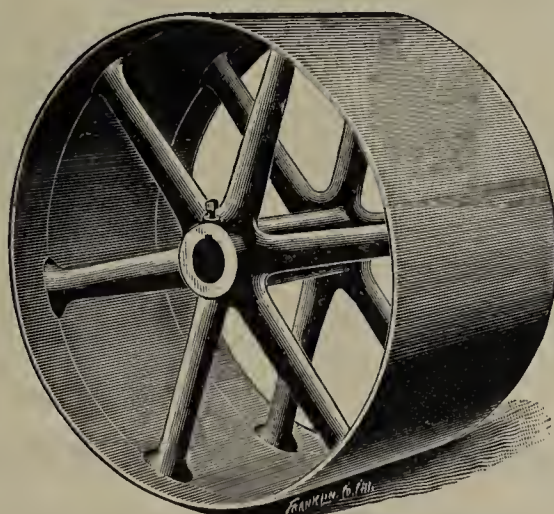
Clay Elevators.



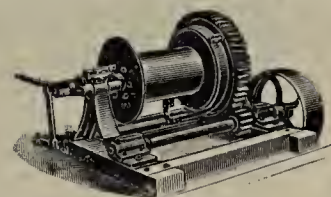
Reduction Mill.



Dump Cars.



Pulleys, Shafting and Belting.



Winding Drums.



Couplings, Hangers, Etc.

**The FREY-SHECKLER CO., - Bucyrus, Ohio, U. S. A.**  
Manufacturers of a Complete Line of Clayworking Machinery. Also builders of the Celebrated Bucyrus Steam Tunnel Dryer.  
**Send for Catalogues.**



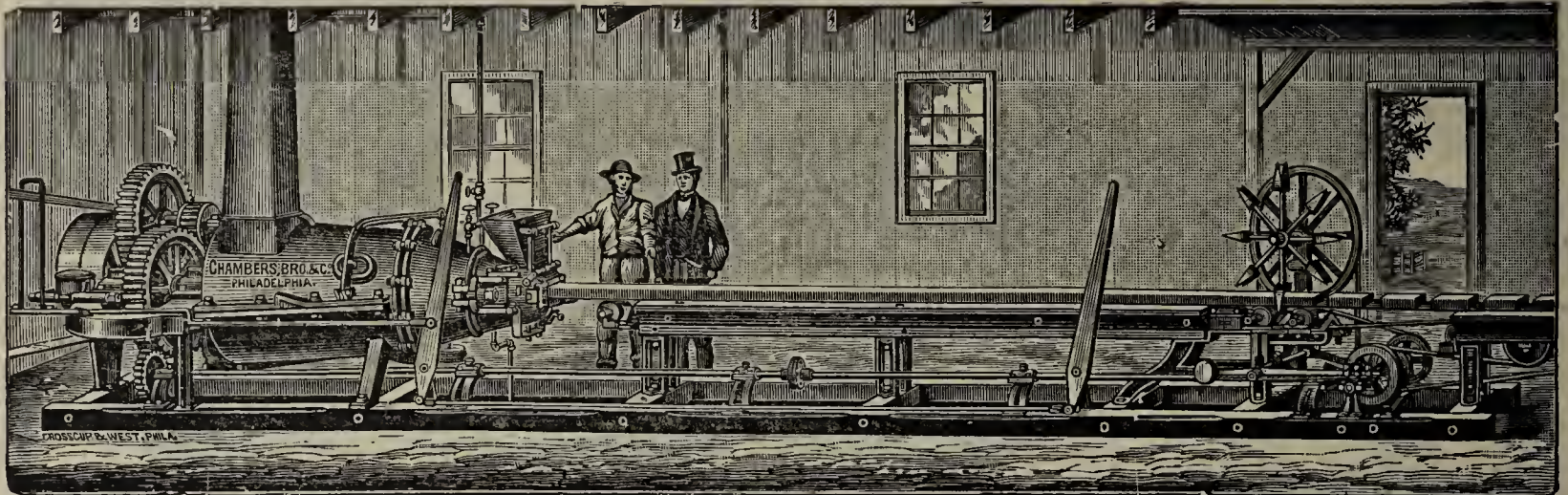
# CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

◆◆ PHILADELPHIA, PENN. ◆◆



## IMPROVED BRICKMAKING MACHINERY.



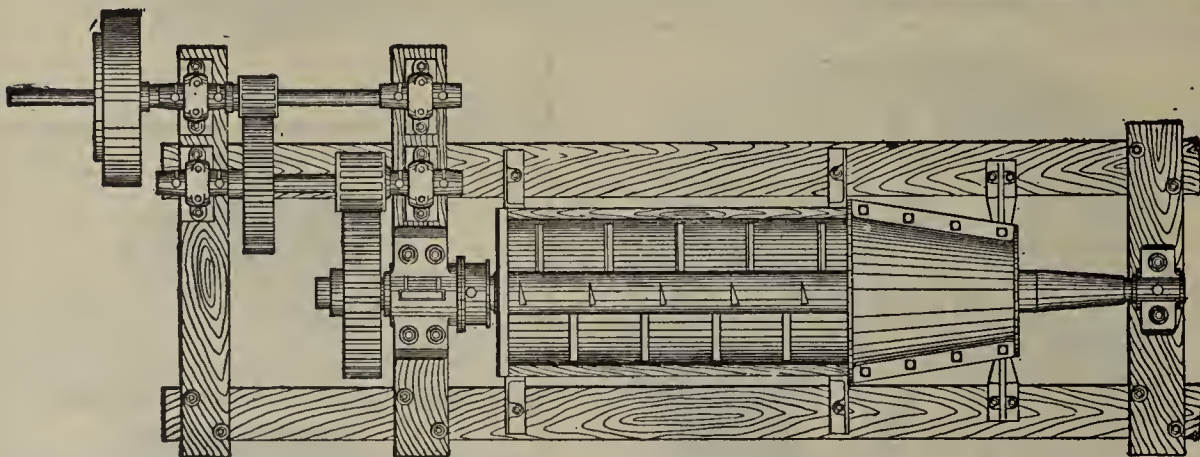
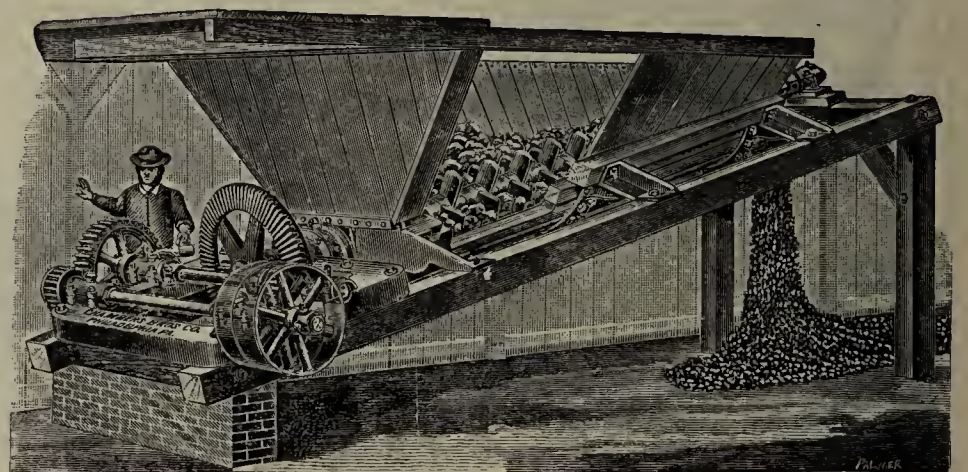
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL  
PUG MILLS

Of Six Sizes and Styles.

VERTICAL PUG MILLS, ◆◆ CRUSHING ROLLERS,  
CLAY ELEVATORS.

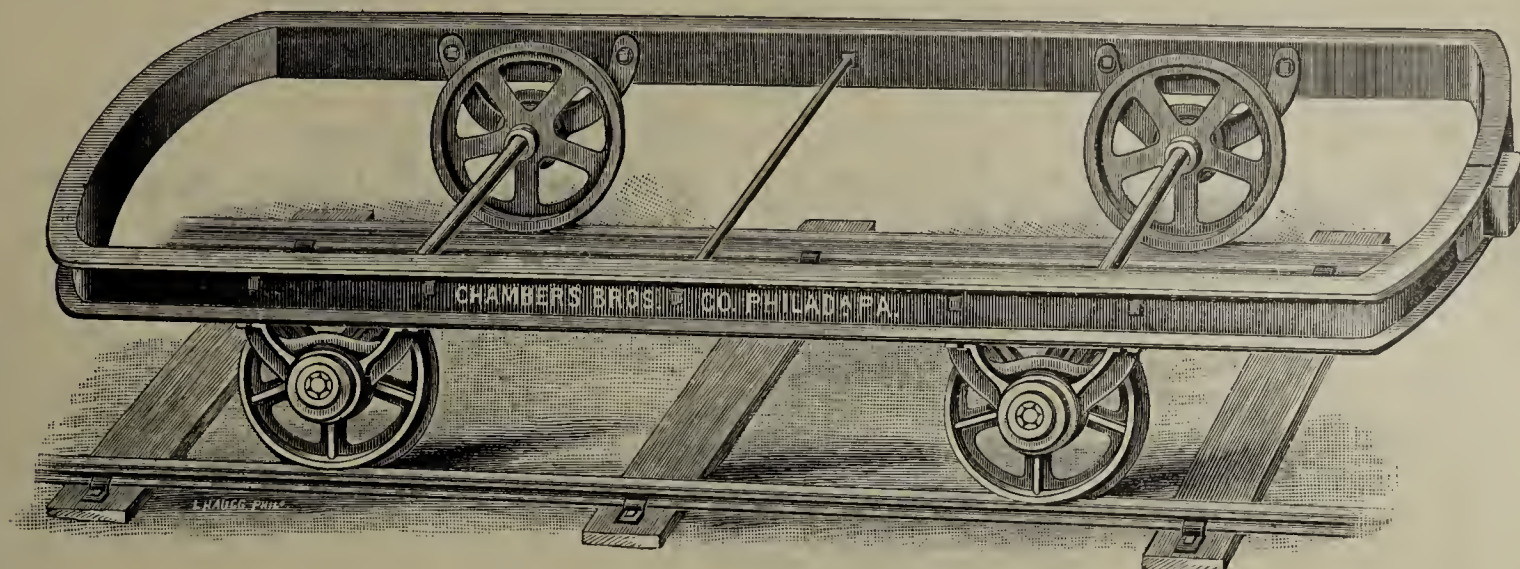
KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]



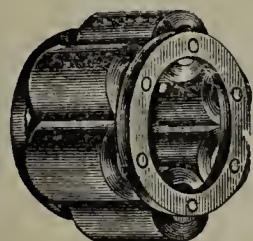
# ❖ DRYER CARS. ❖



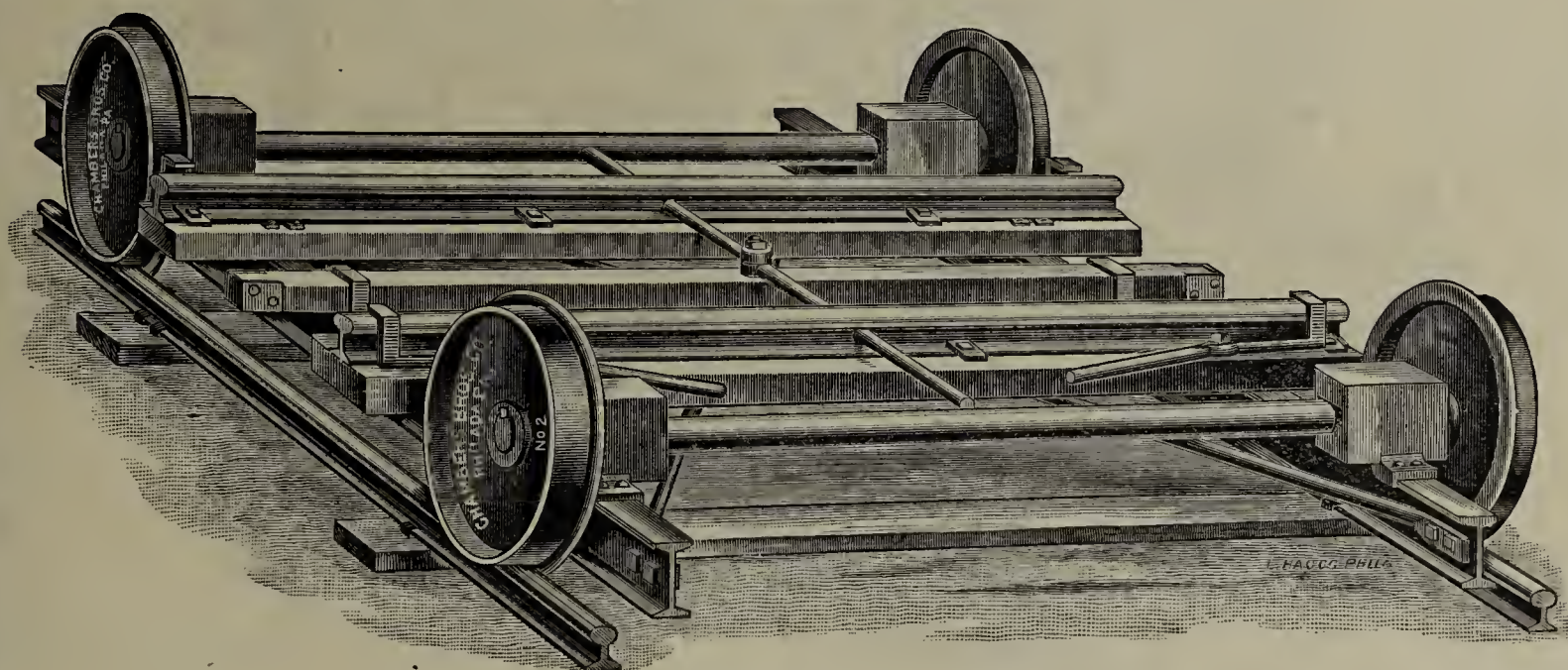
This STEEL CHANNEL FRAME CAR is Without an Equal.

We are prepared to make it of different dimensions, and of gauge to suit customers requirements. The channel section is much stiffer than angle, and being in one piece there are no weakening joints as where cross rails and bumpers are bolted to side frames.

The Anti-friction Cage Roller



Bearing used on our Cars.



WROUGHT IRON BEAM TRANSFER CARS.

We guarantee these to give satisfaction.

## CHAMBERS BROTHERS CO.,

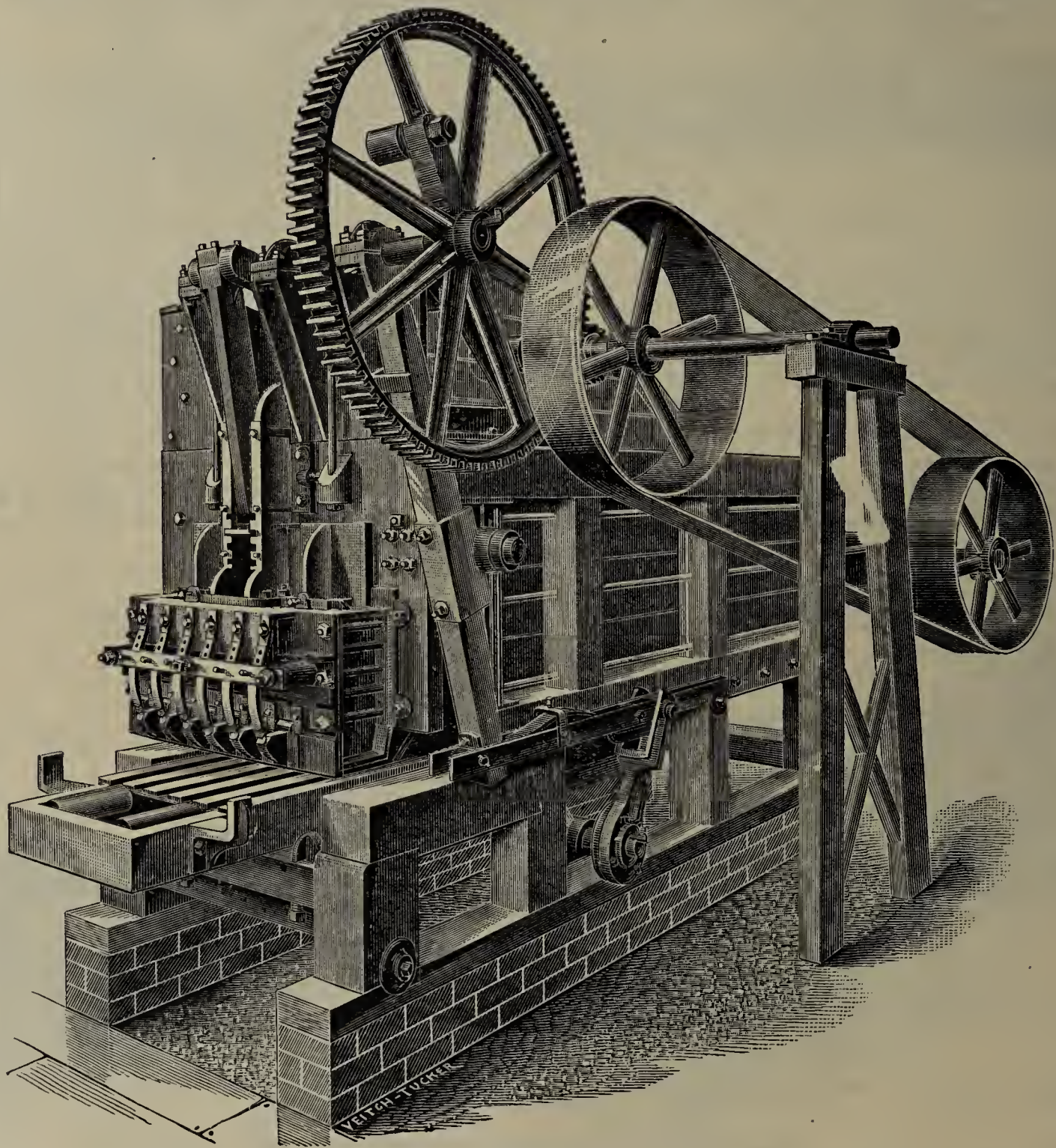
Fifty-Second St., Below Lancaster Ave.,

❖ PHILADELPHIA, PENN. ❖



—:WE BUILD:—

# Brickmaking Machinery.



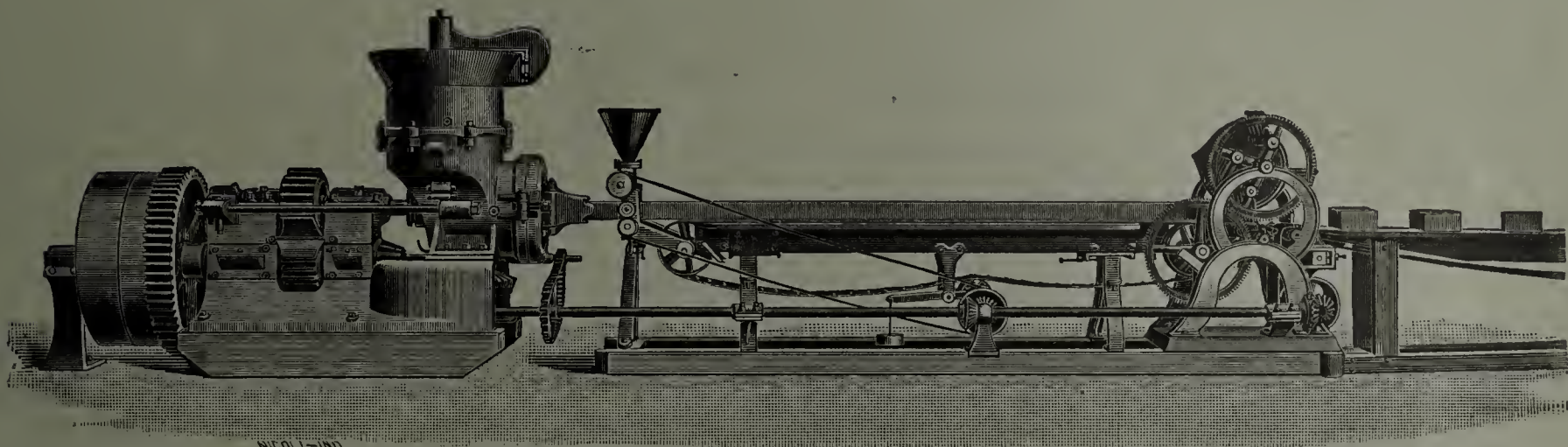
WE WANT YOUR PATRONAGE.

In return we promise you the best service, courteous treatment, and prices as low as is consistent with good work.

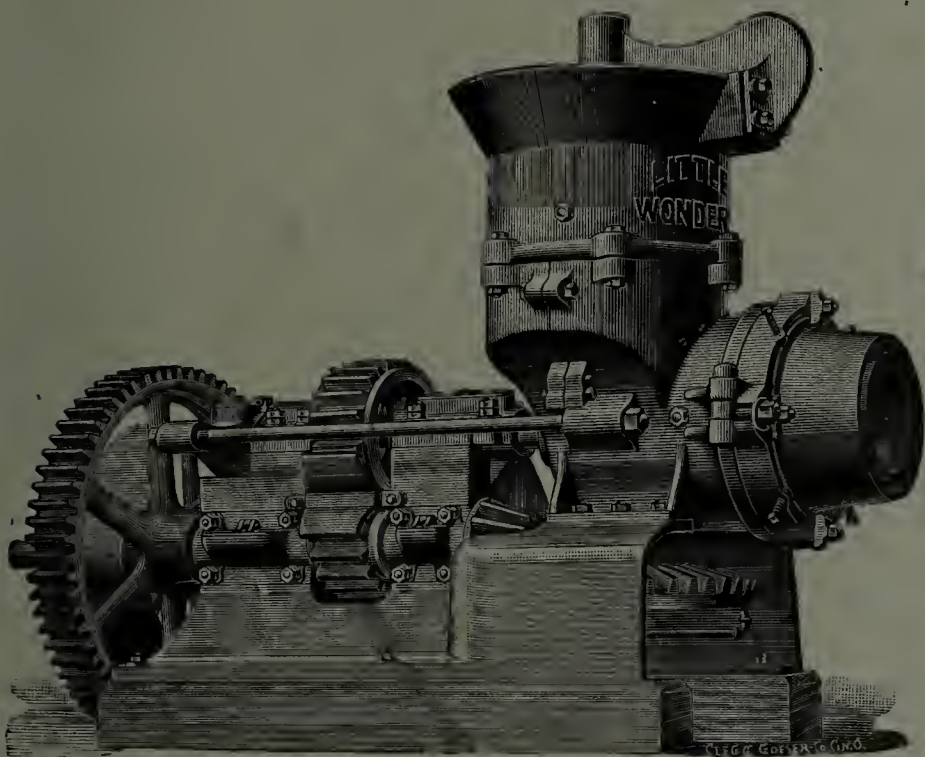
~~~~~FAIR PROPOSITION, IS IT NOT.~~~~~

The McLagon Foundry Co., New Haven, Conn.

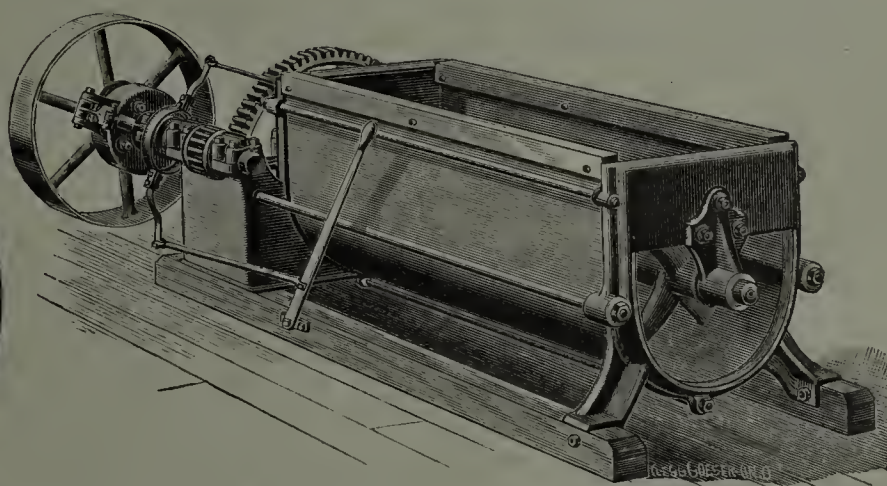
Wonder Machinery.



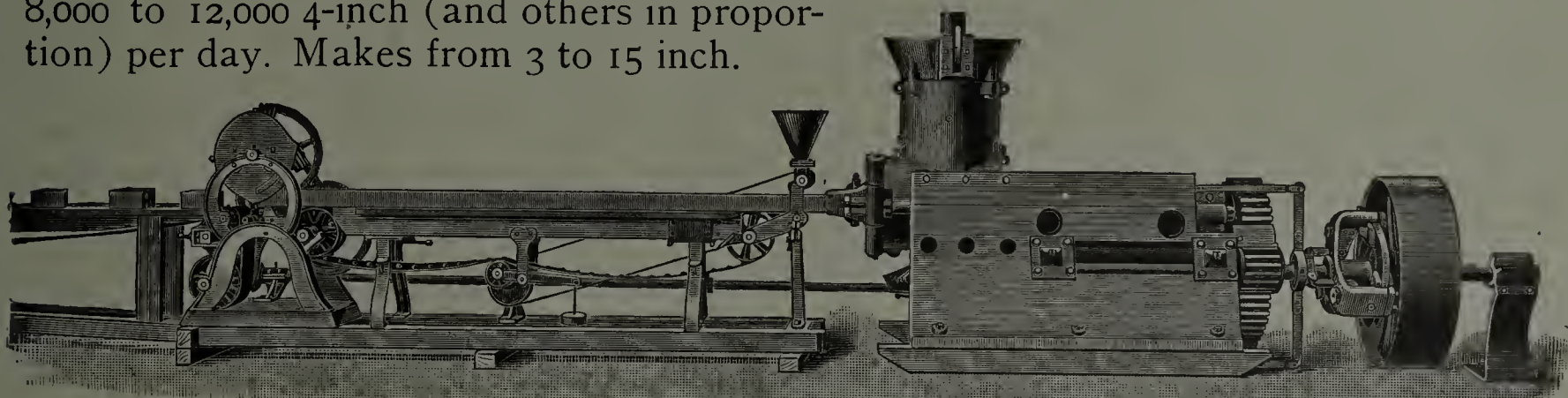
Little Wonder Brick Machine, with Cunningham Automatic Brick Cutter and Sander ; capacity, 25,000 Brick Per Day.



Little Wonder Drain Tile Machine ; capacity 8,000 to 12,000 4-inch (and others in proportion) per day. Makes from 3 to 15 inch.



No. 1 Open Top Pug Mill, Single Geared, 25,000 to 35,000 Brick Daily Capacity.



Big Wonder Brick Machine with Cunningham Automatic Brick Cutter and Sander ; capacity 60,000 to 75,000 Brick Per Day.

AS MANUFACTURED BY ~~~

The Wallace Manufacturing Co.,

Send for No. 14 Catalogue for further particulars.

FRANKFORT, IND.

The LATEST IMPROVED



Brick Dryer.

ADAM J. WECKLER,
TELEPHONE. DIVERSY AND CLYBOURN AVES.

WECKLER BRICK CO.,
TELEPHONE. WESTERN AND ADDISON AVES.

WECKLER-PRUSSING BRICK CO.
TELEPHONE. BLUE ISLAND, ILL.

MAIN OFFICE:
517 OGDEN BUILDING, 34 CLARK ST.
TELEPHONE 5044.

Chicago, July 18, 1894.

WOLFF DRYER CO., Chicago,

Gentlemen:—We have had one of your twelve track dryers in use for nearly two years and two six track dryers for more than one year. Since you have improved these dryers by means of the receiving tank and pump system, we are drying 175 to 180 M bricks per day, with a saving of 20 to 25 per cent. of steam used under the old system. It is possible to dry up to 200 M brick every 24 hours, without injury to the ware, and we have done this on several occasions when we were compelled to run over time.

Our experience with other dryers formerly used on our plant and the results obtained by other manufacturers in this neighborhood with hot air and fire dryers, compels us to say that in our estimation your dryers are more economical and show better results than any we have seen. We use two boilers 5x18 feet for these dryers and at times have to reduce the quantity of steam used to prevent getting the bricks too dry. Pressure carried 85 pounds.

Yours respectfully,

WECKLER-PRUSSING BRICK CO.,
Alexander Prussing, Secretary

TENNESSEE PAVING BRICK CO.,

GENERAL OFFICES:—MONTAGUE BLOCK.

W. M. LASLEY, GENERAL MANAGER.

ROOMS 1 & 3.

Chattanooga, Tenn., September 3, 1894.

The WOLFF DRYER COMPANY, Chicago, Ills.,

Gentlemen:—We have thoroughly tested your Iron Clad Dryer put in for us recently, consisting of three (3) tunnels of three (3) tracks each; tunnels being eight-three (83) feet long, and it is giving us entire satisfaction. We are drying forty thousand (40,000) paving blocks per day, in size $2\frac{3}{4} \times 4\frac{1}{8} \times 9\frac{1}{4}$. Our brick come from the dryer perfectly dry, without checks, warp or twist.

It is a decided improvement over our old method of direct heat flue dryer and we are drying more and better brick with it than we did with our old system, nine (9) tunnels, three (3) tracks in each tunnel.

We adopted your system after investigating others and can recommend it.

Yours truly,

TENNESSEE PAVING BRICK COMPANY,
W. M. Lasley, Gen. Man.

DRYING SAND MOLD BRICK.

C. HENNEKE, PRESIDENT.
F. VOGT, SECRETARY

TELEPHONE 737-2.

STANDARD BRICK CO.,

MANUFACTURERS OF THE CELEBRATED

Milwaukee Cream Colored Brick.

OFFICE AND YARDS: 496-510 Clement Ave., 17th Ward.

Milwaukee, Wis., Sept. 30, 1893.

WOLFF DRYER CO., Chicago, Ill.

Gentlemen:—In regard to your inquiry, how we like the exhaust pump put in for our dryer last Spring, we are glad to say, that same works to our entire satisfaction; in fact could work no better and what is more, has saved us a great deal of fuel. It gives us also great satisfaction to say on this occasion, that your dryer, after using same three seasons, works as nicely as ever and we are fully convinced that we have the best dryer in the market to-day. Last year we felt a little doubtful as to whether we really had the best dryer, for other parties, who tried to sell their dryers here, made such high claims for same in every respect, that, if realized, they would put your dryer in the shade. Since then two dryers of different makes, were put in different yards here, just those dryers, for which these claims were made. One of them proved a complete failure, drying about 20,000 brick per day, instead of 60,000, and it will have to be torn down to make room for some other dryer; and the second did not work until same was materially changed, and we have all reasons to congratulate ourselves to have hit on the right dryer in the first place. We shall be glad to show your dryer to any interested parties who may visit our yards. Yours very truly,

STANDARD BRICK CO.,
F. Vogt, Sec'y.

Labahn Brick Company,

MANUFACTURERS OF

BUILDING BRICK.

YARD:—LANSING, ILL., PANHANDLE R. R.

TELEPHONE:—MAIN 4132.

OFFICE:—159 LA SALLE ST., ROOM 97.

Box 408, BUILDERS' AND TRADERS' EXCHANGE.

Chicago, Ill., September 7, 1894.

WOLFF DRYER CO., Chicago, Ill.,

Gentlemen:—The four tunnel dryer, sixteen tracks, which you built for us to dry 90 M bricks daily, did the work in a very satisfactory manner. Recently we concluded to increase our capacity which we could do with very little expense, providing we could dry the extra quantity.

We are pleased to state that you mastered the situation by adding your late improvements which cost very little extra, and we are now enabled to dry 112 M bricks as easily and with no more expense than the cost of drying 90 M, and we feel confident that if we were to run 10 hours daily, instead of eight as we are now doing, that the drying capacity is ample to thoroughly dry the entire output. We therefore take pleasure in commending your dryer to all brick manufacturers in need of an economical system of drying their clay product.

Yours respectfully

LABAHN BRICK CO.,
John F. Labahn, Pres.

Information, Estimates, Catalogues fully furnished.

WOLFF DRYER CO., 358 Dearborn St. **Chicago, Ill.**
Room 304,



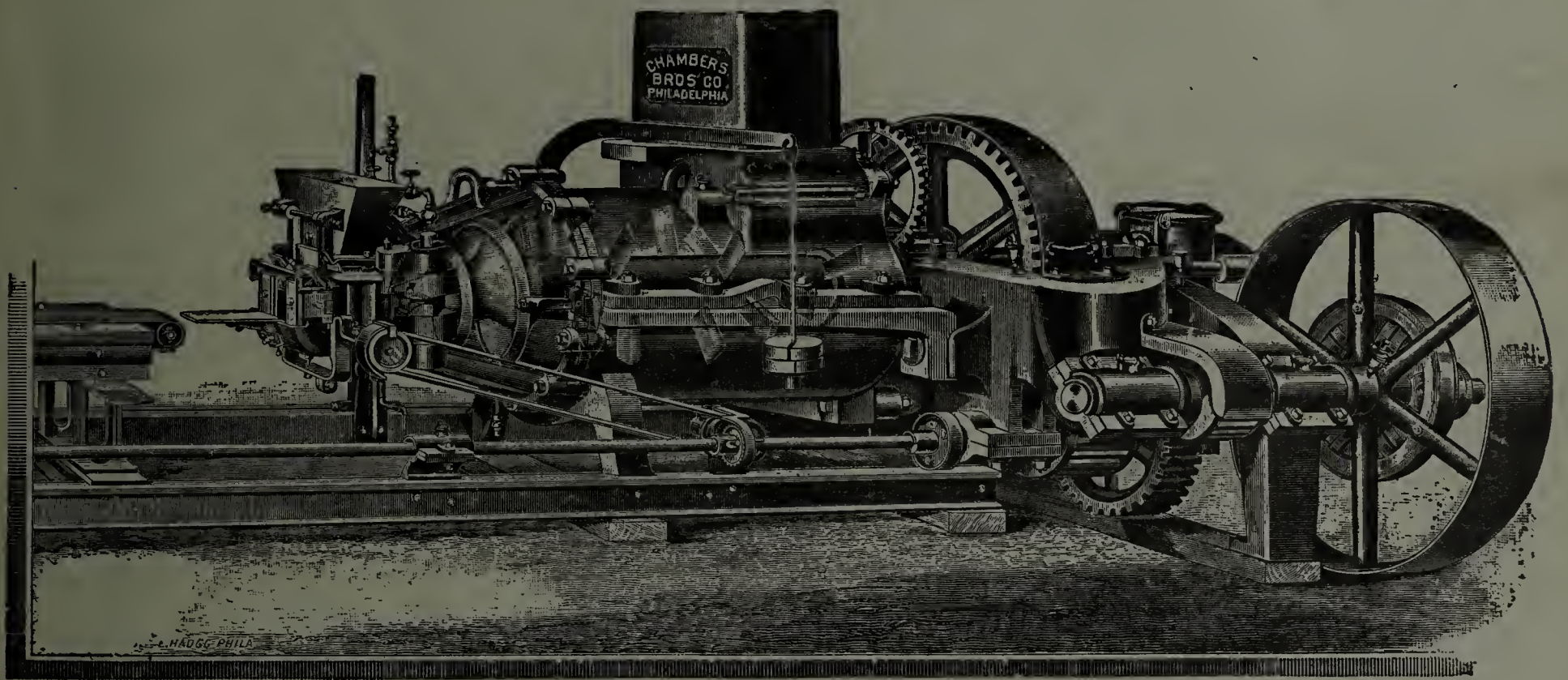
THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXII, No. 6.

INDIANAPOLIS, IND., DECEMBER, 1894.

\$2.00 a Year in Advance.

Brick Making Machinery,



Chambers Brothers Company,

FIFTY-SECOND STREET, BELOW LANCASTER AVE.,

J. E. EASTES, Chicago Agent,

203 South Canal Street.

PHILADELPHIA, PA.

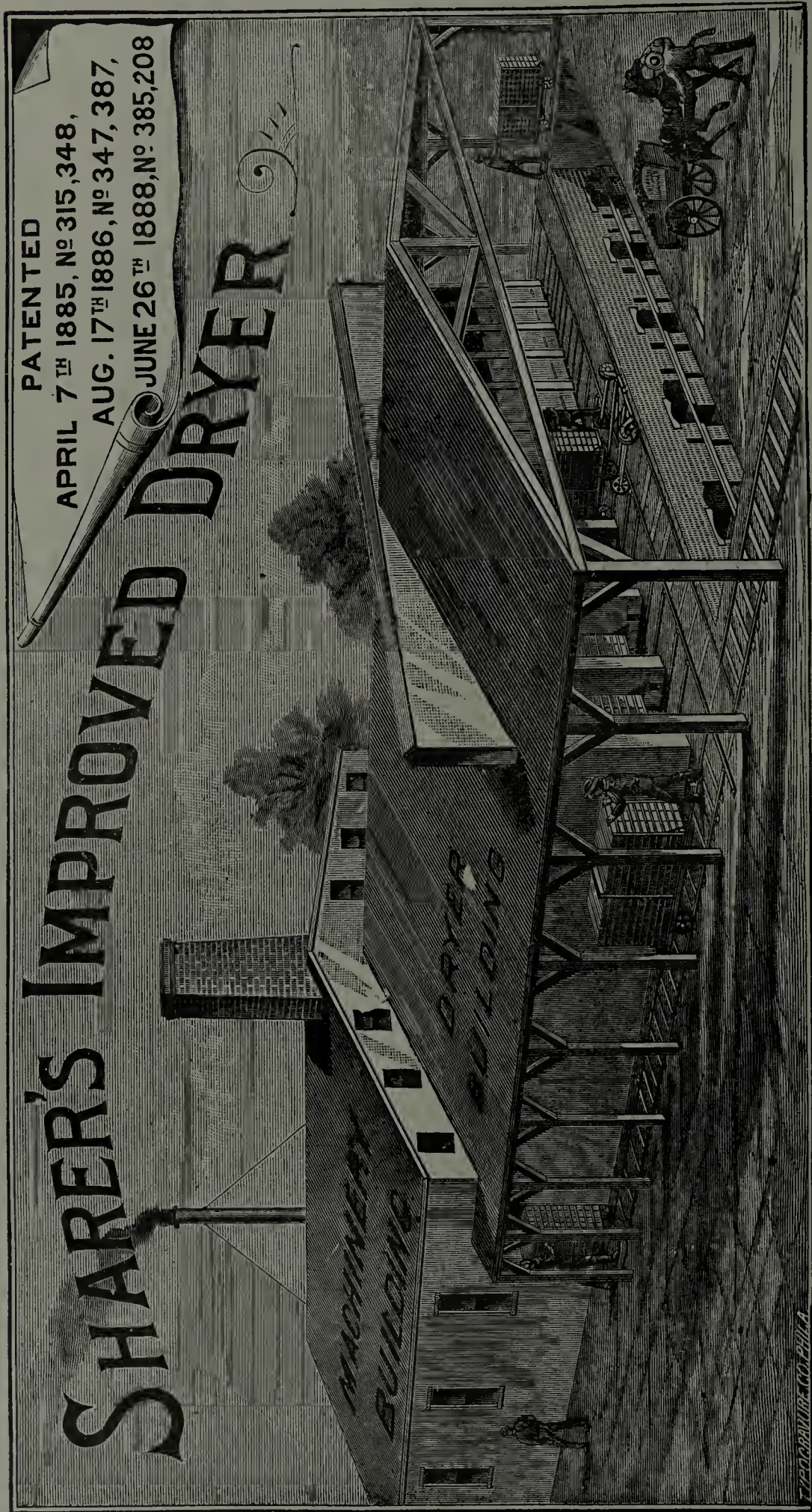
See ads. on pages 608 and 609.

THE SHARER DRYER AND CONSTRUCTION CO.,

**CONSTRUCTING ENGINEERS. CONTRACTORS AND BUILDERS.
BRICK MANUFACTURING EXPERTS. COMPLETE PLANTS A SPECIALTY.**

Builders of All Kinds of Dryers and Kilns for Dry ing and Burning any and all Kinds of Clay Products.

**Owners of SHARER'S IMPROVED DRYER;
SHARER'S IMPROVED CALORIFIC KILN.**



Manufacturers of Cars, Transfer Cars, Turn Tables, Furnace Castings and Complete Dryer and Kiln Equipments.

.....Dealers in All Kinds of Clayworking Machinery, Engines, Boilers, Shafting, Pulleys, Etc.

New plants built and equipped complete in every particular. Old plants remodeled and modernized. Clays tested and analyzed. Plans and estimates furnished. Information costs you nothing. Send for Catalogue "C."

SHARER DRYER & CONSTRUCTION CO.,

**TORONTO OFFICE: 71 Adelaide, East, Toronto, Ont., Canada,
HUGH CAMERON, Manager.**

Rooms 506 and 507, The Mutual Life Building,
N. W. Cor. 10th and Chestnut Streets,

PHILADELPHIA, PA.

For Clay Screens

..USED...

In Making Brick,
Tile, Terra Cotta,
etc., etc.

Also for Dry Pan,
Pulverizer, Chute,
Shaking and Re-
volving Screens.



Heavy Iron and Steel Plates

Punched for sizing
Coal, Coke and
Ores; Macadam,
Concrete, Railroad
Ballast, Sand, Etc.

PERFORATED STEEL PLATES AND SHEETS
—USED FOR—

CLAY SCREENS.

Perforated Steel Screens are the most effective and durable, and applicable in all manner of Separating and Grading.

—SHALL WE SERVE YOU?—

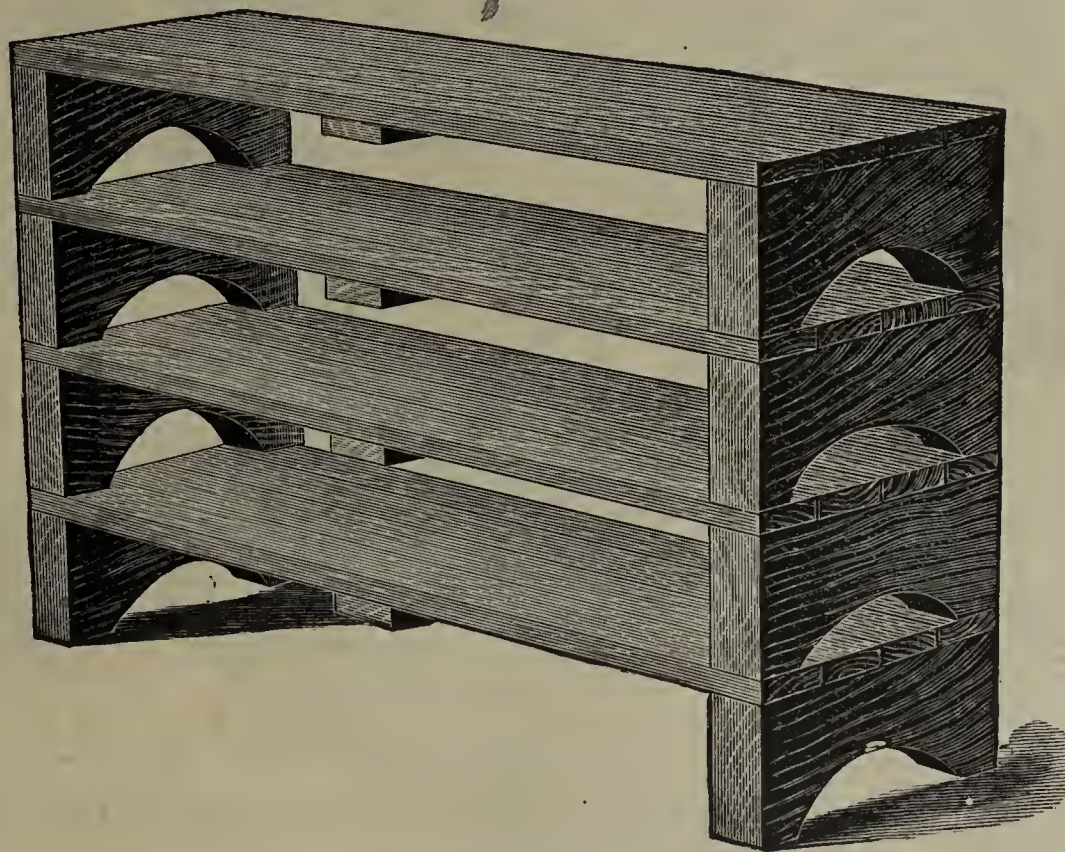
THE HARRINGTON & KING PERFORATING CO.,

EASTERN OFFICE:
284 Pearl Street, NEW YORK.

Nos. 224 to 240 North Union Street,
CHICAGO, ILL.

WOODEN BRICK PALLETS

WOODEN
BRICK
PALLETS



STYLE C.

WOODEN
BRICK
PALLETS

We manufacture all styles and sizes. Write to us direct for descriptive circulars and prices.

WM. B. MERSHON & CO., - Saginaw, East Side, Mich.

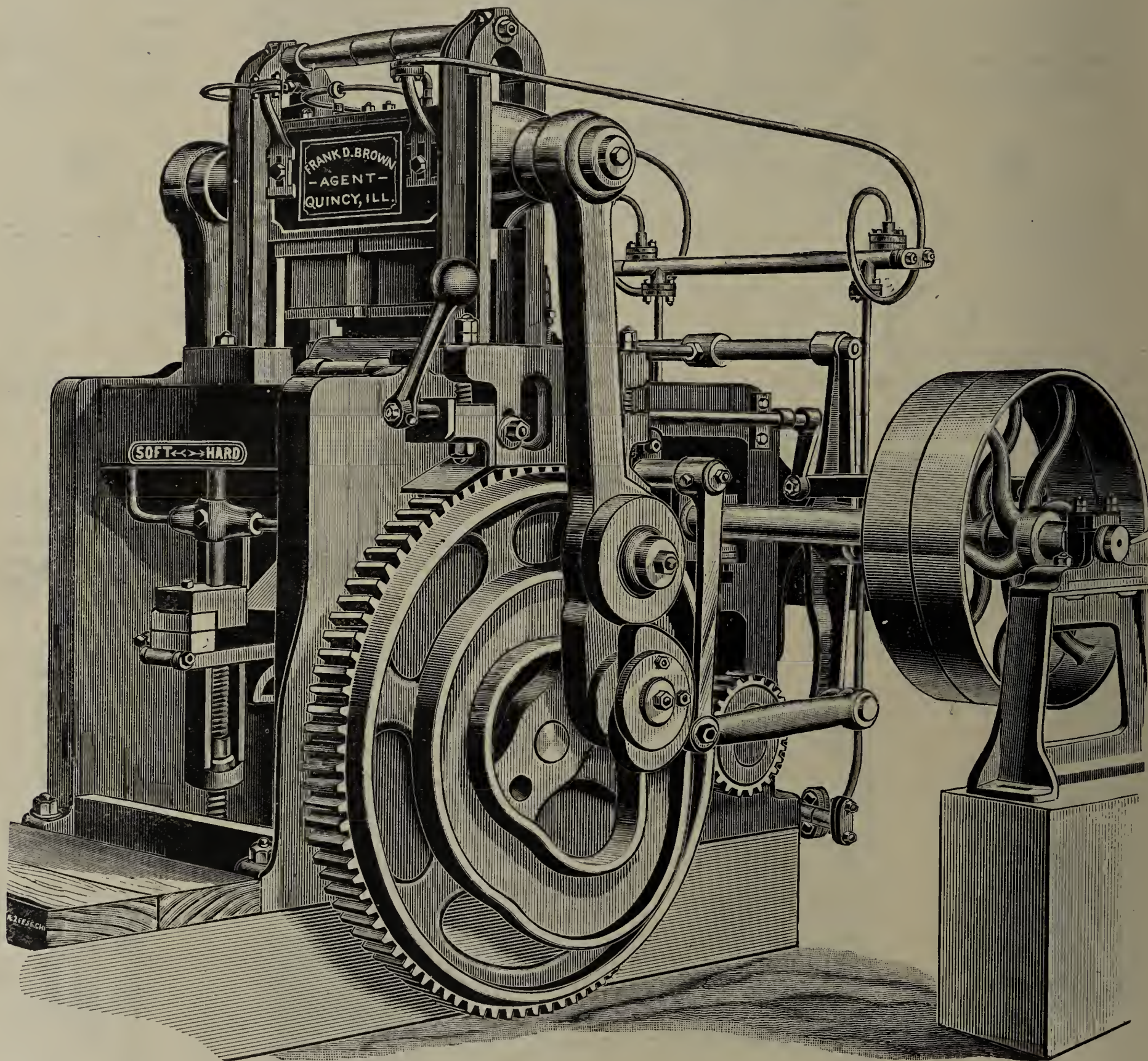
WHITTAKER PRESS BRICK MACHINE.

Works Clay Semi-Plastic, Semi-Dry or Dry.

• HAS NO EQUAL FOR THE MANUFACTURE OF FINE FRONT AND ORNAMENTAL BRICK. •

Best, Cheapest and Most Durable Press in the World.

* ————— One, Two and Four Mould Machines.



No need to experiment. A positive success insured to all brickmakers desiring the best and most durable press and finest product.

Will place the machine in your yard and guarantee entire satisfaction.

Your correspondence solicited.

FRANK D. BROWN, Room 817 Continental Bank Bldg.
Cor. La Salle & Adams Sts. **Chicago.**

The Ross-Keller Brick Machine.

— TRIPLE PRESSURE —

Weight of 4-Mold Press 50,000 Pounds, Capacity 24,000 Per Day. Weight of 6-Mold Press 75,000 Pounds, Capacity 36,000 Per Day.

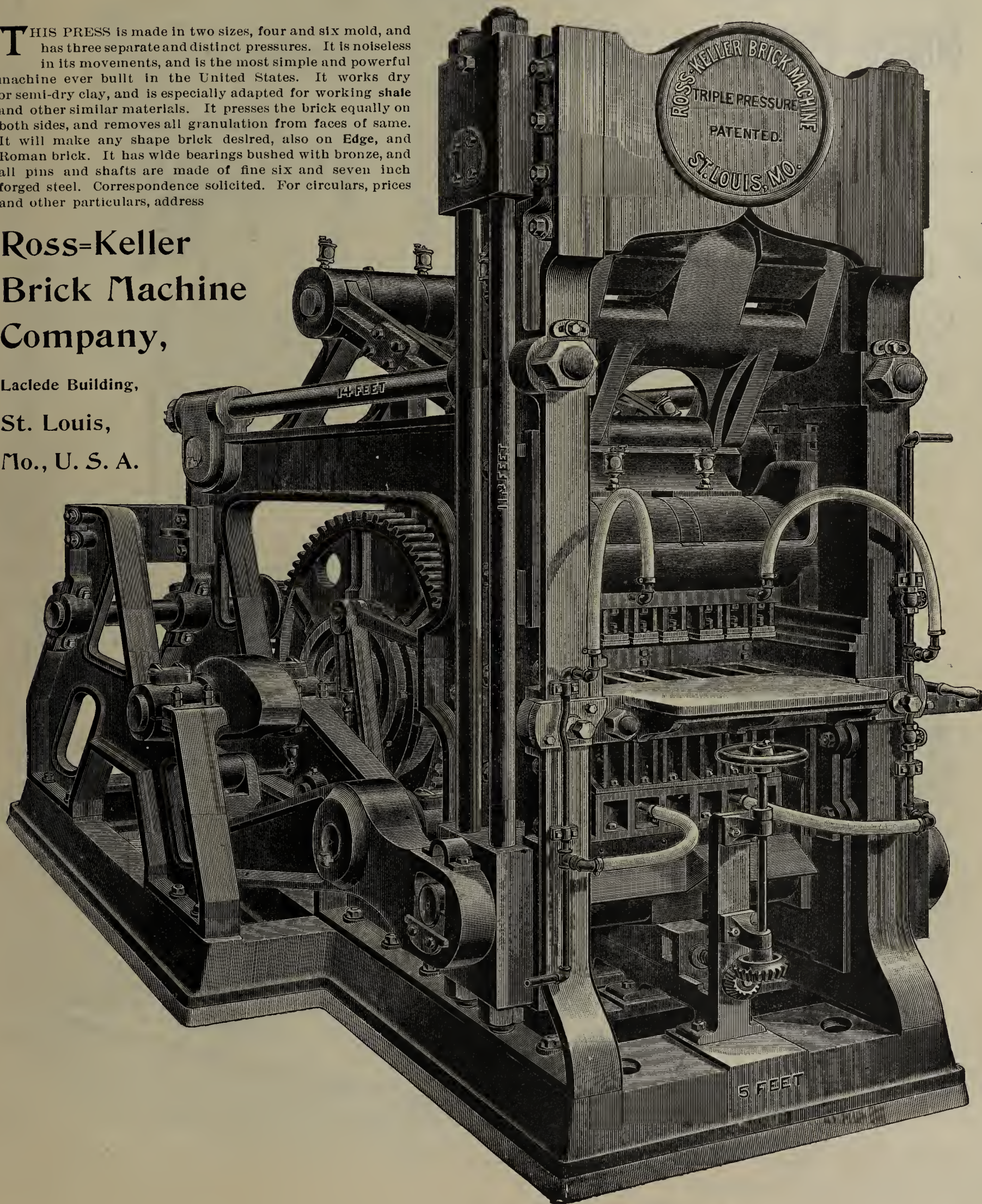
THIS PRESS is made in two sizes, four and six mold, and has three separate and distinct pressures. It is noiseless in its movements, and is the most simple and powerful machine ever built in the United States. It works dry or semi-dry clay, and is especially adapted for working shale and other similar materials. It presses the brick equally on both sides, and removes all granulation from faces of same. It will make any shape brick desired, also on Edge, and Roman brick. It has wide bearings bushed with bronze, and all pins and shafts are made of fine six and seven inch forged steel. Correspondence solicited. For circulars, prices and other particulars, address

**Ross-Keller
Brick Machine
Company,**

Laclede Building,

St. Louis,

Mo., U. S. A.



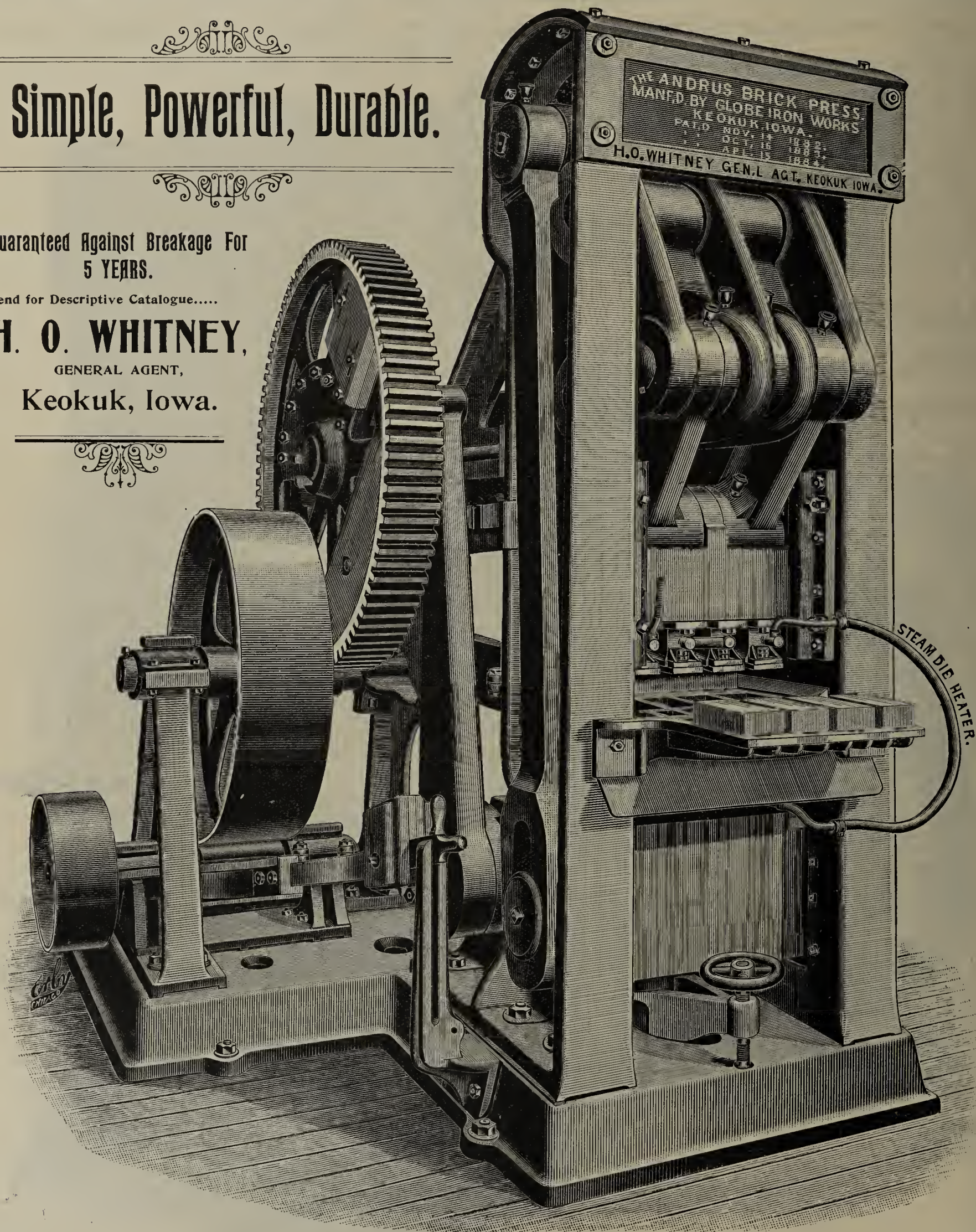
THE ANDRUS 4-Mold DOUBLE PRESS BRICK PRESS.

Simple, Powerful, Durable.

Guaranteed Against Breakage For
5 YEARS.

Send for Descriptive Catalogue.....

H. O. WHITNEY,
GENERAL AGENT,
Keokuk, Iowa.



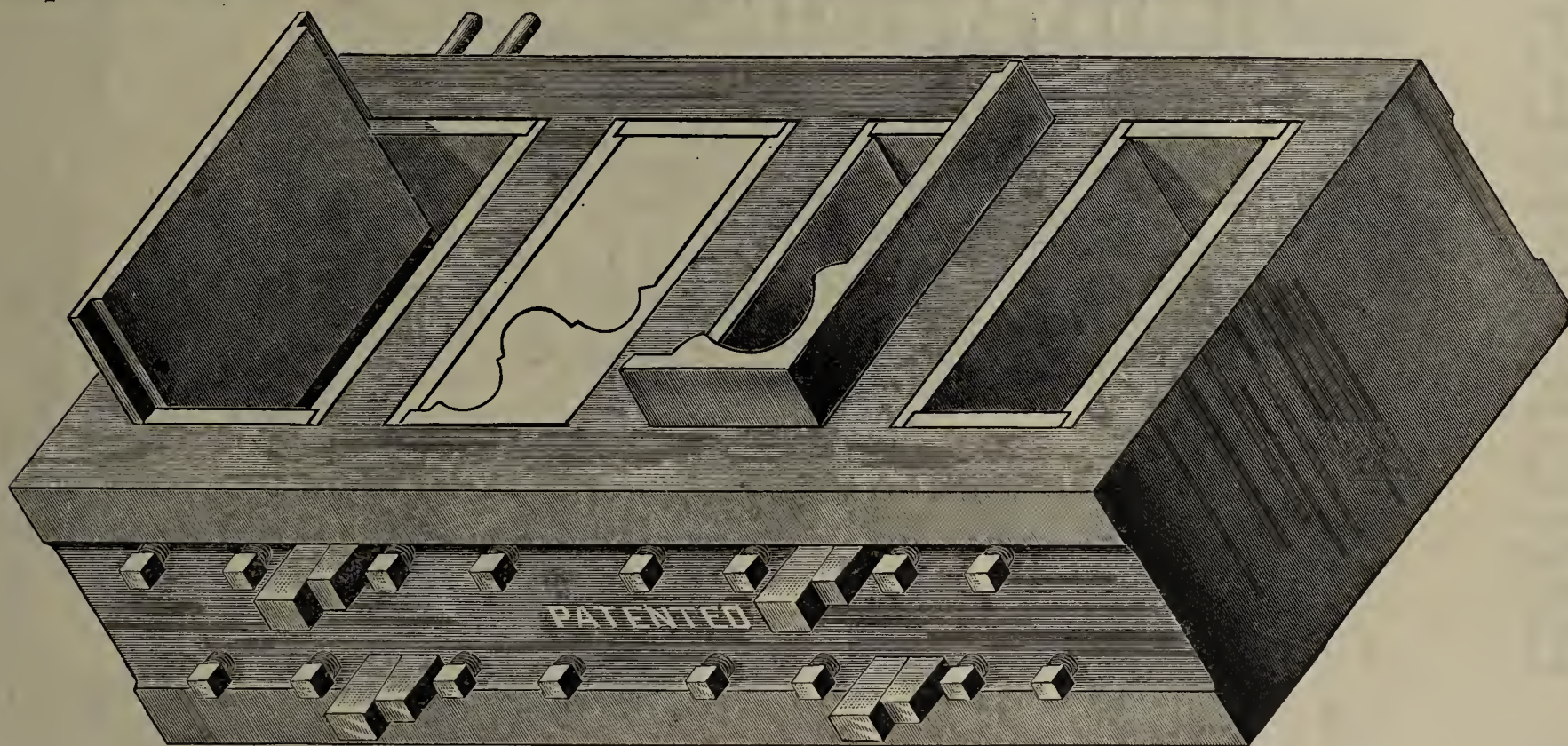
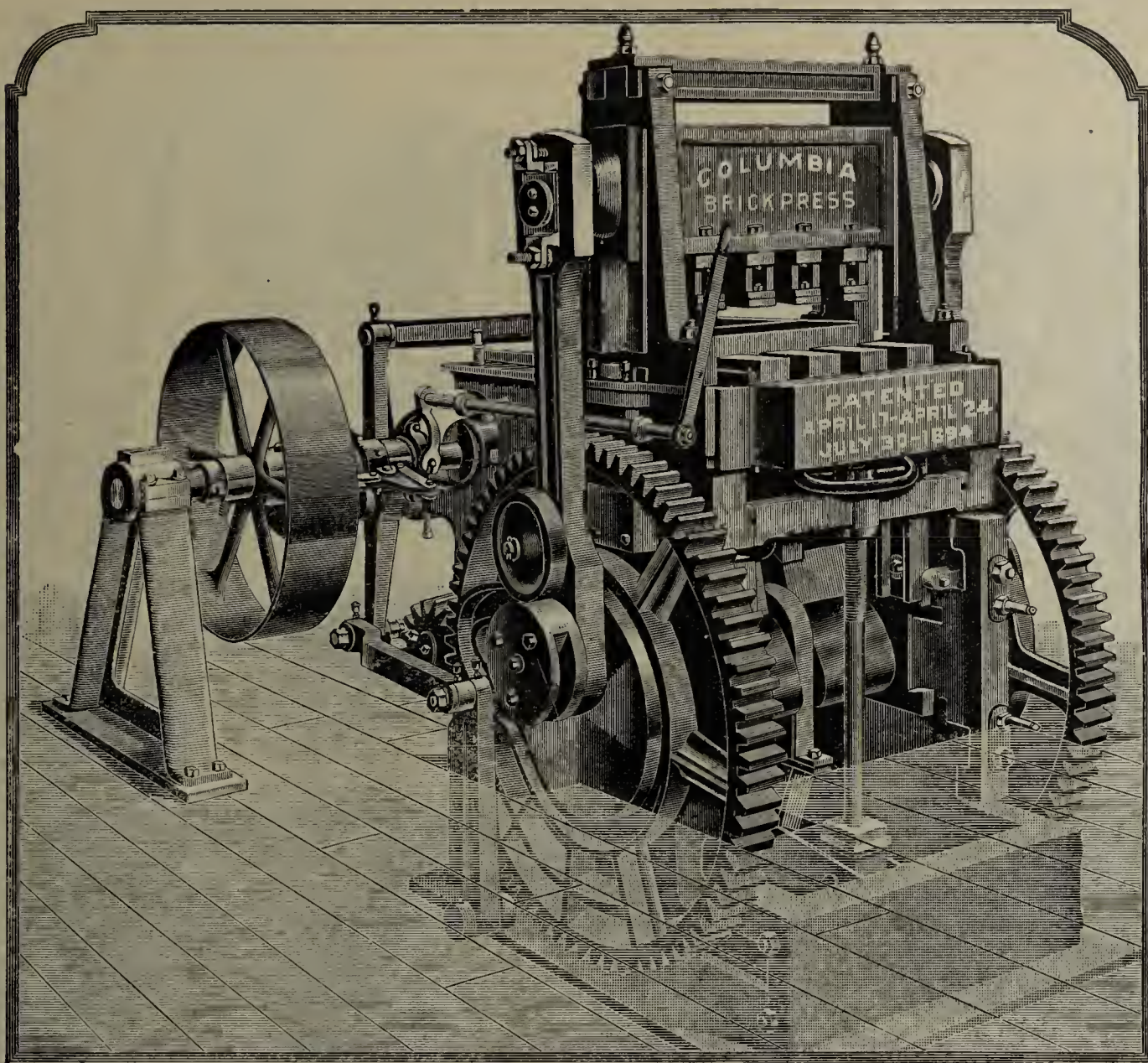
This Press

Is Especially
Adapted to the
Manufacture of
Fine Front
and Ornamental
Brick

And is as well the best
and most unbreakable
Dry Press Machine yet
made.

It is a decided im-
provement over all other
Machines. This we are
prepared to fully demon-
strate.

Those wanting the best
and cheapest Dry Press
Brick Machine now on
the market should write
us for our circular giving
18 REASONS why it is
superior to all others.



OUR NEW PATENT MOULD is elegant in construction and is just the mould that brick manufacturers are looking for, it is so simple in construction that any one can adjust it in a few minutes from a front brick to an ornamental or brick on edge.

WITH THIS MOULD every brickmaker can take out the liners, grind them and replace them himself and will enable him to turn out a first-class front or ornamental brick, which obviates the expense of getting new moulds.

OUR TERMS ARE REASONABLE. ADDRESS,

Columbia Manufacturing Co.,

[Mention the CLAY-WORKER.]

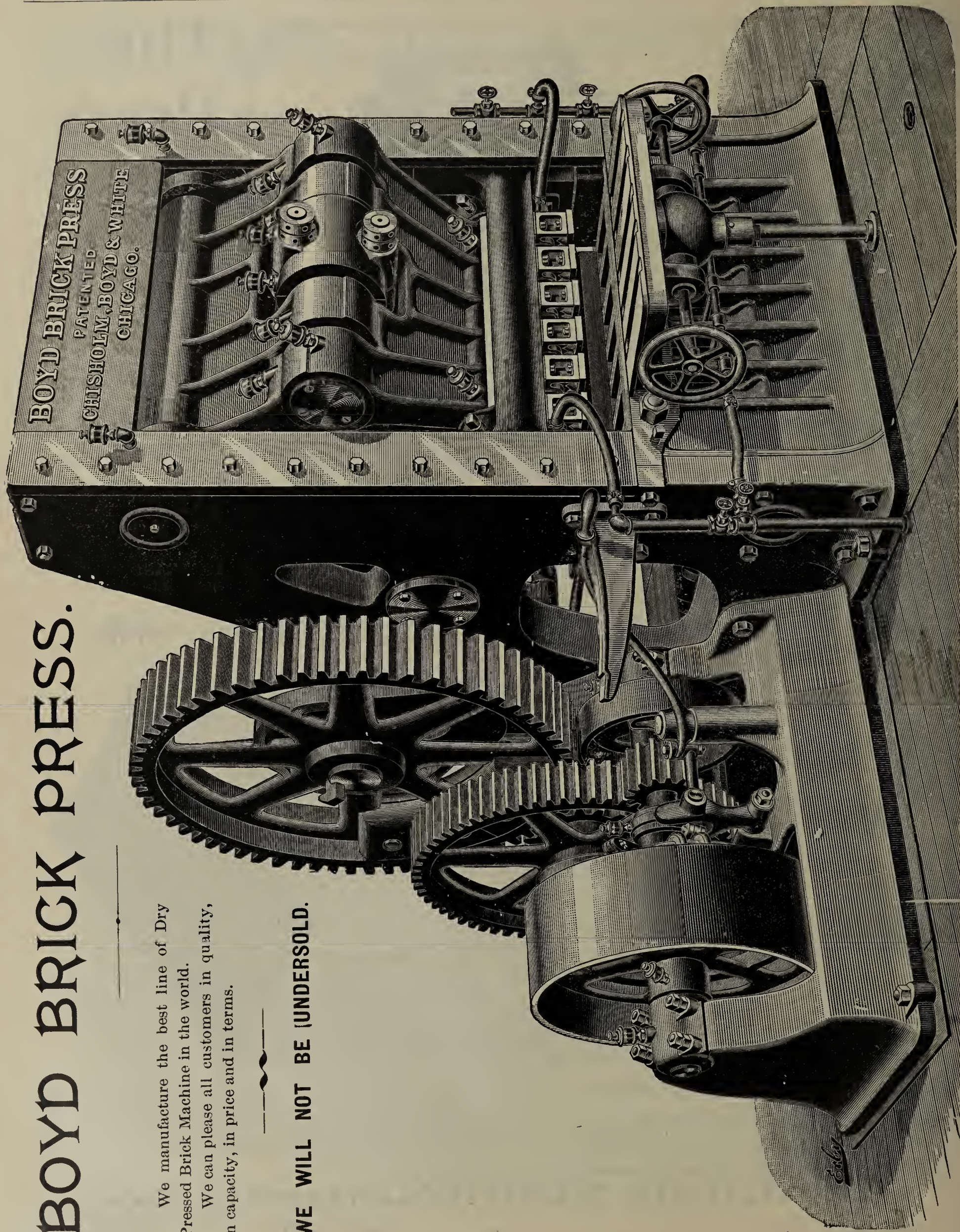


2119 N. Ninth St., ST. LOUIS, MO.

BOYD BRICK PRESS.

We manufacture the best line of Dry
Pressed Brick Machine in the world.
We can please all customers in quality,
in capacity, in price and in terms.

WE WILL NOT BE UNDERSOLD.



The CHISHOLM, BOYD & WHITE CO., Monon Block, Chicago.

A SURE THING.

We will construct and equip a Brick Plant of any capacity desired for any responsible party, furnishing Brick Presses, Power, Kilns, Clay-preparing Machinery, Shafting, Belts, etc., and erect the necessary Buildings. We will make and burn one or more kilns of brick, and turn the Plant over to him in proper working order under guarantee of satisfactory results as to quality of product and cost per 1,000; the loss to be ours in case of failure.

Why experiment when you have a sure thing?

THE CHISHOLM, BOYD & WHITE CO.,

MONON BLOCK,
324 DEARBORN STREET.

CHICAGO.

NONE CAN COMPETE WITH IT

The Simpson Brick Press

THE STANDARD MACHINE OF ITS CLASS.

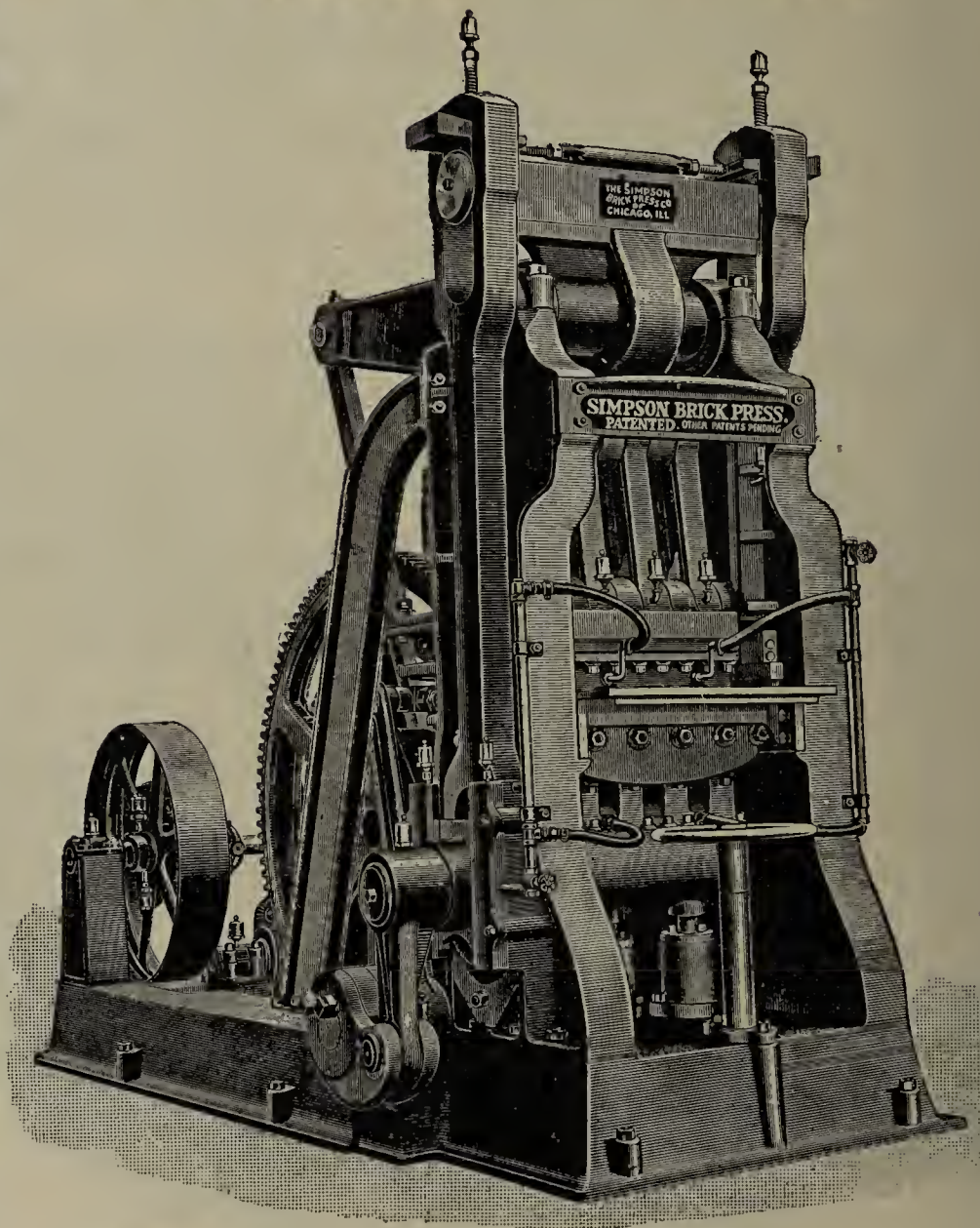
Every purchaser receives the benefit of years of experience in the dry press process.

The **SIMPSON** is beyond the experimental stage as its many successes can prove.

There are more of them running successfully than any other machine in existence.

It was the **only** machine to receive **favorable** mention from the **Official** Judge on Brick Machinery at the

World's 
 **Columbian**
Exposition 



 Write us for descriptive matter, prices, terms, estimates, etc.,

The Simpson Brick Press Co.,

AGENTS FOR CANADA,
 Waterous Engine Works Co., Brantford, Ontario.

Chamber of Commerce, CHICAGO, ILL.

U. S. BRICK PRESS

Perfect in Mechanical Construction.

Least Cost For Repairs.

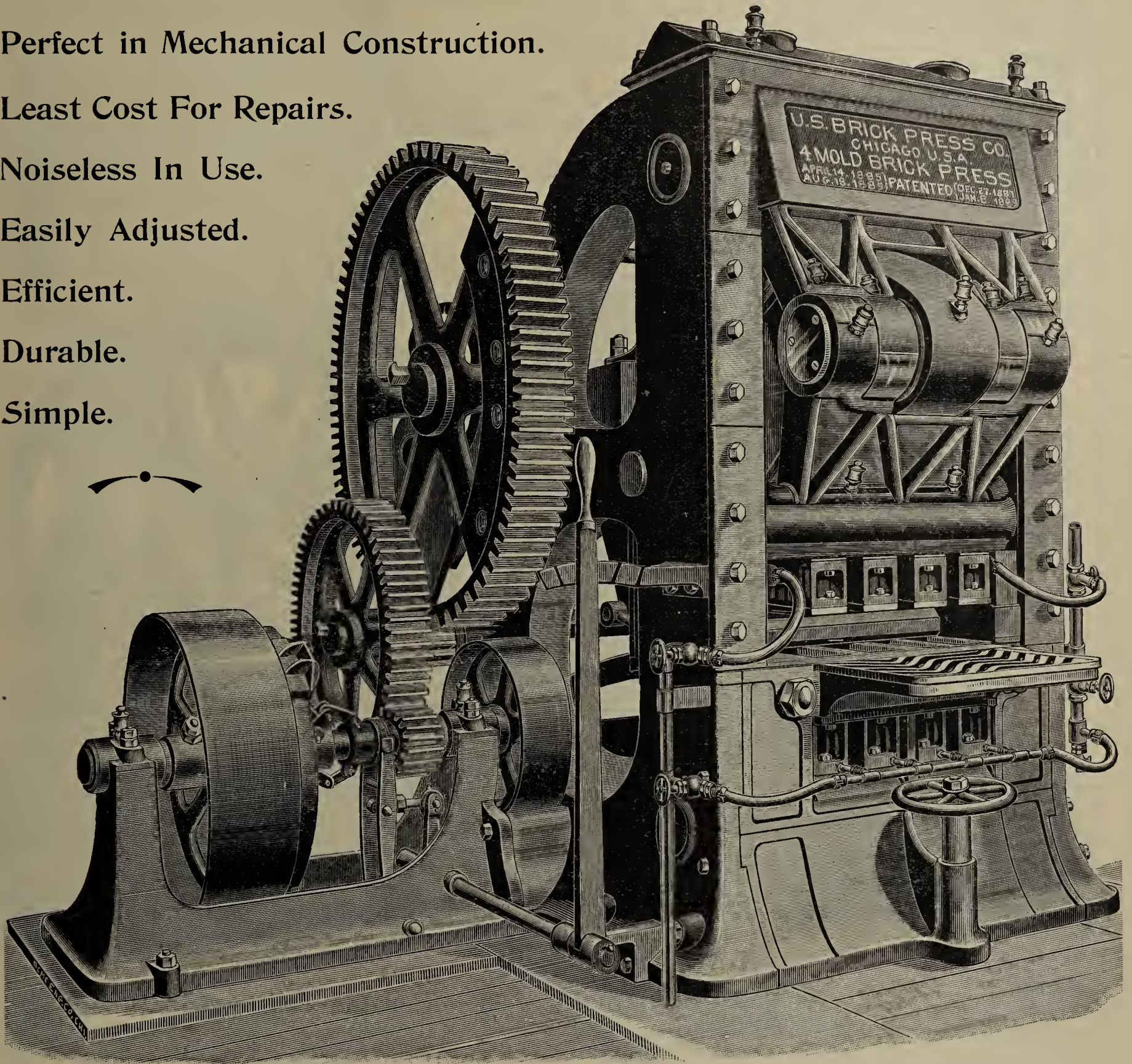
Noiseless In Use.

Easily Adjusted.

Efficient.

Durable.

Simple.



The U. S. Brick Press embodies all the requirements demanded by Pressed Brick Manufacturers, and its record is proof conclusive of its perfection as a Pressed Brick-maker. Write for new descriptive sheets.

UNITED STATES BRICK PRESS WORKS,

OSWALD KUTSCHE, Proprietor,

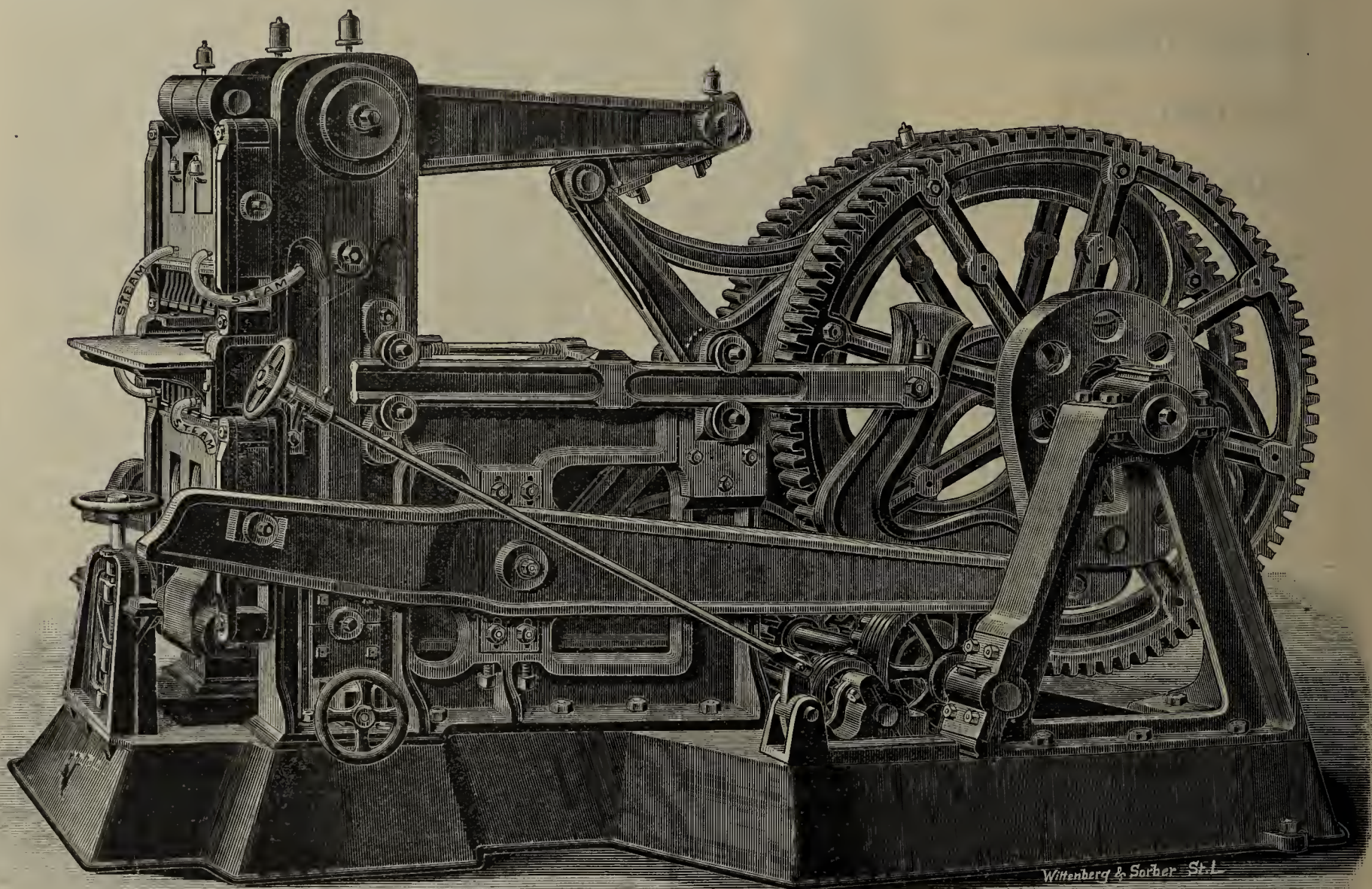
OFFICE AND TESTING ROOMS:
72 West Washington Street.

 **CHICAGO, ILL.**

The Progress Brick Press,

✻ *DRY and SEMI-DRY.* ✻

This machine is the result of years of practical experience in Dry Pressed Brick-making, a model combining **Simplicity, Durability and Economy**, as Brickmakers and Press Builders, we have entailed every advantage in producing the machine for a Brickmaker.



Can be seen in daily operation on plain, stock and ornamental bricks at any time at our yards. **Inspection solicited.**

Equal in strength to 50 tons of iron; this press is built of **Bassic steel** and best quality iron.

Bearings of split boxes, and wear taken up with kib and key, hence no lost motion.

All adjustments arranged with wedges operated by hand wheels, no troublesome liners and all parts easily accessible.

Only Six Horse Power required to operate our largest 6-Mold Press.

No liners to our mould, no table to fit mould into, and no change in size bricks by regrinding moulds.

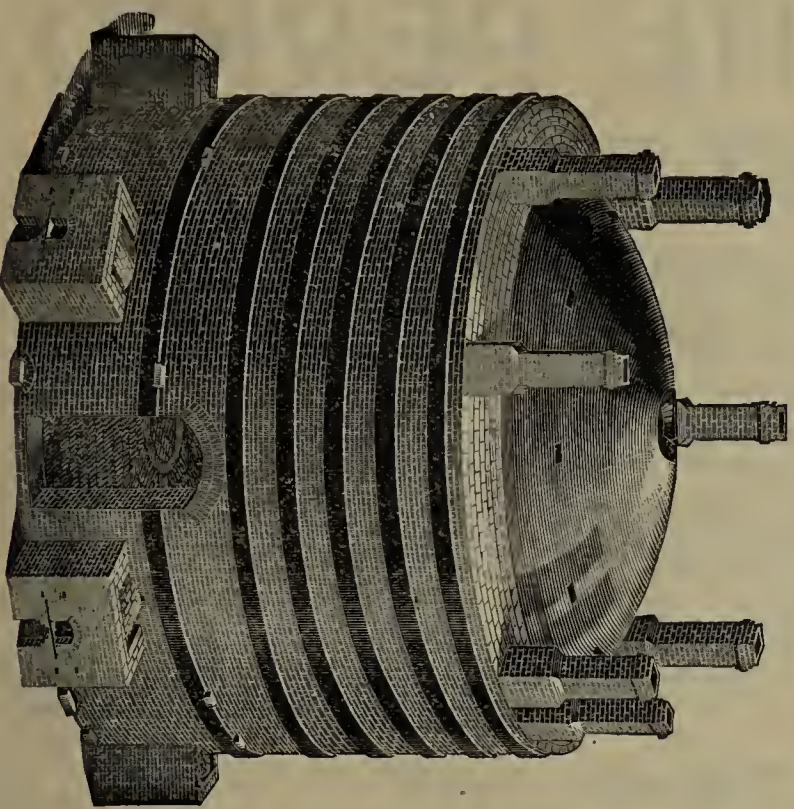
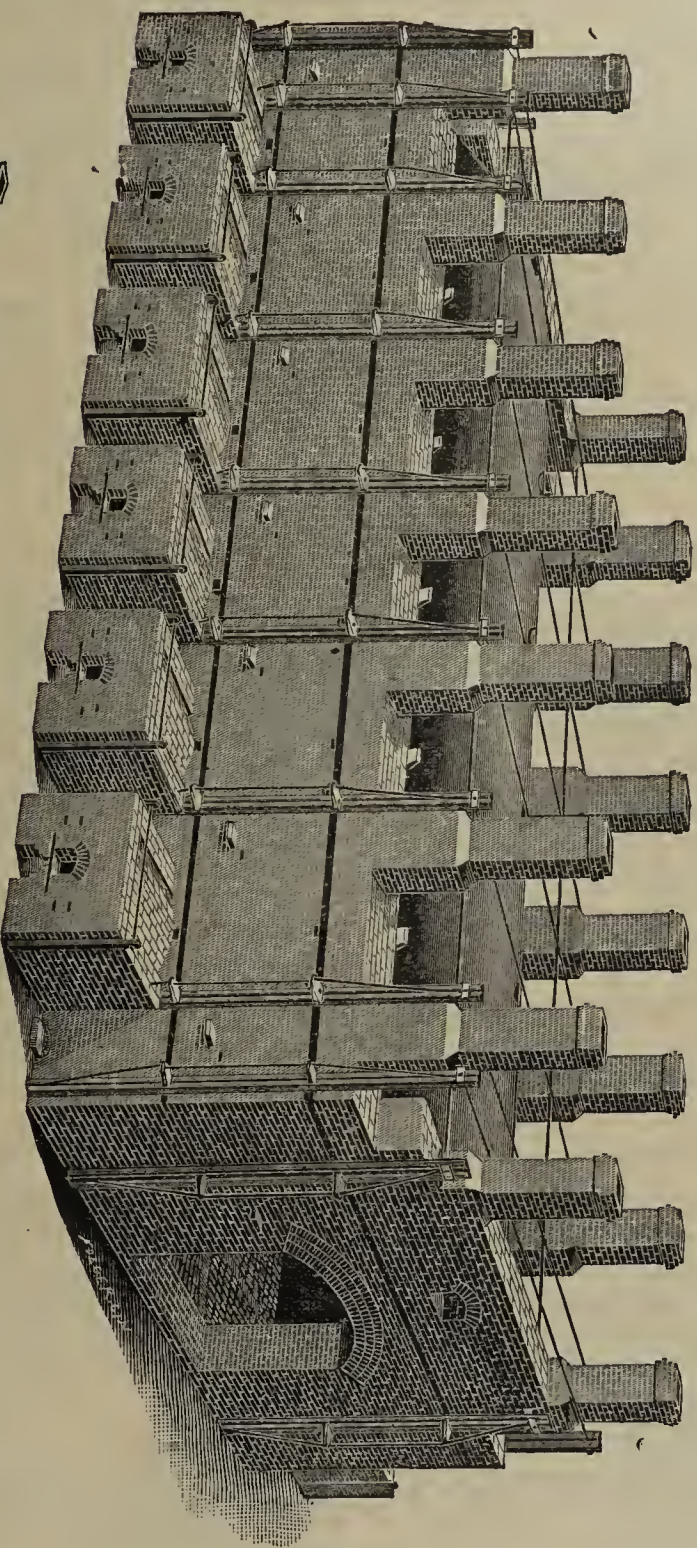
Of the time of each revolution 40 per cent. is spent in high pressure on bricks, permitting all air to escape, hence, no seam or granulation, in the brick, 28 per cent. in charger forwarding bricks, perfect filling of molds and undamaged product secured by this easy movement. Only 32 per cent. in moving of the Plunger.

This machine is adapted to making all sizes and shapes of bricks up to 12 inches square. Bricks pressed on edge, etc., etc. We manufacture 2, 3, 4, 5 and 6 mould presses and sell them with a perfect guarantee.

Descriptive catalogue, prices and terms on application.

Tower Grove Brick and Machine Works,
King's Highway and Oak Hill R. R. **ST. LOUIS, MO.**

The Eudaly Improved Down-Draft Kiln.



A VERY large number of manufacturers are now using the EUDALY KILN for burning all kinds of clay wares, especially front, ornamental and paving brick. We have made a number of very important improvements since we first began the erecting of these Kilns. The square Kiln is especially adapted to plants of large capacity on account of economy in cost of construction and space occupied on the plant; while the Round Kiln is better adapted to plants of small capacity, drain tile, sewer pipe and fire brick in small quantities. These Kilns have gained a reputation for burning all hard and uniform. The Kiln is easily controlled and is in every way practical and desirable. We will be glad to hear from any who contemplate going into the clay manufacturing business and will take pleasure in giving any information we can on the subject of handling or burning clays. Address,

W. A. EUDALY,
64 Johnston Buildings,
Cincinnati, Ohio.

THE KILN OF THE PERIOD.

THE "PERFECT KILN."

Sercombe's Patent.

Designed on Economic and "Common Sense" Lines, for Burning Brick, &c., Lime and Cement.

Patented in England, America, France, Belgium, Germany, Austria, Italy, Cape Good Hope and New Zealand.
Patents Applied for in Canada, Australasian Colonies, Russia, Brazil, Cape Colonies, &c., &c.

THIS Kiln is taking the lead of all others. It costs much less than a Hoffman to erect. It consumes about half as much fuel, and as regards other Kilns, it saves 80 per cent. and there is perfect control of the fire.

It burns all hard Brick with 2 cwt. dust coal to the 1,000, and gives no Waste. It will produce about 70 per cent. Facings, and it will effectually dry Bricks, &c., however wet, with the waste heat from the cooling chambers.

Over 800 firms in England, America, Canada, Austria, Russia, Belgium, &c., have corresponded with us in six months, showing the need there exists for such a kiln. A large number of new kilns are being erected, and many Hoffman's and other Chamber kilns are being converted to our system in England. Hoffman's are being converted and new ones erected in Austria (the home of Hoffman's); also a number in America.

NOTE WHAT THE USERS SAY.

100 per cent. Hard Brick, out of which are 70 per cent. Vitri-
fied, Annealed Tough Pavers.

John A. Wiley, *Pres.*
Geo. Allen, *Sec.*

W. S. Bleakly, *Treas.*
W. Cramer, *Gen'l. Man.*

FRANKLIN PAVING BRICK CO.,

March 19, 1894.

To L. HANCOCK, Esq., Metuchen, N. J.

Dear Sir:—In answer to yours of the 13th wanting to know how we are getting along with our kiln, would say that we are improving steadily as our men get to understand our material. You know that our clay is one of the most difficult kind to work that your kiln ever had to contend with, for the reason that there is so small margin between vitrifying and melting. We are now getting 70 per cent. vitrified brick and balance all hard. We expect to do better than this soon. I feel confident we will. A kiln that will burn our clay properly, will burn anything in the shape of brick material.

Yours truly,
GEO. ALLEN, Secretary.

From the Russian Agricultural Agency, St. Petersburg.

Herewith we beg to inform you that the erection of the Kiln is finished, and we are very glad to tell you that our customer (Prince Kourakine) is very much satisfied with the kiln after same was duly tried.

We enclose cheque for balance of license fee, etc.

From Mr. H. Burrridge, Bedford.

No doubt you will be pleased to hear that I am getting on all right with the Kiln. I have no hesitation in saying that I am pleased with it. It is going well.

From Mr. J. D. Dunlop, Woodstock Works, Belfast.

I am very pleased to be able to inform you that the "Perfect Kiln" is doing well, burning the brick all hard, at a cost of between 7d. and 8d. per 1,000 for coal.

From Messrs. Hawkes & Joberns, Kenilworth.

We shall be happy to let the gentlemen you name see the Kiln. We are quite satisfied with it, and its work.

From the St. Julian's Brick and Tile Co., Ltd., Newport, Mon.

In reply to your letter, my Directors instruct me to say that they are very pleased with your kiln, and will be willing for any intending clients of yours to inspect same.

..... Secretary.

From the Longton Hall Co., Ltd., Stoke.

Our Kiln seems to be working satisfactorily, and we shall not at present require the assistance of one of your men.

From the Exmouth Brick and Tile Co., Ltd.

In reply to your inquiry, my Directors instruct me to say that they are extremely well pleased with the way the Kiln is working. The splendid lot of brick in the yard is a credit to anyone, and no one could reasonably expect better.

..... Secretary.

From the Stramberg Lime Co., Stramberg, Moravia.

After speaking highly of the economy in erection, and the system of flues, they say, "After we have been used to working two Hoffmanns, beside the "Perfect" furnace, then can we truly assure you that we save 20 per cent. burning material in the "Perfect," and attain a more equal heat. We can therefore highly recommend this system, and shall be pleased to answer further enquiries."

From the Rothneusiedler Brick Co., Vienna.

The altered Hoffmann is very easy to work, and we save 15 per cent. of fuel and get the brick more evenly burnt by the "Perfect" system.

References can be given to over Forty first-class firms already.

Agents for Canada, R. H. PYNE & CO., Yonge Street, Toronto.

SERCOMBE, OSMAN & WARREN,

Mention the CLAY-WORKER,

EXMOUTH, DEVON, ENGLAND.

W. H. KELSO, Pres.

F. HASPER, Sec'y

PAUL BOEHNCKE, Treas.

M. C. KELSO, Ass't Sec'y.

MAX A. TH. BOEHNCKE, Gen'l Mgr

P. O. Address:
Centinela,
Los Angeles County,
California.



THE CENTINELA Brick Kiln and Drier Co.



R. R. Station:
Inglewood, California.
Tel. Address:
Inglewood, California.

Incorporated October 15th, 1892.

Capital Stock, \$24,000.

INVITES ATTENTION TO

Our Latest U. S. Patent,
No. 474,807, May 17th, 1892.

BOEHNCKE'S

Several other U. S. Pat-
ents applied for.

UP AND DOWN DRAFT

Continuous Brick Kiln.

Canada Patent, No. 44,615.

DON'T LOSE TIME TO INVESTIGATE.

18 Kilns in Operation in
.....the United States.

Several Kilns in course of
construction
East and West.



Inglewood Works since five years in successful operation turns out 97 per cent. sewer brick.

Beware
of
Infringe-
ments.

ADVANTAGES OF THE KILN.

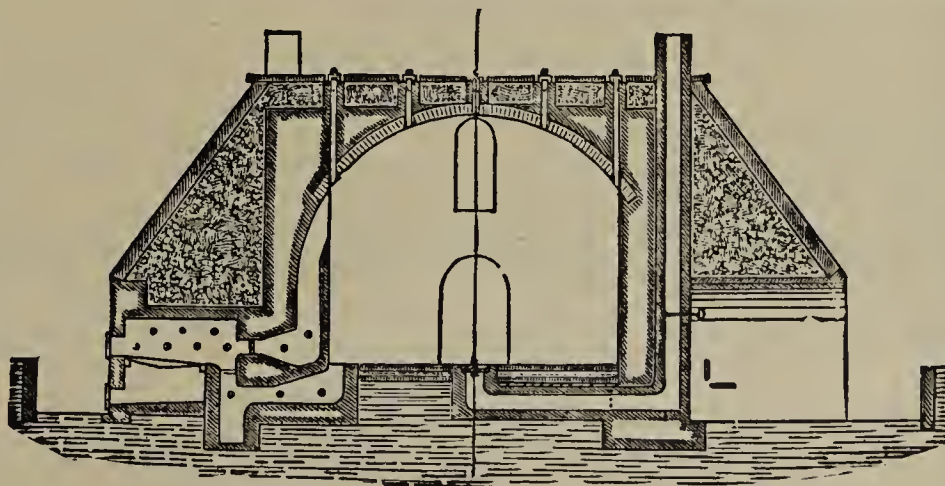
1. Eighty per cent. fuel saved. One ton of soft coal screenings burns 10,000 brick near to vitrification.
2. This Kiln having up and down draft independent of each other, enables to watersmoke all parts of the contents even and gradually, and to draw the heat to top or bottom as desired.
3. Very wet, green brick may be set, provided they stand their own weight, 30 high, and will be entirely dried by pure, dry, hot air, without extra fuel or labor, before admitted to the general run of the Kiln.
4. Consequently an even burn throughout the Kiln will be obtained without any difficulties.
5. No fireflashes on the brick.
6. A kiln of our construction will stand with little repairs for 50 years and longer.
7. The Kiln is most perfectly drained.
8. Our Kiln is no experiment. It is the result of over 20 years' experience of the inventor in building and operating continuous kilns on both sides of the Atlantic.
9. The Boehncke's Up and Down Draft Continuous Brick Kiln is perfectly adaptable for burning of
Soft and Stiff Mud Brick,
Dry Press Brick,
Shape and Face Brick,
Sewer and Paving Brick,
Fire Brick, Cement and Lime.

Write for Circulars to

Centinela Brick
Kiln & Drier Co.,

Box 35,
Centinela, Cal.

COMMON SENSE KILN.



Patent No. 475,433.

FOR very small yards, and where only limited demand for finer ware is in the market, we recommend along side of our Continuous Kiln the use of our "COMMON SENSE" KILN, Up and Down Draft, which is very cheap in construction and successful in operation.

A NEW BRICK DRYER.

We have also Boehncke's Brick
Drier, which is very economical

Agents for Eastern States: DeHaven and Charles Lance,
Commercial Union Building, Philadelphia, Pa.

Agent for Illinois, Indiana, Wisconsin and Michigan: John Col-
lins, 75, 76, 161 La Salle Street, Chicago, Ill.

Important

Improvements

IN BURNING ALL KINDS OF BRICK.

BRICKMAKERS before deciding upon putting in new kilns or altering old ones, should write to the following address for information. We control the Patents of the **W. A. WILFORD CONTINUOUS KILN**, which holds the lead, also, our Up and Down Draft to meet the requirements of all Brick and Tilemakers. They can be built for one half the cost of any other kiln of the same capacity, and, burns all of uniform hardness and color, and with from 50 to 75 per cent. less fuel. Easy and simple to handle, as every brick can be seen by the burner while burning, therefore, leaving no excuse for bad burns. Results are guaranteed or no money. The leading Brickmakers are using our Kilns with complete success. Our charges are low. We keep expert builders and burners for same.

OFFICE OF
BRUSH BROS.,

MANUFACTURERS OF

ALL KINDS OF BUILDING BRICK.

OFFICE: No. 2 Builders' Exchange.

WORKS at East Buffalo.

BUFFALO, N. Y., Oct. 29, 1894.

Wilford Patent Kiln Co., Toronto.

W. A. Wilford, Man.

DEAR SIR:—In answer to your enquirers, how we like the continuous kiln you built for us would say, that we have burnt it round twice, about 800,000 bricks, and have found no waste, as all the bricks are alike in hardness and color, from top to bottom, and side to side. There seems to be no wear upon the kiln, which is an item to us. It is simple to handle. The saving to us in fuel is wonderful, and would say in conclusion, that it meets our entire satisfaction, and does all you claim for it. We shall be pleased to answer any enquirers respecting your kiln, for you have the best kiln we have ever seen.

Yours truly,

BRUSH BROS.

See what the Prize Winners for Brick and Terra Cotta at the World's Fair, Chicago, who are using our Kilns, say:

Office and Show Rooms,
60 Adelaide St., East.

Telephone 2997.

—OFFICE OF—

Don Valley Pressed Brick Works,
TAYLOR BROTHERS,

Manufacturers of Fine Grade Pressed Bricks, in all Colors and Designs.

Fire Clay, Fire Bricks, Sewer Pipes, Etc.

CAPACITY UNLIMITED. (Copy) TORONTO, August 6th, 1894.

The Wilford Patent Kiln Co., Toronto, Ont.

W. A. Wilford, Mgr.

DEAR SIR:—We are thoroughly satisfied with the results we have secured from your Continuous Kiln, and have got out of it Vitrified Paving Bricks that are fully equal to anything on the market. We have looked into the matter of your Downdraft Kilns, and have decided to put in four of them for the purpose of burning our Ornamental and Terra Cotta wares, and enclose herewith amount of your fee for same. If you can so arrange, kindly let us have one of your foremen right away, as we are anxious to have them ready as soon as possible. Shall be more than pleased to give any information to your prospective clients regarding the Continuous Kiln we got from you. You deserve every success, as you have undoubtedly the best in your line.

Yours truly,

TAYLOR BROS.

Elmira Paving Brick Works.

PHILIP WEYER & SON, Proprietors.

ELMIRA, N. Y., September 25, 1894.

W. A. Wilford, Wilford Patent Kiln Co.,

DEAR SIR—We have examined your continuous kiln as it is in operation at the works of Messrs. Brush Bros., at Buffalo, N. Y., and as a result we remit you the license fee and request that in response to the enclosed signed contract you will at once come on and erect a kiln for us.

For over a year we have been looking for the best kiln for our shale material and we believe we have found at last, what we have been looking for. Kindly use all expedition in getting it running for us.

Yours very truly,

PHILIP WEYER & SON.

Stengel & Cook,

WHOLESALE DEALERS IN

LUMBER AND COAL.

GEN'L SALES AGENTS

FOR
NATIONAL BRICK & TILE CO.'S
PRESSED & ORNAMENTAL BRICK.

GENERAL OFFICE,

NO. 9 BUILDERS' EXCHANGE
YARD AND TRESTLE,
157 FILLMORE AVENUE

BUFFALO, N. Y., October 3, 1894.

W. A. Wilford, Esq., Toronto, Ont.

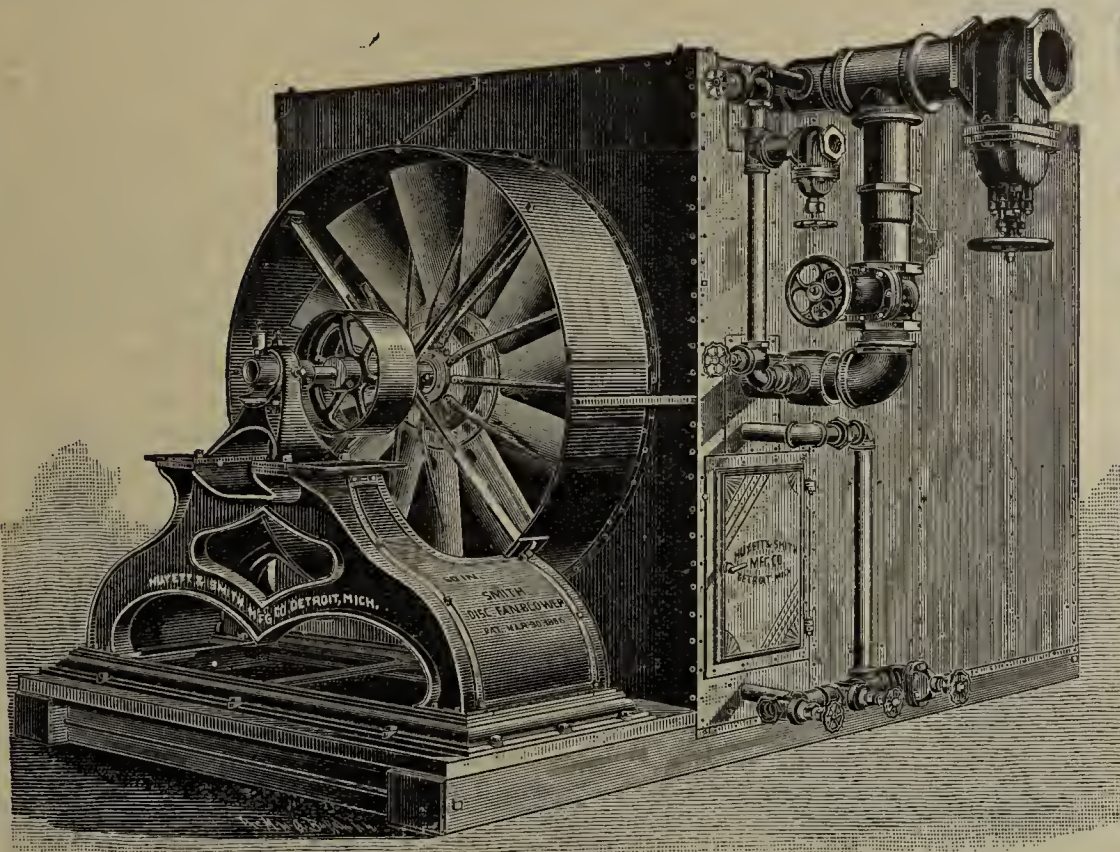
DEAR SIR—Having investigated kilns for brick works on Grand Island, I have decided to put in yours, and herewith remit license fee with your contract signed and would request you to commence building as soon as possible.

Yours truly,

J. F. STENGEL.

Write us for Information and Testimonials.

The Wilford Patent Kiln Co.,
Correspondence Solicited. **TORONTO, CANADA.**



Four Inch Tile

Dried in
Six Hours
Without Crack-
ing
in the

Smith Hot Blast Brick
Dryer.

BOTH

BRICK and TILE

Dried as fast as they
can be taken care of—

So Say the Users in
Their Letter Below.

MORENCI, MICH., August 25th, 1894.

MESSRS. HUYETT & SMITH MFG. CO., Detroit, Mich.

GENTLEMEN:—Replying to your inquiry asking us how we like the Dryer purchased of you about nine months ago, will say the said Dryer has been in constant operation since the day we first started it, and It is giving us the very best of satisfaction. It dries both brick and tile as fast as we can take care of them, and in fact we can dry 4-inch tile in six hours without cracking them.

We consider the Dryer a **PERFECT SUCCESS** in every particular and would recommend it to any one in want of the same.

E. CLARK & SON.

The above is a sample of the letters we are constantly receiving from our patrons. Write us for plans, catalogues, and estimates.

The Huyett & Smith M'f'g Co.,

Main Office and Works,
1400 Russell St.

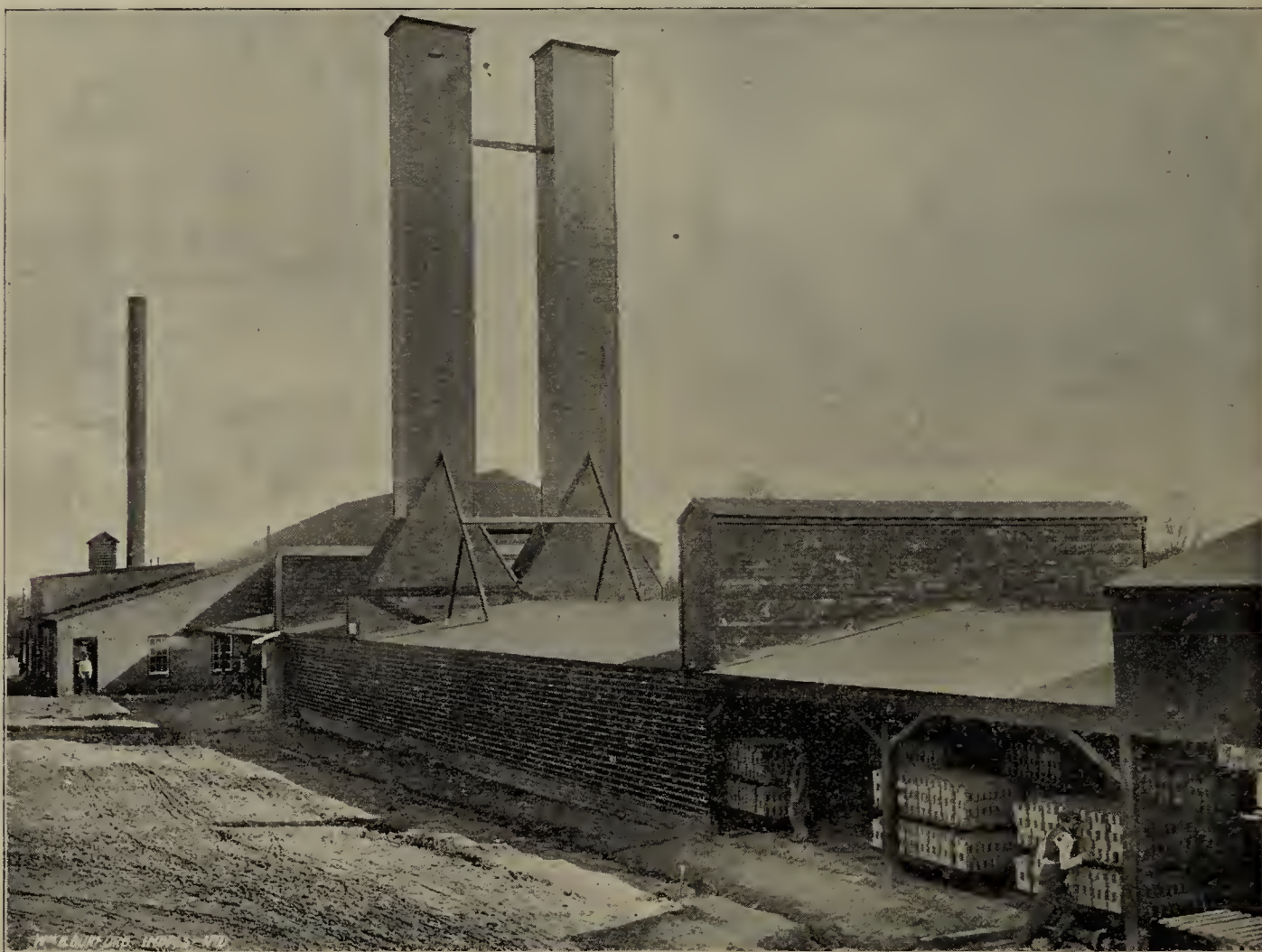
DETROIT, MICH.

BRANCHES

CHICAGO, 31 South Canal Street.
NEW YORK, 26 Cortlandt Street.
BOSTON, 48-54 Union Street.
SAN FRANCISCO, 21 Fremont St.
PHILADELPHIA, 118 Custom House Place.

The Standard Improved Natural Draft Brick and Tile Drier

Is still acknowledged the leader among modern Driers; it maintains this position because it has been demonstrated that it more fully meets the requirements of the varied clay products than any other make.



Furthermore, it is the popular Drier of to-day, because of its simplicity—because of its freedom from complicated mechanical contrivances—because of its ingeniously arranged Heating apparatus, which distributes the heat just where it is needed—because of the abundant means provided for expansion, by which the annoyance of leaky pipes is obviated, and lastly, because the price has been reduced so as to place a **first-class Drier** within the reach of all.

IF YOU ARE IN NEED of drying facilities or Drier Equipment of any kind—Cars—Transfers—Turntables—Rails—Pumps—Tanks, Etc., don't fail to consult us and get our prices—we are headquarters for everything in this line.

Send for Catalogue and "Opinion of Users."

The Standard Dry Kiln Co.,

INDIANAPOLIS, IND.

Patentees
and Sole
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Main Office
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184 So. Meridian St.

THE CLAY-WORKER.

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

VOL. XXIII.

INDIANAPOLIS, IND., DECEMBER, 1894.

No. 6

Written for the CLAY-WORKER.

AMERICAN ARCHITECTURE IN CLAY

Number 3.

RAIN-WASHED BRICK FOR FRONTS.

MANUFACTURERS and dealers in front brick, who manufacture or handle several different grades and qualities of brick, are continually being reminded of the fact that

very few laymen and very many architects and builders have little or no knowledge of what constitutes a *good first quality brick*. Since the introduction of dry pressed brick with its smooth face and sharp arris, architects and owners in visiting the salesroom usually look over the shelves, and taking a brick in hand, examine it much as a purchaser of diamonds would do; looking largely to the smoothness and perfection of the shape of the brick and its color, and not going beyond this in their investigation. As to whether the brick is thoroughly well burned, or whether it is made of a clay that will successfully resist the ravages of time and climate is seldom, if ever, taken into account, the result being that very many brick are sold, usually at a low price, which are positively not fit to be used as front brick owing to their



WILLIAMS MEMORIAL CHAPEL, PENN. AND VEDDER STREETS, CHICAGO.—BUILT OF RAIN-WASHED BRICK FROM NEW JERSEY.

very poor quality. The use of soft burned brick, or brick insufficiently hard to make them slow to take water, has done very much to injure the use of pressed brick in buildings. Month by month and year by year, more stone and less brick, in proportion, are being used than in the past, and I think this fact can be largely attributed to the use of inferior brick, which absorb much moisture as well as spot and dirt, and the absorption of water dissolving the salts in the brick, the drying out process deposits them upon its face.

Some architects and owners are continually seeking new varieties of brick, both as to shade and general appearance, and the perfect face and sharp edges are not considered by some as desirable as they have been in the past. Among the oddities that have been brought to the front is that known as the Rainwashed Brick, manufactured by the Sayre & Fisher Company at Sayreville, N. J. For certain classes of architecture these brick are peculiarly well adapted.

Our illustration accompanying this gives an example of a church built after the old colonial style of a New England "Meeting House." In this chapel Rain-washed brick were used, and its effect is certainly very fine. Our sketch shows a small section of the brick work, taken so as to show the rough effect produced upon the face of the brick. These brick are made in the first instance as common builders, and placed in the drying field to dry in the sun. They are left in this position until a sufficient rain storm falls upon them to wash out the softer particles of clay, thus securing the rough pitted formation. The brick are then put in the kiln and thoroughly burned, and when taken out, they are of a dark brown, with a slight bluish tinge, which makes the effect in the wall very artistic and very attractive. Messrs. Holabird & Roche, of Chicago, are the architects of this chapel.

At 1830 Michigan Boulevard, Chicago, is the residence of Mr. J. W. Ellsworth, which is built in the old colonial style of architecture and in which the Rain-washed brick were used. This residence on Chicago's principal boulevard has attracted a great deal of attention. Its artistic effects have been favorably commented upon by the architectural profession, as well as by the people generally.

The artistic effect of a Gothic church or colonial residence built of these brick, cannot be calculated unless one has the eye of an artist to see its possibilities before it is used; or can see the building after it is completed. It has a peculiar oldtime air of respectability and age that few buildings can have in our new country. Such a building with a roof covered with a tile of suitable shape and color, completes the picture. A country church or residence, among green trees crowning a hill top, would be a thing of beauty not easily rivaled. While we cannot import from our English Mother country the artistic ruins and history dear to us, we can, if we have material, greatly improve our buildings in many respects by studying her ancient and modern architecture,



and by profiting thereby when there is material as there is in our day, and money to exercise our taste in building materials. Is it not the duty of every manufacturer to "invent" new methods and new materials and so keep abreast of the demands, and create a demand for the best in every department of the building world?

There are several other very attractive buildings in Chicago, that have been built of this brick, and very many of them in New York, testifying to their popularity to a degree that would hardly be expected of a brick of so rough an appearance. From seeing a sample, and looking it over as brick are usually examined by the purchaser, the average client would hardly accept this brick as a free gift delivered at the building site to be used as a front brick for his building.

These brick first came into use in New York some ten years ago, and since that time, owing to the odd and beautiful effect shown in the first building put up, which was a dwelling in New York City, the demand has increased year by year. The first brick of this kind were made by accident, the brick after being rained on were taken to the kiln to be burned, it being the intention of the makers to sell them as common brick. Their artistic possibilities were seen at a glance by an architect who happened to visit the brick plant of Messrs. Sayre & Fisher Co., and he concluded to use them in a dwelling for which the plans had already been made, with the results as above stated. From this beginning the trade gradually increased, and has now become a special feature in the front brick department of Messrs. Sayre & Fisher Co., who have been unable at times to supply the demand owing to *insufficient rain fall*. At one time they tried to make them artificially, but found they could not make them to compare favorably with the genuine Rain-washed brick. All clays are not suitable for making a good, deeply pitted brick. Other makers in New York, along the Hudson River, as well as near Chicago, have undertaken to make these brick, but so far as we know, none of them have been successful in making a well pitted brick of a color that would be as acceptable to the building trade. Perhaps the largest user of these brick is Mr. W. E. D Stokes of New York, who has used them in a great many buildings in Upper New York, and he thinks the effect of them has been superior to the regular fire clay mottled brick, and he has been able to secure them at a less cost. Sayre & Fisher Co. have been shipping these brick to all parts of the country during the last three or four years, and have been able to sell all they could make, the quantity depending largely on the weather being suitable for making them. Last year they made several hundred thousand of them, but this season they have been unable to produce any, owing to lack of rainfall during the past summer.

There is unquestionably an increasing disposition on the part of many of our architects to look favorably upon the use of the re-pressed and wire-cut brick,

objection being made to the dry pressed brick, owing to its absorption more readily of water, soot and dirt, as well as to its smooth face and sharp edges and corners; while the irregularity to a slight degree of the edges of the repressed and wire-cut brick, they think, gives a more artistic effect when laid in the wall.

One of the largest manufacturers of dry press machinery informs me that he is meeting these objections to dry press brick to such an extent that he is arranging his machinery so as to make it available for the manufacture of mud brick as well as the dry pressed.

Chicago and St. Louis have been the largest manufacturers in this country of dry pressed brick, and in the entire west it is practically the only front brick used, and we are of the opinion it will still continue to be the brick most in demand for years to come. However, I think much will depend upon the stand taken by the manufacturers themselves. If, as is the case with many of them, they continue to make cheap, poor quality of brick and keep the market glutted with them, it will do much toward bringing about a revolution. The public are not going to stop to ask why the goods are so unsatisfactory, or why results are so bad, but will be more inclined to discard brick altogether for fronts, or go over to an entirely different product, viz: The mud brick which for ages has, without injury, withstood climatic effects.

On all sides and in all directions the world is looking more and more for the best—the truest—and the brick manufacturer must strive to make his product all that it should be, the best that he can make it. If he does this he shall have his reward. FAX.

HONEST business methods are better than scheming and sharp practices in building up a business. The man who depends upon the latter for success never succeeds. He may make a great show for a time and deceive others besides himself into the belief that he is a clever business man; but the deception will not last forever. Better results can be obtained by honesty and fair dealing. Customers soon find out the kind of a man with whom they are dealing; so do those who sell him goods, and also those who are in his employ; and if they know him to be

dishonest and tricky they will find some means of getting even with him. —*Exchange.*

Written for the CLAY-WORKER.

HINTS ON CHINA PAINTING.

Third Paper.

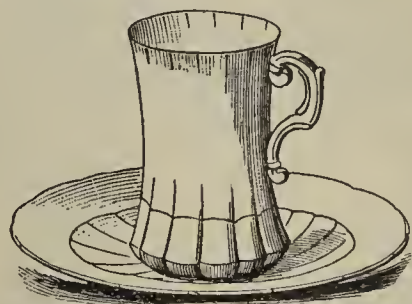
BY EDWIN ATLEE BARBER.



THE American Art China Works of Messrs. Rittenhouse, Evans & Co., Trenton, are turning out some novel designs in white porcelain which they call American china. Among their specialties are embossed plates, circular and oblong, crimped salad bowls, toilet articles, ring stands, tea sets of ornate patterns and a variety of fancy vases. Of these we may select for illustration a pleasing little match box, and a graceful chocolate cup and saucer. These are excellent pieces for receiving fine work and will appeal to a large class of china painters who do not wish to attempt at the outset the more intricate styles of decoration. Pieces which are in most demand are those which are inexpensive and



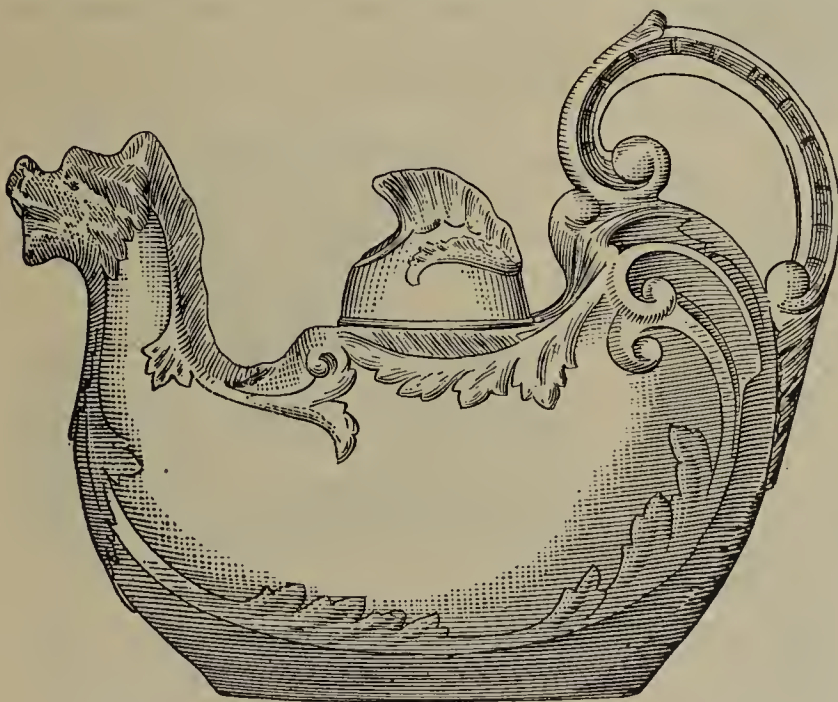
MATCH SAFE.—Rittenhouse, Evans & Co.



CHOCOLATE CUP AND SAUCER.—Rittenhouse, Evans & Co.

The Ceramic Art Company of Trenton has employed many of the best designers to be found in this country and has produced a large number of exquisitely modeled shapes which are decorated at the factory, and also sold in white. These wares are characterized by extreme thinness and lightness of body, and a marked originality of form. Among the most striking pieces are several which have been designed by Mr. W. W. Gallimore, who has been at different times connected with many of the foremost potteries in England. A dainty after dinner coffee cup and saucer, a ball shaped

flower vase and a cupid candle stick, are characteristic examples of Mr. Gallimore's work. An ice cream cup and platter and a swan shaped tea pot, by other modelers, are particularly odd and graceful. Among the smaller pieces to be procured at these works are knife, parasol and cane handles, ink stands, menu slab easels, bouillon cups, atomizers, brush handles and hand mirror frames, which latter, when artistically painted with Cupids and Dresden figures and tinted to imitate ivory, out rival the best lithographic transfer work of the French factories. This company also makes a very extensive line of fine table wares, such as tea sets, salad bowls, trays, finger bowls and



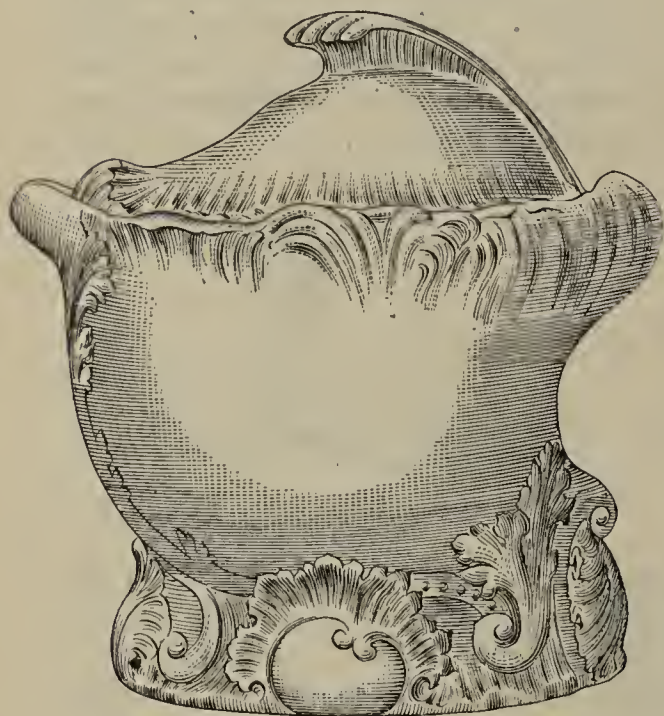
"SANTA MARIA" TEA POT.—Columbian Art Pottery.

which may be painted prettily and simply as modest gifts for friends.

Of the egg shell china, produced at the Columbian Art Pottery of Messrs. Morris and Willmore, one of the most recent candidates for popular favor, the

dles and hand mirror frames, which latter, when artistically painted with Cupids and Dresden figures and tinted to imitate ivory, out rival the best lithographic transfer work of the French factories. This company also makes a very extensive line of fine table wares, such as tea sets, salad bowls, trays, finger bowls and

pitchers. Fastidious indeed must be the decorator who cannot find among these exquisite conceptions in Belleek, pieces which will answer the requirements of any purpose, and prove suitable for any style or degree of ornamentation.



ROCOCO CRACKER JAR.—Columbian Art Pottery.

After it shall have become generally known what our progressive potters have already accomplished in the direction of designing and producing new



AFTER DINNER CUP AND SAUCER.—Ceramic Art Co.

shapes for our American china painters, there would seem to be no good reason to longer reject the domestic wares



BALL SHAPED VASE.—Ceramic Art Co.

which are offered. Shall we encourage our own manufacturers by our patronage and thus incite them to still better

work, or shall we, by withholding it, compel them to discontinue their efforts in the interest of decorators?



CUPID CANDELABRUM.—Ceramic Art Co.

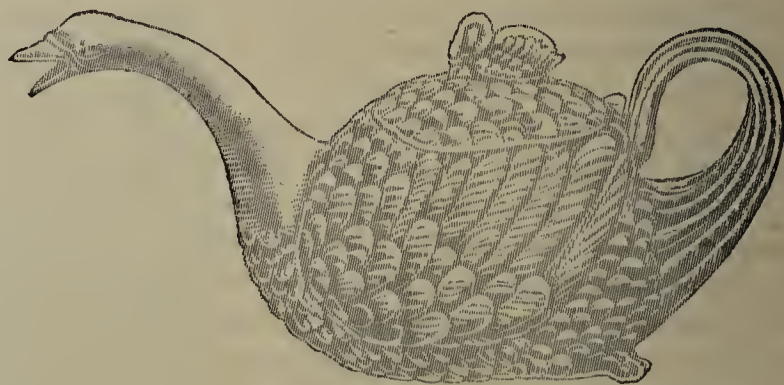
A recent writer, in one of our prominent Reviews, has undertaken to make the sweeping statement that nothing of artistic merit or originality has yet been produced by American potters. In his criticism of "The Pottery and Porcelain of the United States," recently published by Messrs. G. P. Putnam's Sons, he has unfairly assumed that the author advocates the elimination of all classes of foreign wares from our art exhibitions, when in reality it was only suggested that exhibits of competitive China painting should be confined to purely American productions. These unwarranted assertions must be attributed to ignorance of the subject, or a disordered digestion, aggravated by an uncompromising hatred of everything American.



ICE CREAM CUP AND TRAY.—Ceramic Art Co.

Whether his conclusion that a protective tariff has retarded the development of the artistic instinct in our potters be correct or not, may be left to those who are better qualified to determine. But we are positive in our views that to admit foreign made bodies to exclusive exhibitions of American decorative work would be a mortifying admission that we are still incapable of producing wares worthy of decoration.

On the other hand, we cannot too strongly urge the stocking of our public museums with the best examples of decorative skill to be procured abroad, which shall serve to educate our students in ceramic drawing, coloring and technique. Originality can only be reached by studying what has already been achieved by the best potters and ceramic artists of all ages and countries and increasing familiarity with their various methods will enable us to avoid imitation, which in some instances at least, has been the result of accident rather than of design. And if these papers should fall short of their object, let the doubtful artist visit the potteries of East Liverpool, or Trenton, and become convinced that in delicacy of modeling, excellence of body, originality and variety of shapes, the American



SWAN TEA POT.—Ceramic Art Co.

wares for decorative purposes surpass those of any other country.

Written for the CLAY-WORKER.

THE CLAYWORKING INDUSTRIES OF OHIO.

Twelfth Paper.

BY EDWARD ORTON, JR., E. M.

PROCESSES OF DRYING BRICK—CONTINUED.

THE second notable plan of drying is that devised and used by the sewer pipe makers. It was only incidentally applied to brickmaking at first, but lately, large and well equipped plants have been built for this system. Sewer pipe is an article which is very difficult to dry properly and safely, and fire-proofing and other forms of hollow wares are still more troublesome. The process which has been perfected for handling such wares, when applied to brick drying becomes the safest and most natural method possible to adopt.

The plan of operation is to expose the bricks, piled two or four courses high, in open order on slatted floors; the air is allowed free circulation from floor to

floor through the slats, and it is heated gently by steam pipes strung along on supports underneath each floor. The piping, while it is arranged in open order, being usually two or three feet apart, amounts in total to a large quantity for each floor. Frequently the piping is only applied to one or two of the lower floors and the upper floors stay warm enough by the ascending heat from below. Steam is supplied by exhaust from the engine and pumps by day, and live steam is used at night.

The principle or plan of this process is to copy the most favorable of natural conditions and constantly produce them. The bricks are exposed to a comparatively low temperature and free natural circulation, and they dry about at the speed that they would if exposed to the open air in the shade on a quiet summer day. No effort is made to induce rapid circulation of air currents, or to produce temperatures above those convenient for men to endure while working.

Naturally, the character of the drying obtained by this plan is the best possible; there are no violent changes of temperatures; no forcing of natural conditions. Its advantages to the manufacturer are great, for besides having no cracked or broken bricks from the drying, the structure and appearance of the wares as they go to the kiln are as perfect as they were when they left the machinery.

There are only two objections to the process, and they are based on economical rather than on technical grounds. First, the original outlay for the building in which such a scheme of drying can be carried out is very large. In its best development five or six floors are used—three or four are necessary to practice the process with economy and buildings capable of carrying loads of from 600 to 1000 pounds per square yard of floor space on each of three or four floors, are of necessity strong and well built and expensive.

Second, the process involves a double handling of the material as is done in the case of the dry floor. This could be done away with by providing a portable pallet, or hack, or some other means of transporting quantities of brick from the machine to the floors and away again, but as ordinarily practiced the work is done by two handlings.

On the other hand the drying is the best that can be obtained, the cost of

drying after the building and piping are once arranged, is very small, for in nine months of the year, the use of the exhaust steam is sufficient to maintain the necessary heat day and night, and on account of the large amount of material in process of drying all the time, the stoppage of either kilns or machinery can be provided for without a shut down of the entire plant. It requires about 6 or 7 days to dry by this plan, and for a daily capacity of 30,000 brick, a floor capacity of not less than 200,000 should be had. Variation in machine production and irregular demands for dry bricks from the kiln men will cause these figures to constantly fluctuate. The amount of pipe used in the process is very great in proportion to the temperature obtained. If the floor space is limited, the heating pipe must be increased out of proportion, and the use of live steam becomes necessary more of the time. The quality of the drying thus accomplished is still likely to be good when working on bricks, but the economy of the process is at once sacrificed.

The proper way to do, when it is decided to use this system of drying, is to make all the calculations as to space and heating arrangements perfectly ample, so that by simple use of the exhaust steam and time the drying may be perfected; of course, in winter nights the temperature of building must be kept above freezing by use of sufficient live steam, but the intention of the plan is to make the exhaust steam dry the product. The sewer pipe system as applied to brick drying is thus seen to be almost the reverse of the fire brick hot floor. In the latter economy of first cost is obtained at the permanent expense of prodigality of fuel. In the former, money is spent freely in the beginning to erect a massive building, and, heat it with thousands of feet of pipe, to the end no coal need be burnt in drying, that would not have to be burnt to grind the clays and manufacture the brick in any case. In the latter, the bricks are put wet from the machinery into a hot floor and the water is literally "driven" out. In the former, the bricks are piled away and in a soft warm atmosphere they gradually and gently dry out to the humidity of the surrounding air.

Both processes are alike in requiring one more handling of the brick than is required in the later brick process. This is not true of necessity, for either kind of

dry floors could be arranged to use better methods of putting the material on to their surface and taking it off again, but as the processes are characteristically carried out, one extra handling is required.

Written for the CLAY-WORKER.

CERAMICS OR CONTENTS?

A 13th Century Ceramic Critic on Tile
By a Lay Brother—A Tile From the
Northland—A Commemorative
Tile for Capt. Freitsch, the
Discoverer of Europe.

BY RICHARD G. FRACKELTON.



THE earliest tiles of English origin, prior to the conquest of that country by the Normans from the Continent, are those with which the churches and abbeys of that country were paved.

Not only were these great gathering places of the people of that Nation paved, but the walls of their church protected and assisted Native art in many ways. Whereas, in this our *fin de six neuvieme siecle* period in America, even votive windows for our churches are not unfrequently brought from the same country, where the first English tile we possess were found; namely, from Chertsey Abbey in Surrey, with a date of 1270.

It is not likely that at that date the floors of family halls were tiled, even the gentleman at that time, and landowner, being content to drag in his own grown Christmas log, over the dirt floor of his farmhouse, the same as the writer has seen it done in Devonshire, before the water-stocked railroads and stockbrokers invaded the dear old county.

In Russia to-day you can find nobles of the empire decorated for services to their country in field and council. Men dreaded by their opponents in the grand international game of Statescraft, when living on their ancestral estates at home, literally on the soil, on dirt floors.

In America, every barbershop, in order to be "in the profession," must have a tile floor.

In the Chapter House, at Westminster, the visiting Ceramic Tourist can find to-day, tiles of the thirteenth cen-

tury, still occupying their original place, and the clergy dropping their "g's" at the end of their verbs as of old, no matter how they spell Ceramics, or pronounce Majolica.

Speaking of Chapter Houses and churches reminds me of a votive window I saw once lately. The choice of selection had been left to the good father in charge who was from the otherside. The window commemorated his sister's children. The motto he selected was the expression of a whilom Bishop in Rome in the Slave Market—"Non Angli, sed Angeli." A more appropriate motto for such a place I have seldom seen among the Christmas lights and Holly.

As in all objects of unknown Ceramic origin, priority is uncertain, yet as between "Patterns in relief" and "Patterns sunk," supposing as is now generally conceded, that the first English tile was used for flooring purposes in buildings like churches, and then in abbeys and the richer religious houses, where triumphs of art and culture could be safe from the pillaging hands of soldiers and looting robber gentlemen, or nobles of the time. The right to go out first to dinner, must naturally be conceded "*Comme part du Capitaine*," to "Patterns sunk." For the wear and tear of sandaled feet tell in time on relief patterns.

These were made in a mould and coated with a uniform brown or green glaze. Ill adapted as they were for pavements, this led to their being originally placed in walls.

St. Albans claims the earliest known specimens of these 13th century tiles. Doubtless their first use was that of votive tablets placed in church walls, for one in the British Museum bears the inscription—"Orate pro anima domini Nicholai de Stowe Vicarii," and so we can all pray for the Vicar of Stowe, and his "tiles" good. In the West Country these tiles remained long a custom, some bearing date up to 1708.

The custom doubtless is from the North land. I am at this moment unable to quote Danish or Norwegian authority, but remember some years since visiting in the home of a wealthy lumberman in Northern Wisconsin. In his parlor, I noticed, hung in a frame, a quaint old tile, which he told me, in response to an inquiry, he had brought from the wall of his old family farm house when he came to America.

From that country from whence came the discoverers of America, one of whose able Seaman—Captain Freitsch—having lately built his boat alone in Milwaukee, has sailed it from this Port alone on Lake Michigan in the United States, and re-discovered Europe!

But to return to my Wisconsin lumberman and his tile. The words on it I did not understand, but he told me they gave the date and fact of the



YE ANCIENT CLAYWORKER.

building of the house by his ancestor in Norway, and when he came to rebuild and regild his escutcheon in America he brought it with him, just for luck, you know. And then he added, as the servant brought in some glasses of flavoring extract before going into the dining room, "But you see I have become naturalized and instead of building it into, I hang it on the wall." *Och aldrig blef jag Kallard. Raedd, blott to king mellanat.*

"Never was I called a coward, but sometimes I was called insane."

"SUNK PATTERNS."

These were generally ornamented in outline only, color the same as the tile, Shropshire, Cheshire, Cambridge and Northhamptonshire furnishing rich specimens of this art; Prior Cranden's Chapel at Ely, being perhaps the richest of them all, but the date of it, according to the best English authorities, not being later than the Fourteenth Century? St. Patrick's Cathedral in Ireland, also furnishing good 14th Century specimens of Celtic Ceramics in tiles. But "Celtic Art and Tiles" I will inflict on your readers later on, the subject is too wide for the fireplace this month.

"INLAID PATTERNS"

Being the most common variety of paving tile, I mention last.

After the pattern had been impressed with a mould or block, the sunken portions being filled with white clay, the whole tile was covered with a yellow glaze, producing a bright yellow pattern on a rich brown ground.

Shaw's "Specimens of Tile Pavements" illustrate this art. One magnificent abbey, that of Jervaulx, having the centre isle paved with the armorial bearings of the Men at arms, who, having fought in her wars in their strength, turned Monks in their old age, in honor of "Belle Marie." Their prayers, none the less acceptable before her altars, for being gentlemen, and having lived and loved.

In these three varieties the patterns were formed with a wooden stamp by hand. The same pattern being met with in churches, far distant from each other, shows that the old kilns supplied considerably large districts, and were not strictly for one building, as has been sometimes supposed. Only four of these kilns have been discovered in England. One for tiles in relief, the other three for inlaid tiles.

The larger Monastic Institutions of Catholic England had their own kilns and furnished tiles doubtless to the churches and filiale houses of their order.

In Nichols' "Examples of Decorative Tiles," you will find a quaint pattern from Malmesbury Abbey. One of the border tiles I have had reproduced herewith from an old wood cut, the original tile being in the British Museum. The design consists of glowing rich colored centres and borders of squirrels and monkeys.

You must remember, the kilns in those days, were not in the hands of witless amateurs, but fired by the lay brothers of the order.

Good friars and good livers, who loved a joke and enjoyed a glass at their own or others expense and the covert ceramic satire of the good lay Brother has caused a laugh at Christmas tide from his day to this, down through the centuries, for whether the monkey is critically examining the subject of "Ceramics or Contents" has never been decided.

Written for the CLAY-WORKER.

ONE OF PHILADELPHIA'S SUCCESSFUL BRICKMAKERS.

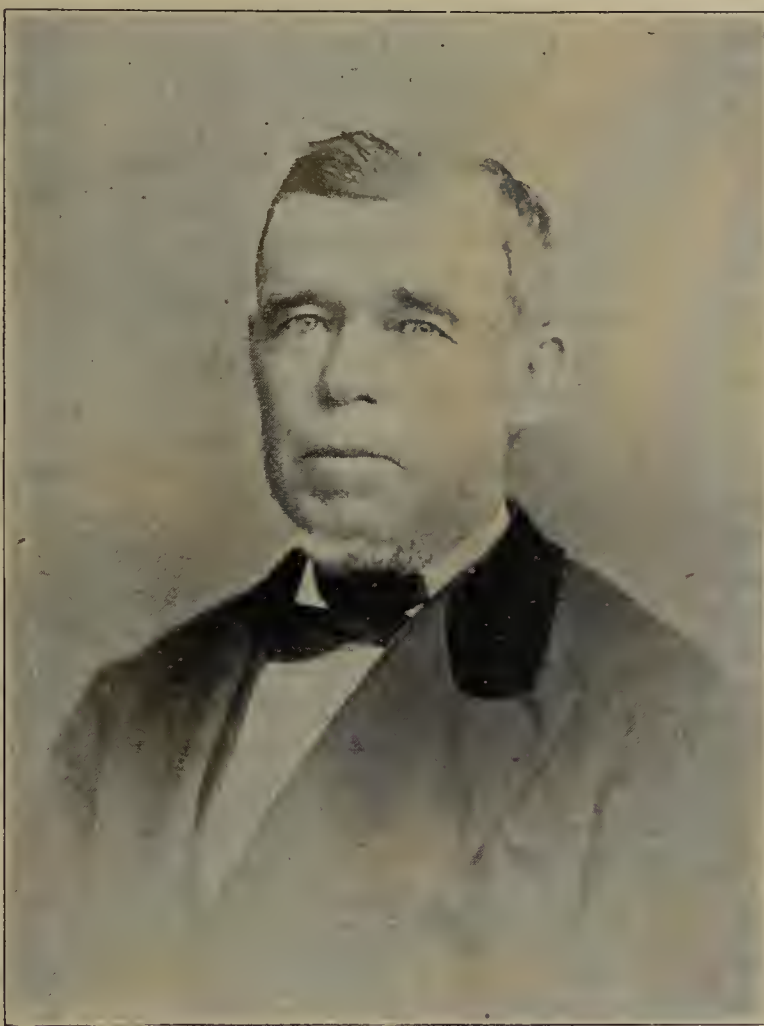
ON THE 12th of April, 1840

there landed in Philadelphia a poor Irish lad, who celebrated his eighteenth birthday while on his passage from Liverpool to this

country on a sailing vessel. Steamships were scarce in those days and a luxury no poor man could indulge in. Soon after he landed he was relieved by some of his *friends* (?) of what little money he had and most of his belongings too. Notwithstanding such a disheartening disaster the plucky youngster married a girl one and a half years younger than himself in two weeks after his landing, and commenced life—to use his own words—"without a shilling in his pockets or a shirt to his back." His first permanent job was six months before the mast, on board the schooner Chapman Keyler for which he received the magnificent salary of \$5 per month and his *grub*. I would have used a prettier word than "grub," but am imbued with a certain regard for the eternal fitness of things, and was unable to find any word that would look consistent side by side with the salary. This schooner traded between Philadelphia and Virginia. When the brave little fellow—for he was small but wiry—had put in about six months of sea-faring life, he quit, and engaged with Col. Carr for one year as gardener, then he tackled a stone quarry in Malinsville, here they worked from 7 a. m. until sundown; after two years of this work he commenced his brickyard career, his first "boss" being

Samuel C. Adams, better known in those days as "Yankee Adams," he received this appellation because he was very bright and smart, and is credited with being the inventor of the tempering wheel, some of which are still lingering in the Philadelphia brickyards until they are superceded by the clay rolls, pug mills, etc.

Speaking of clay tempering reminds me that previous to, and long after Adams brought out his tempering wheel the clay was tempered by the bare feet and hands. This was the work assigned to our young Irishman; each temperer had to temper clay for 2,332 bricks for a day's work. When Harry had finished his day's work, you would find him



H. C. CARROLL, Brick Manufacturer, PHILADELPHIA.

making overtime at nights and occasionally on Sundays he would be seen tempering clay to practice on so that he might acquire a thorough and practical knowledge of the business, and to this same end he had a good spell at off bearing, wheeling, tossing, setting, burning, and everything connected with brickmaking. The overtime spoken of above was not for wages, but for practice and experience.

When he had been with Adams about 15 years, the yard was sold to Pitman & Taylor; this yard was between

20 and 21st, Market and Chestnut streets, within two blocks of the present ultra fashionable neighborhood of Rittenhouse Square. Think of Harry with his wife and small family living in this tony quarter, in a one story house and struggling with the asperities of brickyard life at that period, however, by this time he had made himself a valuable man, and Pitman & Taylor were shrewd enough to secure his services which they retained for 10 years. He then became a partner in a yard at 50th and Market streets with Jacob H. Taylor and after running it a year they sold out to Lloyd & Russell. Samuel Lloyd had a good idea of Harry's ability, and tried to induce him to join them in

partnership, but failing in this, he did the next best thing, he secured him as manager. Russell was an imperious man and too fond of rum, and when in his cups gave Harry considerable trouble and uneasiness by unnecessary interference, etc. Lloyd always stepped in as mediator and by this means they retained their manager about six years. John Wildey was their burner, and he and Harry struck up an intimacy that eventually resulted in them going into partnership and buying out the yard of Samuel P. Hancock, located in Hestonville. When the Hancock yard played out they rented another yard on Landsdown avenue, at \$550 per year, north of the P. R. R., and west of 44th street; they also purchased the yard of Chas. Stagg down on the neck and ran both yards, working together harmoniously for about 5 years; they then dissolved partnership in the most friendly manner agreeing to have the Landsdown

yard put up at auction, the highest bidder to take it and the other to take the yard at the Neck, the bids went up by \$100 at a time, finally, Wildey swore a good natured oath that Harry should take it, as he would not make him pay more for the yard than it's worth. Their affairs were then settled up without the difference of a nickel between them. Wildey taking the yard at the Neck, and Harry remaining at the Landsdown yard which he purchased for \$7,200.

The P. R. R. now began to make pre-

parations for the Centennial, and found they needed Mr. Carroll's brick yard land for sidings, etc., and unhesitatingly paid him \$50,000 for it; he now purchased 18 acres of land on Haverford street and commenced a brickyard on it which is running to this day. In 1877 he purchased an adjoining yard on the opposite side of the street, formerly run by Wm. Chambers & Co., this yard is also still running, and was described some time ago in the CLAY-WORKER.

Many good stories could be told to his credit if space would permit, but one must suffice. In the early stage of his brickyard ownership he engaged a man named Patrick Sullivan as foreman, this curious engagement was without any agreement as to salary, and ran on to the end of the year, Patrick drawing on account as he needed it, when the year was up Mr. Carroll requested Mr. Sullivan to bring in his book and have his account straightened up, he did so, and when they had summed it all up, Mr. Carroll made out a check for the balance due at \$1,450 per year, this, Mr. Sullivan flatly refused to take, vowing it was too much; Carroll sternly insisted, saying "take it, I have made money in the business and you have a right to a share of it." This faith-in-each-other agreement, continued in force about 16 years and terminated about the time of the Jay Cook failure. It is needless to say that Messrs. Carroll and Sullivan remained fast friends until the latter's death about 8 years ago. His memory is still held in the highest esteem by Mr. Carroll, and hosts besides, for he was another for whom Philadelphia is, and ought to be, proud.

Outsiders say Mr. Carroll is a millionaire, this he repudiates, and says one-third would be nearer the mark, be that as it may, 64 acres of land on good streets and much of it already eligible building land, cannot fall far short at even moderate prices. However, at the lowest estimate (Mr. Carroll's own) there is much to his credit.

In conclusion, let us view another phase in his character. He is a devout Catholic, not a pharisaical one either; he attends mass every morning that he can get out of bed, and never enters on any undertaking without first going and laying matter before his Maker, and attributes his success to the guidance of his heavenly Father. He is a member of St. Agatha's church, 38th and Spring Garden street, to which he is a substan-

tial contributor, but in this and other charitable acts, his 'left hand knoweth not what his right hand doeth.' Mr. Carroll's word is as good as his bond and "goes" unquestioned wherever he is known.

HOMINUM.

ENAMELING AND GLAZING BRICK.

Number 2.

IN relation to the burning of glazed brick, it is absolutely necessary that to obtain satisfactory results, a person must have some knowledge of heat. In the first place, in burning soft glazes, care must be taken that the brick do not touch each other—that is, the glazed portion of the brick, as the glaze in melting resolves itself into a liquid, and if touched when cooling will stick.

In glazing red brick that will not stand a high degree of heat, it is as well to scatter a little ground flint or sand under the bottom of the brick to prevent sticking. It is necessary in order to thoroughly fuse the glaze to give the brick as much heat as they will stand without collapsing in the kiln.

PROCESS OF FUSION OF GLAZE.

In order to determine the fusing point of the glaze in kiln, it is necessary to use small trial pieces of same material as the glaze, placing five or six on the top and bottom of kiln, and at the expiration of, say, ten or twelve hours, take out these trials through the trial hole. As soon as these pieces are thoroughly fused to a fine lustre or a perfect glaze at both the top and bottom, the kiln should be stopped. Should you find the top is thoroughly burned and the bottom not sufficiently burned, keep on burning until the bottom of kiln is done; as the glaze when fused on top will stand two or three hours longer burning without injury. When you are satisfied that the brick are thoroughly fused in all parts of the kiln, if you are burning with coal, draw the fires from the fire box and close perfectly tight. If you are burning with wood, there is no necessity for drawing the fires, but if you are burning with coal and do not draw the fires, the glazes will have a cloudy appearance, which is caused by the sulphur and cold air combined. The time consumed in cooling off a kiln depends, of course, upon the size of the kiln, but care must be taken that the kiln door is not opened until the bricks are moderately cool; by this, I mean cool enough to handle with the bare hands.

It is a common occurrence when experimenting with small quantities in small trial kilns to take out the brick before they are entirely cool, on account of anxiety to see the results. This does not give the glaze a free chance, and experimenters often think they are working from poor recipes. This often causes the glaze to craze badly.

With some clays it is almost impossible to find a glaze that will not craze, or crack on them. If this continues to be the case after two or three trials, I would advise any one trying to work same to discard such clay and try some others, as it is only a waste of time and money, for a crazed brick is not saleable. There are many glazes that when used raw (that is, without fritting) are very liable to craze, but in my experience, I have found that this can be prevented by fritting the boracic acid, feldspar and whiting. There is an idea prevailing among many people that borax should be used in the place of boracic acid, but it is quite the opposite. Boracic acid is cheaper and better in every way.

ENAMELING BRICK.

In discussing this question, I will only deal with enamel on burned brick. There seems to be quite a discussion at this time, concerning enamel on burned brick and enamel on green brick. This latter question I will leave until some other time.

In the first place, it is a waste of time to try to make an enamel without fritting, because in making the enamel, boracic acid and tin take a prominent part, and as neither of these compounds will thoroughly dissolve in the raw state, it is necessary that they be fritted and thoroughly ground.

In the purchase of oxide of tin and all metallic oxides, it is important that you should get the same article every time. In using tin oxide, I would suggest that the best Banca tin be procured, the first cost of same will be a little more, but it proves cheaper in the end.

In the manufacture of white enamel, it will be found necessary to have a special apartment, in order to keep it separated from any colored materials used, such as oxide of cobalt, manganese iron, etc., and all surroundings must be absolutely clean. And, again, I would impress upon beginners the necessity of having the enamel perfectly ground. The reason I am so persistent in this is because I have seen so many dismal failures because of carelessness in this

one feature, although the experimenters were working from good formulas.

APPLYING ENAMELS.

In applying enamels to the brick, it is necessary to put it on thick, say, about one-eighth of an inch, (I find this to be about the best thickness) and it must also be put on perfectly even. In dipping the brick, I would advise giving them one dipping, to give them one coat and let the same get perfectly dry, and when dry apply another coat.

I will give more of the details of this process in my next paper. O. PAKE.

To be Continued.

Written for the CLAY-WORKER.

THE VILLAGE BRICKYARD.

REFERRING to the cost of building houses it appears that brick form at least ten per cent. of every brick house, which is a larger proportion than furnished by any other material man. This would seem of itself a potent reason for the brickmakers, in many instances, being the contractors for buildings of various kinds.

The custom has long been in our community for the carpenter to undertake this work, and as they seldom have capital it puts all the material people at the mercy of persons who have nothing to lose in such undertakings. Hundreds of brickmakers have unfortunately had to buy just such an experience—brick gone and no money to pay the bill, and the lien for some cause worthless.

Among the important things to buy right in a building operation is the piece of ground or lot. If the lot is such as to sell any house that can be put on it, then the money to be made in the transaction will be manifolded by buying as large a piece of ground as possible, for it must be kept distinctly in mind that each additional house erected adds to the value of every other house in that immediate neighborhood. Purchasers like to enter a thriving and modern improved street. And in this connection it may be wise to so expand the operation as to have the roadway also paved with brick, plant the foot walks with shade trees; and in some instances I have gone so far as to have flower beds laid out and carefully planted. What ever will show our enterprise to the public as a complete undertaking, judiciously planned, is a valuable card to the home seeker.

To show the value of ability to estimate the cost of building operations closely in a few minutes: A month ago the Pastor of a small church in my village called me from the dinner table to ask the cost of a house for which he brought me the plans. The cubic contents were ascertained and a few questions asked to determine the character of the improvement, and an estimate made by the cubic foot and he was advised to then take his plans to a number of reliable contractors for their bids. This was done, and proved to be as follows:

| | |
|------------------------------------|---------|
| Village Brickmaker's estimate..... | \$1,800 |
| Harry Bourn's bid..... | 1,790 |
| W. Harrison Bourn's bid | 1,990 |
| Thomas McFadden bid..... | 1,920 |



J. H. RATHBUN, SUPT. KENSINGTON BRICK WORKS,
PITTSBURGH, PA.

Gropper Bros. bid..... 2,265

That estimate was made complete in ten minutes and the Village Brickmaker furnished the brick, and at the same time tied every one of those carpenters who bid on the job to his business interests by recommending them to this church as proper parties to employ. It also had the good effect of showing the church people that even a low down brickmaker, with a one-horse yard, understands all the details of his business.

The importance of controlling custom

in allied trades, can hardly be overestimated. That Book that tells us new truths every day, as we are able to read between its lines, says that "To him that hath, more shall be given and to him that hath not, even the little he seemed to have shall be taken away." That is the substance if not the literal words of the Book, and its truth we will vouch for.

THE VILLAGE BRICKMAKER.

THE PROPER USE OF LOAM IN CLAYWORKING.

LOAM occupies a sort of intermediate position between sand and clay. Any earth which is composed partly of clay and partly of sand, and yet which is neither distinctly sandy nor clayey, may be strictly called a loam. As a matter of experience, it is rare to find a pure loam. Most of the strata designated by that name contain impurities, due to the percolation of water which has become muddy, owing to its having drained through the top soil. Unless very impure, a loam may often prove a god-send to a clayworker, especially if his clay be of a strong, fat, plastic nature. The quantity of sand and grit present in a loam renders it less liable to warp and shrink on being burned than the strong clays. Hence its proper use is as a corrective to these clays. Goods may often be improved up to 25 per cent. in their quality if the clay from which they are made is mixed with a suitable proportion of loam. We saw a brickfield once from which no absolutely sound bricks had ever been turned out. There was a fine bed of loam there, but that used to be dug out and wheeled away so as to get at the clay more easily. All the essentials for making first-class goods were present, but the manufacturer was unable to produce them until we suggested working up the waste loam heaps with his clay. The first kiln full of goods that he turned out after taking our advice was a perfect revelation to him. By itself loam is useless for brickmaking, and its proper employment is such as we have indicated. If, however, chalk can be had for the cost of getting, very fair bricks may be made, by mixing it with the loam, for the chalk takes up the excess of fusible silica and binds all together during the process of burning. —*British Clay-Worker.*

A FORMIDABLE DOCUMENT. AN ECHO OF THE CHICAGO CONVENTION.



HOSE of our readers who were fortunate enough to attend the Eighth Annual N. B. M. A. Convention will remember that the Secretary was then, for the first time, required to give bond for the moneys belonging to the Association entrusted to his care. With his accustomed thoroughness that officer has secured a bond, the sureties of which represent a combined wealth of several millions. Just how many we leave for "Keystone" and his ilk to determine. Believing that the bond and the accompanying letters from the sureties will prove very interesting to all who are interested in the N. B. M. A., especially at this time when the craft is preparing for the coming Annual Convention which will be held at Cleveland in February, we submit them entire.

OFFICIAL BOND.

KNOW ALL MEN BY THESE PRESENT, That we, Theodore A. Randall of Indianapolis, Ind., as principal, and the undersigned as sureties, are held and firmly bound unto The National Brick Manufacturers' Association of the United States of America, in trust for said Association in the penal sum of One Thousand (\$1,000.00) Dollars, good and lawful money of the United States, to be paid to the said Association or its Executive Committee, the survivors of them, or their successors in office, or the executors or administrators of said Association in trust as aforesaid, to which payment, well and truly to be made, we do bind ourselves, our heirs, executors and administrators, firmly by these presents.

Sealed with our seals, and dated this 23rd day of January, A. D., 1894.

THE CONDITION OF THIS OBLIGATION IS SUCH, That whereas, the said Theodore A. Randall has been duly chosen the Secretary of said Association for the term beginning this 23rd day of January, A. D. 1894.

NOW, THEREFORE, If the said Theodore A. Randall shall well and faithfully perform the duties of said office, in accordance with the laws governing the administration thereof, and at the end of his said term, account for and turn over to his successor in office, or to whoever may be legally appointed to receive the same, all moneys, books, papers, and other property of whatever nature, which shall have come into his hands as such officer, then this obligation to be void, else to remain in full force and effect.

WITNESSES.

Addie M. Wallace.
Chas. B. VerNooy.
H. B. Prosser.
S. T. Kimbell.
F. B. Alsip.
X. Wittmer.
Edwin C. McGraw.

SURETIES.

Theodore A. Randall.
D. V. Purington.
Wm. D. Gates.
S. S. Kimbell.
W. H. Alsip.
Edwin C. McGraw.
X. Wittmer.

F. E. Evans.
Frank B. McAvoy.
Chas. L. Underwood.
H. C. Dingee.
J. Pearl Norton.
Josephine P. Fuller.
Florence I. Doolittle.
N. S. Bud, Jr.
F. J. Tinkham.
S. R. Morrison.
A. S. Blaffer.
Dwight W. Huntington.
J. Milt. Blair.
E. Pavers.
James Taylor.
May Durler.

C. B. Pearson.
T. B. McAvoy.
Thomas H. Flood.
James E. Dingee.
J. P. Norton.
George M. Fiske.
Frank L. Stiles.
Samuel Pearl Crafts.
D. G. Harriman.
R. B. Morrison.
J. A. Blaffer.
W. A. Eudaly.
B. W. Blair.
Anthony Ittner.
Laclede J. Howard.
Justus C. Adams.

Office of THE SECRETARY OF THE N. B. M. A.
Indianapolis, Ind., April 5, 1894.

D. V. Purington, Esq.,
Ex-Pres. N. B. M. A., Chicago, Ill.

Dear Mr. Purington:—You will, doubtless, remember that when the motion was made and carried at the recent Convention of the National Brick Manufacturers' Association, requiring the Secretary and Treasurer to give bond for \$1,000.00 each, I notified you that I would expect you to go on my bond.

As I sometimes have as much as \$200 or \$300 in my hands belonging to the Association, and have never heretofore given any bond at all, I would like now to give a good one, and so in part make up for former laxity. As the sureties will necessarily be taking large chances, it occurs to me that it would be well to divide the responsibility among a number of the well-to-do brethren. I, therefore, attach to the enclosed bond a list of names, and request that, after signing for yourself, you pass it on to the next on the list, and request him (Mr. Gates) to do likewise. A brief letter of condolence giving any views you may happen to have on the subject, might to some extent lessen (or add to) the burden of responsibility that the good brethren are asked to share with you.

Kindly give this attention at your earliest convenience, as until the bond is executed the Association is "holding the bag"—a position it is earnestly hoped you and the others named will assume in the interest of

Your humble servant,

THEO. A. RANDALL,
[Dictated to W.] Secretary N. B. M. A.

Office of
PURINGTON PAVING BRICK CO.
OF GALESBURG, ILL.,

Chicago, April 7th, 1894.

Theo. A. Randall, Esq.,
Secretary N. B. M. A.

Dear Sir:—The assurance of some people is past my comprehension. Because forsooth, you notified me that you should expect me to assume any shortcomings of yourself as an officer of an association, you seem to take it for granted that I would acquiesce. You will pardon me for saying that during my four years of service in the Quarter Master's Department of the U. S. Army, I never chanced to make the acquaintance of an army mule with one millionth part of the cheek you evidently have. Unless the estimable gentlemen whose names you send me, or at least a majority of them, join with me in sharing this responsibility I shall insist on an indemnifying bond. What assurance have we that the list of signa-

tures will not be attached to a paper declaring you to be a gentleman? With these conditions, under protest, I have placed my five thousand dollar autograph to the paltry one thousand dollar bond.

Yours truly,
D. V. PURINGTON.

Office of
THE AMERICAN TERRA COTTA AND
CERAMIC COMPANY.

Chicago, April 10, 1894.

T. A. Randall, Esq.

My Dear Sir:—Of course I will. Am surprised at Purington's hesitation. It has been understood all along that we were to whitewash each other. "Us fellows must stand together."

I do this the more readily as the business prospects of the year indicate that all our autographs will be worth less next January than they now are.

Yours,
WM. D. GATES.

Office of ALSIP BRICK CO.

Chicago, May 7, 1894.

Theo. A. Randall, Esq.,
Secretary N. B. M. A.

Dear Sir:—Will I sign that bond? Yes, sure. and if I could not sign a bond without quibbling and growling, I would not sign it at all.

Of course signing bonds is taking chances, but what is a man in the world for, if not to take chances!

Respectfully,
W. H. ALSIP.

Office of VIRGINIA BRICK COMPANY.

Washington, D. C., May 21, 1894.

T. A. Randall, Esq.,

Sir:—How dare you take such a liberty. Do you know that going on a bond is a very risky business, and many a person has lost his all by so doing, especially in a case like the one under consideration, where the man is in cahoots and belongs to a combination that depends largely on profits "seldom realized" out of that which is trod upon by the smallest creatures and unreliable men. I give you my name to help you out, trusting the confidence will not be abused.

Yours sincerely,
C. B. PEARSON.

Office of T. B. McAVOY & SONS.

Philadelphia, June 26, 1894.

T. A. Randall, Esq.,

Dear Sir:—Having delayed the bond in question for some time, I suppose I should give a good reason for doing so. Not making a practice of going on bail pieces, bonds, etc., or endorsing notes except upon very, very rare occasions, I took my own time in deciding what to do in this matter. What with so many new, and ambitious competitors, in the field—Clay, Brick, etc., etc.—striving to "do you" as it were, it becomes a rather serious matter going on your bond.

However, I think this one of the rare occasions referred to above and attach my signature to it

Respectfully yours,
T. B. McAVOY.

Office of FLOOD BRO.

Philadelphia, July 2, 1894.

My dear Mr. Randall:—It does not seem to me that your request, coming as it does, from the hustling, bustling West is "nervy." It is extremely natural.

But as "adversity" they say "make strange bedfellows," I will be glad to assist you by signing the bond, if the coupling of my name with that of Purington, Gates, McAvoy, Dingee and several of the others be not used against me when it may be necessary for me at some future time to prove "previous good character."

Sincerely,
THOMAS H. FLOOD.

Office of JAMES E. DINGEE.

Philadelphia, July 6, 1894.

Mr. T. A. Randall,

Dear Sir:—For pure unadulterated cheek your letter goes ahead of anything I have experienced in my business career. Are you not aware that parties asking favors of this character, should make the request in a humble manner? You must also know that to go on the bond of an editor is a very risky matter, as they are reputed to have very little money, of their own, and to trust the immense sums of money of our association in such hands is liable to lead to serious results; but I suppose there are asylums in the West for just such cases. I will however, out of respect for Mrs. Randall, who I am aware is the better man of the two, place my signature on the bond, and create a sinking fund of one-twenty-third of \$1000 with the idea that the other 22 signers will be able to come to time, should any disastrous results follow. Yours respectfully,

JAMES E. DINGEE.

Office of J. P. NORTON.

York Corner, Maine, July 12, 1884.

T. A. Randall, Esq.,

Secretary N. B. M. A.

Dear Sir:—One of your editorial brethren lately announced his ability to secure a bond of \$2,000,000 in two minutes. Would it not be well for you to consult him? Or do you rely upon the innocent ignorance of the eastern man to still send more capital after his fast disappearing "Western Mortgages?" However, I'm sorry for you and will help you out.

Very truly yours,

J. P. NORTON.

Office of FISKE, HOMES & CO.

Boston, July 16, 1894.

T. A. Randall, Esq., Indianapolis, Ind.

My Dear Randall:—Do you remember what the Duke of Newcastle said when he signed the American Declaration of Independence? Said he, "I want four dollars for that." Now I am no Duke, but you once referred to me in your valued paper soon after the Washington Convention as a "Munchausen." I looked him up in a biographical dictionary, and found his greatest claim to notoriety was the fact that he was the biggest liar that ever lived. So in my capacity as "a Munchausen" I sign your bond.

Very truly yours,

Dictated.]

GEO. M. FISKE

Office of

THE CENTRAL NEW ENGLAND BRICK EXCHANGE CO.

New Haven, Conn., July 19, 1894.

Mr. Theodore A. Randall,

Secretary of N. B. M. A.

Dear Sir:—Your letter in the form of a request for me to sign your Bond, this day received. I am 22 years old or more and have never up to the present time been known to sign a Bond or Note for any man, but having the greatest respect possible for your assistant, who has so correctly reported everything that I have said at our past Conventions, and wishing the same to continue, (for her sake) I will sign your Bond. Trusting my explanation will seem plain to you, I am as ever

Your friend,

FRANK L. STILES.

Office of

THE CENTRAL NEW ENGLAND BRICK EXCHANGE CO.

New Haven, Conn., July 26, 1894.

My Dear Randall:—Will I go on your Bond? Of course I will. Will a duck swim? Like Micawber when he gave his note and exclaimed "Thank God that debt is paid;" so will I rest in the sweet consciousness that such is the unreliability of the previous signers, that before whoever tries to collect on the Bond gets half around in his vain efforts he will just lie

down and howl, and I shall not be obliged to tell him to let me know if he gets the money before I do. Sweetly but not not Sugar Trustly,

Yours truly,

SAMUEL PEARL CRAFTS.

Office of D. G. HARRIMAN.

New York, July 27, 1894.

Theo. A. Randall, Esq., Secretary.

I knew that Purington was a Maine-lac, but I thought he had some "horse-sense." What a disappointment! As for yourself—well on that subject I have a decided opinion just at present. "A brief letter of condolence," you ask for. It strikes me that the "condolences" will be needed by the "miserable sinners" who sign this Bond. What have we ever done to merit such a fate? By the way, is there any "politics" in this business? I put my foot in so badly at the Powwow last winter, that I am nervous now on that point. However, as Bro. Flood, who was so terribly shocked by my politics then, has signed, I presume it is all right. Now, Randall, please do not "skip," for if you do, and I am "called" on this Bond, like Shakespeare's character, I "may not come when I am called." It is Democratic to quote Shakespeare, just now in the U. S. Senate, and therefore cannot be "politics."

Yours,

D. G. HARRIMAN.

Office of MORRISON'S BRICK KILN CO.

Rome, Ga., July 31, 1894.

T. A. Randall, Esq., Indianapolis, Ind.

My Dear Randall:—Trouble never comes singly. My spaniel got killed, then my rooster died of chicken "grip." In the midst of these afflictions comes your request to sign this bond. What I say is strictly P. & C. If I sign this bond and you should change your place of residence to the other side of the lake, I would have to shoulder the entire responsibility. The gentlemen who have preceded me with their signatures mean well, but they are brickmakers, and brickmakers 1894 A. D. are N. G. It is true that I also am a brickmaker, but do not depend upon that for my revenue, I have an independent (prospective) source of income, I am running "a one steer crap." If I can just raise enough corn and cow peas to fatten my herd of "razor backs," I will not be "execution" proof, hence these tears and groans, however I cheerfully sacrifice my "crap" on the altar of friendship.

Yours doubtfully,

R. B. MORRISON.

P. S.—Please keep in mind the losses I have already sustained, remember the straw that broke the camel's hump back.—R. B. M.

Office of J. A. BLAFFER & SON.

New Orleans, August 4, 1894.

T. A. Randall, Esq., Sec'y N. B. M. A.,

Indianapolis, Ind.

To sign, or not to sign,
Is always a vexed question,
Yet after due reflection
Must surely fall in line.

How dare I hesitate,
To share such honor great,
With such high Lights to rate
And give my name to Fate.

A surer bond to seal
May it serve, than mere lucre
More binding than our sugar
This bond for woe or weal.

Cement the bond of States,
With a spirit of affection;
Then all will have protection;
None need deplore the Fates.

And so dear Pu-ring-ton,
I hope we'll never rue
A duty, kind and true,
For Randall won-and-done.

Now quickly to Eu-da-ly,
Must lie this precious scroll
Just from Rome, I now enroll
Your friend in need J.-A.-B.

Yours sincerely,

J. A. BLAFFER.

Office of W. A. EUDALY.

Cincinnati, Sept. 21, 1894.

T. A. Randall, Esq., Sec'y N. B. M. A.,

Indianapolis, Indiana.

Dear Friend:—Your official bond and the accompanying documents have been in my office for some time. I did not delay affixing my signature to the bond from any lack of confidence in your honesty and integrity, but I must confess that the part you took in the "Powwow" at the Chicago Convention last January, served to shake my confidence in your judgment. However, now that the Tariff Bill has passed, and since the business world has begun to move with renewed energy, and since you have no further and just cause to leave the country, it being made by Congress possible for you to earn an honest living, I feel the hazard of going on the bond has been materially reduced. I therefore, affix my signature. In conclusion I beg, through you, to assure our friend Morrison that I will share this burden, if occasion requires, while my crop of corn, and "Razor Backed Hogs" is not good, I have an excellent stand of "Chigres" and "Pinch Bugs" growing only a few miles from Rome, which owing to his experience he can gather on the shares. I don't feel able to pick another crop myself.

Yours truly,

W. A. EUDALY.

Office of THE J. M. BLAIR BRICK CO.

Cincinnati, Sept. 22, 1894.

My Dear Randall:—If D. V. Purington with his "vitrified" conscience can sign the bond, I can, but you are a Brick and all bricks when well laid should be well bonded. When you visit us we shall open the *Gates* of our city to you, and we will *Al-sip* a glass to your health, and may a *Flood* of years be spared to you in your *Dingee* sanctum, to write on the different *Stiles* of brick for the *Crafts-men*, and may *Eu-daly* think of us above the noise and *Blair* and din of the hustling world. Business is dull, it might be *A-dam-sight* better, but *Itt-ner* will be so bad again we hope, so it would look a *Pe(a)erson* up a tree.

Yours in the bond of fellowship.

B. W. BLAIR.

Office of ANTHONY ITTNER.

St. Louis, Sept. 24, 1894.

My Dear Randall:—Your bond reaches me this day by mail from Bro. Blair, with quite an array of names, and a volume of witty literature, to which, I regret my inability to add anything. I might by racking my brain for several weeks produce something, but even then, it would be strained and unnatural, I am sure, hence, I will not add to the delay, by making the attempt, but affix my name at once, and turn the documents over to our mutual friend Howard, who, I feel confident, will be able to sustain the reputation of St. Louis, even though he has got to go back four thousand years, and draw on the people, or I should rather say, the children of Israel, to help him out, and in this case, I presume there would be no fine imposed.

Mr. Shover was here to-day and informed me that you are in your new home, I also learn through him, that you built a frame house, I fear, when this becomes generally known, it may give you trouble, and that you will not hear the last of it. With best wishes and long life to you and yours, I remain your friend,

ANTHONY ITTNER.

Office of EVENS & HOWARD.

St. Louis, Mo., Nov. 2, 1894.

Mr. Theo. A. Randall,
Indianapolis, Ind.

Dear Sir:—You ask a favor that I would not grant to any ordinary friend. As you do not come under that head, or rather belong to a class extraordinary, will follow the illustrious example of those preceding me and affix my hand and seal to your bond.

I believe the bond invalid as the courts have decided that a bond given by an officer who serves without compensation will not hold the indorser, so the next move of the secretary I suppose will be toward the allowance of an annual stipend. Well, I will not object to that either, as it will reduce the amount in the treasury and so lessen our—the bondsmen's—liability, if any.

Yours for the N. B. M. A. at any cost.

L. J. HOWARD

Office of SHERIDAN BRICK WORKS.

Indianapolis, Ind., Nov. 12, 1894.

Theo. A. Randall, Esq., Sec'y N. B. M. A.

Dear Sir:—You ask me to do that which I have always refused to do, even for those nearest to me by ties of kinship and most intimate relations of life, but when I remember Mrs. Randall and those brown-eyed hopefuls, I am constrained to sign and in the language of Rip Van Winkle, "I will not count this time." With the added thought that the day is not far distant when signing of bonds and endorsing commercial paper will be relegated to that locality where the Democratic party and tariff reform has just been consigned by the American people, and where good brickmakers are never sent and the wood-bine twineth not.

Very truly yours,

JUSTUS C. ADAMS.

Written for the CLAY-WORKER.

DRY PRESS HINTS.

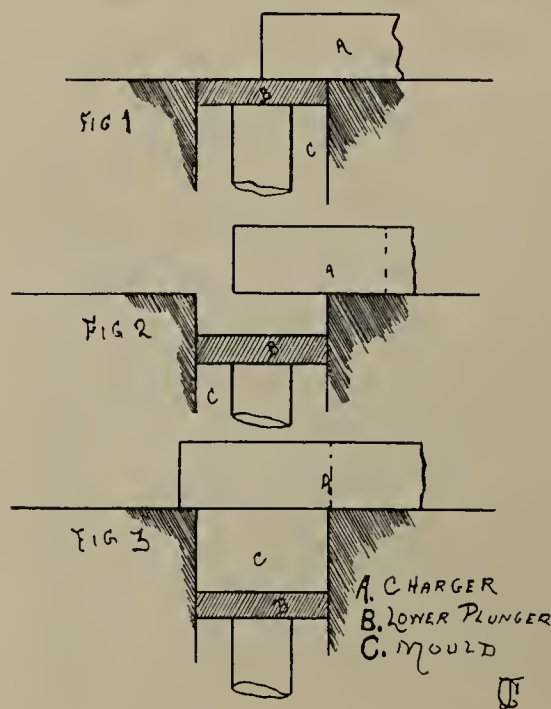
No. 14.



REPLYING to the "German Criticism of Dry Press Hints" in October issue of the CLAY-WORKER, supplemented by comments of Mr.

W. D. Richardson, please allow me to endorse the bulk of it as coinciding exactly with my views of that particular subject. Until Mr. Richardson announced the fact, I was not aware of any "point at issue" between Mr. Duemmler and myself, but as far as I can now see, the difference of opinion is not likely to lead to any serious misfortune on either side, rather the other way. I have read the article in its entirety very thoroughly and the first conviction forced onto my mind was, that Mr. Duemmler—equally with Mr. Richardson—was in a little too much haste to draw conclusions favorable to his own views to thoroughly understand the "point at issue." Allow me to quote the passage I used to describe the charger movement: "When the bricks are about half way onto the

table, the bottom plungers *begin* to fall, carrying with them the ground clay from the feed box. By the time the feed box (or charger) has reached its limit of travel, the mold has also attained its full depth, etc." Now, carefully compare this with sketch, column 3, page 338, and you will readily see that it does not even *approach* my described movement. Also please refer to sketches in the paper which are drawn exactly on the lines of the descriptive paragraph. You will notice that the bottom plungers do not begin to fall *until* the charger is half over the mould, and the travel downward is in the same ratio as the horizontal travel of the charger. With this movement the charger is made to pass outer edge of mould about one inch to allow of leveling off on its return.



I do not wish to be understood as defending this movement because it certainly is not the ideal one, but as Mr. Richardson said in his comment, "It is not a question of what these movements *should* be, but what they really *are*." He condemns the movement as described by me as obsolete and prophesies dire results from its use. In refutation, I could, if necessary, name to Mr. Richardson, concerns standing in the front rank of pressed brick manufacturers who still use this obsolete (?) movement and whose bricks are not excelled by any. One, if not more, of the model presses exhibited at our Chicago convention retained this same obsolete movement.

Now, regarding the movement as described by Mr. Duemmler; I have had charge of dry press machines with this principle embodied, and, shall I say, perfected, for some time now, and had

the honor of assisting in its solution.

It will naturally be asked, Why did I describe a movement I knew to be wrong? and I answer: Because it is a movement in use on the majority of the machines now before the public. In describing this charger movement, to illustrate a point *then* at issue, I took that in most general use, and I still think I did right. That it would have been taken as my opinion of the correct charger-movement, never entered my thoughts, or I would have expressed myself, and so have avoided misunderstanding. Mr. Richardson cannot be very sure of the hitherto universal adoption of this new (?) movement, or he would not ask whether there are such mechanical difficulties in the way of accomplishing this, as to render it practicable. This passage is antagonistic to his closing sentence.

If the brick manufacturer of years ago, abandoned the movement as described by me, the mechanical difficulties were certainly not insurmountable. If they had done so, Mr. Richardson would surely have known it, which would make his quoted question superfluous.

I also notice that Mr. Duemmler speaks of it as something yet to be accomplished. In these days of semi-dry brickmaking (especially with shales) the tendency to "roll" or of the dust to fly up, is not as marked, owing to its moist condition, therefore that point loses its force, but, the charger does not feed evenly, as was explained by Mr. Duemmler. It was while experiencing this trouble with a machine possessing a charger movement, almost as described by Mr. D. in sketch quoted, that I began to "see if I could not get over it some way." While remedying to some extent, I could not—on that machine—entirely overcome the trouble. Please remember that this movement was *not* as I described in the "point at issue."

One point I can give Mr. Richardson the credit of being correct upon, is: "The lower plungers must then be forced down rapidly before the charger begins to move back." And this is the only point of merit advanced by him (except his closing advice to me) in *his* criticism.

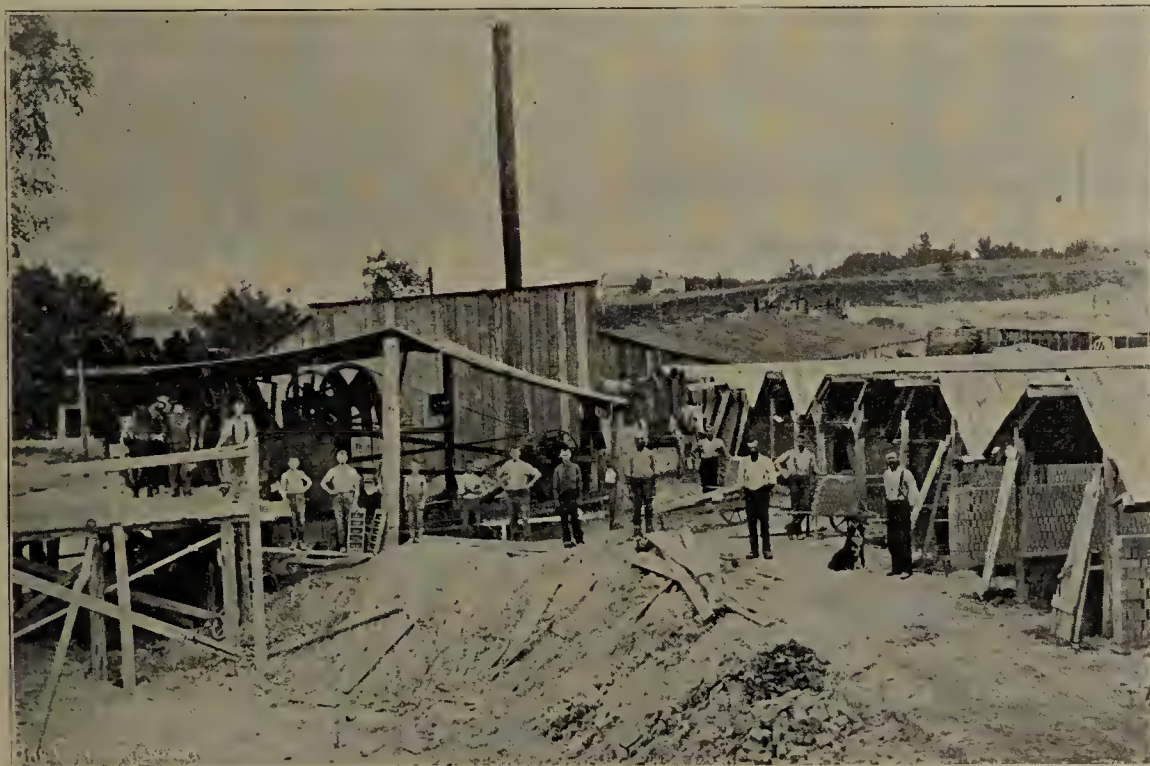
One of the greatest faults of *some* dry-press (or semi-dry) brick machines, is that of allowing the lower plungers to drop of their own accord or when they "feel like it."

There are many causes that operate to prevent any certainty to that operation on this plan that are well known to pressed brick manufacturers, making it unnecessary for me to take up valuable space in this enumeration. They exist, I say, and while it is practically impossible for us to remove them, it is not impossible to overcome their power for evil. This can be—and in some cases is—done by making the drop positive. Not to prolong this reply, I am of the opinion, that if Mr Richardson had read his effusion over *carefully* he would have cut out considerable as not being *a propos*. PRESS.

BRICK AND TILE MAKING IN CANADA

Editor Clay-Worker:

We read the CLAY-WORKER with much interest and some profit. Lately we have been pleased to observe the brief accounts of Canadian brick works that you have published, for we are glad to see our section represented in your columns.



SMITH & CALLFAS' BRICK AND TILE WORKS, DREW, ONTARIO.

We are located some two hundred miles, as the crow flies, due north of Cleveland, where the brickmakers are to hold their next yearly meeting, and have a combination plant—that is we make both brick and tile. Our works are at Drew, a little station on the Wiar-ton branch of the Grand Trunk Railway. The accompanying photograph will give you a glimpse of a portion of our works.

In the brick line we have a Martin machine and pallet equipment and turn

out 12,000 a day. Our drying ground is 150x140 feet. Kiln shed is 150 feet long and will hold 900,000. Our brick are almost white being tinged with yellow and are very hard and dense. Have been getting \$5 to \$6.50 a thousand at the kiln. Most all of our product is shipped by rail to neighboring towns though we sometimes ship a distance of 150 miles.

We have finished burning for the season and the brick now on hand are sold and ready for delivery when wanted. Our clay is rather difficult to burn. We follow Mr. Crary's plan and cover top of kiln with clay when fires are through. Couldn't burn our brick hard without it. Presume a good many of the brickmakers in this section wouldn't take to the idea but we like it, and are making good burns.

Our tile outfit works very satisfactorily we have a Kell's No. 1 machine that does good work turning out a fine quality of drain tile from 2½ to 12 inches in diameter. Have made as high as 12,000 of the small size in one day.

Have a dry shed 40x140 feet that does very well and burn in down-draft kilns in three days. There has been a good demand for tile this year, and prospects are good for next season.

SMITH & CALLFAS.

The road to success is paved with good advertisements.

If you are a business man
Never fail to show it;
Printers' Ink is Fortune's horn,
The wise are those who blow it.
—Printers' Ink.

Written for the CLAY-WORKER.

CHEMISTRY FOR CLAYWORKERS.

No. 29.

BY WM. WAPLINGTON.



IN dismissing the common and well known elements Sodium and Potassium, I think I may properly introduce three other elements that are often associated with them, but by no means so common or so well known; in fact, they were only discovered a little over thirty years ago by spectrum analysis.

LITHIUM, CÆSIUM AND RUBIDIUM. These are the elements referred to above; they are metals and although pretty widely distributed, are nevertheless scarce, and cut but a small figure in the arts and manufactures, we will therefore pass them over with simply giving their atomic weights and specific gravities, etc.

The symbol of LITHIUM is Li, its atomic weight, or combining number is 7, and its density or specific gravity is 0.59. This element calls for more than a mere statement of its symbol etc. It is of little importance to the clayworker except he is a consumer of Lithia water, which is now a commercial article. The metal resembles potassium in many respects and it has the distinction of being the lightest metal known. Potassium was the lightest known until the discovery of lithium. You will see by its specific gravity that it is only a trifle more than half the weight of water, or about the same weight as sycamore and slightly heavier than dry yellow pine. A brick 8 × 4 in. × 2½ in. of this metal would weigh a little more than 1½ lbs.

RUBIDIUM. Combining number 85.4, specific gravity 1.52; nearly three times as heavy as lithium.

CÆSIUM. Combining number 133.0, its specific gravity I do not remember ever having seen and at this writing cannot find.

The next substance we shall notice is AMMONIUM. This is not an elementary body, but a compound of nitrogen and hydrogen; its symbol is NH₄ or H₄ N, so you will easily perceive its atomic weight or combining number is 18. Some chemists contend that this is a hypothetical, or, an assumed body, while others declare it to have been isolated. Amongst the latter we have Prof. H. E.

Roscoe, who says: "The radicle ammonium NH_4 } has been prepared in the free state; it is a dark blue liquid, possessing a metallic lustre, which can only exist under high pressure and at a low temperature, and very readily decomposes into ammonia and hydrogen."

Practically it is a matter of indifference to us whether it has been isolated or not. In every day life and work we have no use for substances so difficult to reduce and maintain in a definite state, nevertheless when we come to examine the properties of the compounds formed by this substance, and the analogy they bear to other metallic compounds, we instinctively become interested and at least—wonder, whether it is a metal or not. We reason something after this fashion. This *Something* behaves very much like an element, and a metallic element, too; moreover, it may be transferred from one compound to another. It will replace the alkaline metals in a compound, and may in turn be replaced by them. Such properties would certainly justify the opinion that the substance is a metal. The late Dr. Wilson says: "In spite, however, of the fact that it has never been with certainty isolated (like fluorine), chemists agree to consider salts formed by the union of ammonia with a hydrogen salt, as containing the quasi—metallic radicle ammonium and to write their formulae in such a way as to show their analogy to undoubted metallic salts."

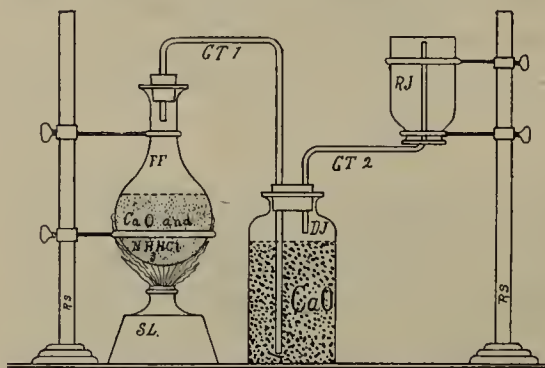
AMMONIA. Symbol, NH_3 . Atomic weight, 17. This is a gaseous substance, and previous to the introduction of coal gas, was obtained by the distillation of horns, clippings of hides, etc., and from this it got the name of *spirits of hartshorn*. The name ammonia was given to it by the Arabians in the deserts of Libya where they prepared sal-ammoniac by heating camel's dung; this was done near to the temple of Jupiter Ammon, hence the name.

Guano, which is the dried excrement of sea birds, contains large quantities of ammonia, so does stable manure, especially the urine of animals. At present, however, ammonia is chiefly obtained from the gas works; there it is one of the bye products, and used to be thrown away, but now it is more valuable than the gas itself, for by adding sulphuric or hydrochloric acids, sulphate of ammonia is obtained in the one case, and chloride of ammonium, or

sal-ammoniac in the other. Of course the solutions must be evaporated to dryness to obtain the salts.

Ammonical gas is transparent and very light, very little more than half the weight of air (0.59, air being 1.0). It may easily be prepared by mixing one ounce of sal-ammoniac with two ounces of powdered quicklime, heating this mixture in a Florence flask by means of a spirit lamp or by gas in a Bunsen burner, the result will be chloride of calcium, ammonia, and water, the reaction may be shown by the following equation.

$\text{CaO} + 2\text{NH}_3 \text{HCl} = \text{CaCl}_2 + 2\text{NH}_3 + \text{H}_2\text{O}$. The gas being so light must be collected by *displacement*; that is, the vessel to receive the ammonia must be upside down as shown in the cut below. It can also be collected over mercury, but not over water, as it is very soluble in water. At freezing point water will



absorb 1149 times its volume of ammonia.

Gases not absorbed by water are generally collected over water in a pneumatic trough, but you see if you were to attempt the collection of ammonia by this method you would have to saturate the water with ammonia before you could collect, therefore the above method is preferable; where S. L. is a spirit lamp burning just under the Florence flask F. F., which contains the mixture of quick lime and sal-ammoniac both powdered. The flask is corked, but the glass tubing G. T. 1, runs through the cork and allows the gas and water to escape into the drying jar D. J., which is nearly filled with quick lime in small pieces; this is also corked with a perforated cork, allowing both the glass tubes to enter the jar. You will observe that G. T. 1. nearly touches the bottom of D. J., while G. T. 2 only just passes through the cork. The receiving jar R. J. is upside down, and is not corked, and you will see that the G. T. 2 is arranged so as to nearly reach the upper end of the jar. R. S. are retort stands. Now the gas generated in the flask is

conducted to the bottom of the drying jar and rises through the quick-lime which deprives it of the water that comes over with it; it then escapes quite dry by glass tube 2, which delivers it at the upper end of the receiving jar. The air in the jar is driven down and out of the jar by the gas; this is why the receiving jar is not corked.

It might be asked: Where does the water come from, when only quick-lime and *dry* sal-ammoniac were put into the flask? Go back to the above equation and you will see that the lime supplies the oxygen and the sal-ammoniac furnishes the hydrogen. The lime prefers two atoms of chlorine to one of oxygen, consequently makes the change and sets the oxygen adrift, and when sal-ammoniac is deprived of its chlorine it is no longer sal-ammoniac, but ammonia. Now ammonia has no use for more than three atoms of hydrogen consequently two atoms of hydrogen are set adrift, and these meeting the atom of oxygen they at once unite and form the water in question. These few lines of reply are only for those who do not clearly understand the import of the equation referred to.

The ammonia, or "spirits of hartshorn" supplied you by the druggist is only an aqueous solution of the gas, and is no more ammonia than a glass of whiskey is alcohol. I am not finding fault with the selling of diluted ammonia and alcohol, for it is one of the convenient ways of handling ammonia, but there is a very common and erroneous impression prevailing; that is, that ammonia is a liquid substance, because the druggist sells the aqueous solution under that name.

Supposing you have performed the experiment of generating ammonia and collected a jar of it, you may perform other experiments with it, you may return it to sal-ammoniac by passing it into hydrochloric acid and evaporating the solution to dryness, you may see this reaction take place immediately, if you rinse a test tube with hydrochloric acid and then pass it up into the jar, the tube will immediately fill with white clouds, which is sal-ammoniac in a very fine state of division.

ONE ON CHICAGO.

A Windy City publisher
Unto a wily merchant said:
"Unless you advertise your wares
Your business will be dead."
The wily merchant winked his eye
As he grasped his sordid pelf,
And whispered to the publisher,
"Physician, heal thyself."

—Exchange.

Written for the Clay-Worker.

UNCLE ELISHA'S GOLD BRICKS.

A Christmas Story of
Small Expectations.

BY CHARLES
LEDERER.

"HAT am I going to give you for Christmas, my dear? Why, a seal-skin cloak, a gold watch and a diamond ring, my dear."

It was a rare jest.

Jim Trowell was almost as poor as a churchmouse, yet who ever heard of a churchmouse going into bankruptcy and living principally on a diet of hope? Jim's wife laughed—she had a habit of laughing at most anything. Jim might as well have offered her a half interest in the Chinese indemnity to the Japanese.

They were terribly poor—Jim and his wife.

Six months before Elisha Trowell, Jim's eccentric uncle had died. Uncle Elisha had been rich at least so everybody believed, yet outside of his valuable brick plant, for Elisha Trowell had been a prominent clayworker in his lifetime, he had left little of apparent value.



Jim's wife had a habit of laughing.

When Uncle Elisha's will was read it left everything to Paul Cotter, Jim Trowell's cousin, who had for several years been superintendent of the yard. Paul was a business-like young fellow and it only seemed fair that the brickyard should have been bequeathed to him. Paul was all business—Jim was mostly visions.

Nevertheless Jim had been old Trowell's favorite nephew, for the dead brick-maker had combined the shrewdness

of an alert business man with the vagaries of the neer-do-well inventor, and in the latter capacity he had been ably abetted by nephew Jim.

Elisha Trowell had had but few vices outside of love of tobacco in nearly every form, and a desire to be a state legislator and make laws to regulate the color of brick used in residence districts.

But the old gentleman's chief hobby had been the invention of a light green brick. This emerald-hued brick he intended to make from ordinary clay with the slight addition of certain cheap chemicals, which, with peculiar



Elisha threatens to discharge Jim.

manipulation, produce the desired color, and at a price not in excess of the ordinary article.

In latter years Jim and his uncle spent most of their time in experimenting with a little kiln near the big works. They certainly did manage to produce a brick of an exceedingly delicate and beautiful shade of green. But the cost of it! The difficulty was in making them at a marketable price.

Uncle Elisha with Jim's help made a few thousand of the brick which were hoarded by the old gentleman as if they had been diamonds—and in fact they had cost nearly their weight in gold. There was no money in all this, but the main works under Paul Cotter's careful management still paid good round profits, and Jim was paid a handsome salary for assisting in the green brick process, which salary he spent with charming promptness and regularity. He was as enthusiastic as his uncle. Day dreams ran all through the Trowell family.

Then just a few weeks before his uncle's death what must Jim do but fall in love with the pretty stenographer in Paul's office. On general principles Uncle Elisha did not want Jim to get married, though he had no particular objection to pretty Maple Waters.

Everybody called Jim and his uncle a couple of cranks, and there was no surprise when there was a row and Elisha threatened Jim with immediate discharge if he didn't swear to live and die an old bachelor like his uncle before him.

The result hastened the marriage, for Jim was as headstrong as he was visionary.

The wedding was a quiet one, and when Jim and his bride reached the neat cottage that Jim had neatly and hastily furnished on credit, they found two wedding presents from their Uncle Elisha. One was a neatly indicted dismissal from his position as assistant in the little green brick kiln. The other was a deed to the young couple of a house and lot.

The latter didn't seem so bad, but the lot happened to be a little space adjacent to the green brickyard, a space just 9 by 12 feet. The house was built one story high and only about 6 feet high at that. There was a rough door and an unglazed window.

There was also a note from the uncle in which, among other pleasant things, he said: "You will prize this little cottage the more when you know it was built with my own hands. I laid every brick and even the few beams there are in it. God bless you, my children."

That was six months ago. Paul didn't want Jim around the brickyard, and who could blame him?

Jim's little savings which represented not money, but a very limited credit among his friends, were quite gone and he was in debt. The first Christmas of



Jim demolishes the little house.

his married life was at hand with nothing but natural cheerfulness and a wife's love as available assets.

A seal-skin cloak, and a gold watch and a diamond ring, indeed!

Jim left the house in bad humor, a strange condition of mind for him. He passed the brick kiln and came to the useless building which was his sole possession.

"Darn it, I'll raise some money some way! I'll sell those green bricks for whatever they'll bring—for filling, though no one but Uncle and I ever wanted them." Jim borrowed a big hammer from the kiln and proceeded to demolish the only house he owned.

Crash! and a section of eight or nine bricks fell thumping to the ground. But there was a metallic check that sounded strange to Jim's ears. What's that, a twenty dollar gold piece between two sundered bricks!

Jim sat down and stared helplessly at the broken wall of brick. Practical,

BURNING UP-DRAFT KILNS.

A COMMON up-draft kiln, it has often been said, under no circumstances can be burned hard from head to head, and, have uniform good brick. That it could be otherwise, I dare say, a brick manufacturer who has had experience with this sort of kilns, would not listen to any such argument. He would immediately say, "It can't be done; the heads are bound to be soft," which he is very true if they are burned by the old method.

This kind of kiln when set, was scoved on all sides and double platted with burned brick, this scoving wall was, when completed, well daubed with mud; the fires lighted and the burning begun. After the kiln was burned, it

burned hard from the bottom course to the top one; from head to head, good hard brick, uniform in shape, size and color, with no more trouble or expense than it takes to burn a kiln and have soft heads. To accomplish this, set the kiln in the block arch style; three over three, with sufficient space between each brick for draft. Do not set the heads tight, but, give them as much space as you do in any other part of the kiln. When the kiln is finished and ready to be scoved and platted, scove and plat it with good brick. Do not build with scoving wall tight against the kiln, but start it about four inches from the kiln at the bottom. Permit it to gradually approach the kiln as you near the top, finally bringing it plumb against the kiln at the top course.



BRICKYARD SKETCHES—BOOTH & FLINN'S BRICK WORKS, PITTSBURGH.

honest, Paul Cotter found him that way half an hour after, and it was Paul who gladly helped Jim work his gold mine. Uncle Elisha had placed three twenty dollar gold pieces in the mortar between every two brick he laid.

Jim was in a somewhat dazed condition after he reached home, after he and Paul Cotter had stowed away in the office vaults the novel gold mine. "A seal-skin cloak, a gold watch," he murmured, "and a diamond ring, my dear? Well, I guess yes."



sometimes happened the heads were so soft as to render them unmarketable, making it a total loss to the manufacturer. Then again, the heads would be so soft as to cause their removal or sale for one-fourth the real market price for common kiln run brick. Yet it seems no one has even thought of ever trying to obtain better results regarding the heads of these kilns, which, are always soft. But they have been content to suffer this loss, believing, no doubt, there was no remedy, that the heads of an up-draft kiln would be soft no matter what was done. So what was the use in trying any other way to burn them hard?

A common up-draft kiln can be

This gives the fire unobstructed passage up the heads to the very top course of the kiln. The brick in the scoving wall should lay endways at least three-fourths the height of the kiln.

Now, when you burn the kiln, by all means, let the fire follow the "steam." It has been the rule to allow a slow fire for forty-eight hours before drawing the fire outside the arch. Draw the fire in twelve hours if the steam will permit it, by doing this, the head brick with the scoving wall away from the kiln, will receive the same benefit as do the brick in the very center of the kiln.

The old method of building the scoving wall tight against the kiln from the bottom to the top, prevents the fire from

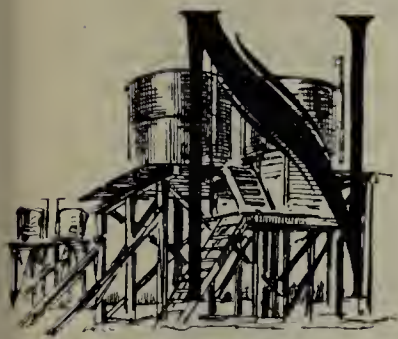
following the steam up the heads and working it off in proportion with other parts of the kiln. If the center of the kiln or any part of it was built to resist the fire as much as the heads are, what would be the result? "A soft spot," to give it a brickyard phrase, would be the result. Then does it not stand to reason, if the fire can reach and follow an unobstructed passage through the heads, the same as it does in other parts of the kiln, that the heads should be as hard and uniform as the brick that received the very same amount of benefit, no more?

The foregoing method has been tried not only once, but for one whole season, and has brought about most gratifying results, in the way of hard brick on the heads.

J. G. GREUSEL.

BRICKYARD SKETCHES.

IN AND ABOUT PITTSBURGH.



OW and then one hears of lawyers, doctors, merchants, et al, embarking in the brick business. The sequel is usually of a doleful character, being a series of unsuccessful shifts and ventures,

covering a few months or years, according to the amount of capital at the command of the "new beginner." We have heard many amusing stories told at the expense of these more venturesome than wise individuals. The most remarkable up-to-date comes from the Smoky City. We are tempted to commence the narrative with, "Once upon a Time," for its a good deal like a fairy story—minus the good sprite which always leads its charge safely through every tribulation to a happy end.

In '93 a gentleman, from Chicago, 'twas thought, bought a little mountain of clay located a few miles from Pittsburgh, and at once set about the purchase of brick machinery for "a model plant," one that he confidently expected would prove a veritable gold mine, not that he expected to make gold bricks, but he would show the old fogies who were supplying that market with brick, several things worth knowing about the economics of brickmaking. A complete stiff clay equipment was ordered and substantial buildings erected including an artificial dryer of large capacity. In due time the work of construction was

completed, the wheels began to turn and enough brick were made to fill the dryer when it was discovered that no provision had been made for kilns in which to burn the brick. Nor was there any space on which to build them. The buildings already erected



XAVIER WITTMER.

occupied the only level portion of "New Beginners" land, indeed a part of that was "made" in constructing the dryer. The ambitious proprietor realizing that an irretrievable blunder had been made and finding his available capital exhausted, abandoned the venture and returned to his western home, where a few weeks later he died of mortification. The brick plant which he expected would bring him fame and fortune lay idle for months and was finally sold at auc-



WITTMER BRICK CO'S CLAY BANKS.

tion, the machinery and appliances going at a song. Had this poor deluded mortal succeeded in turning out a few kilns of brick, much of the demoralization of the Pittsburgh brick market

during the past season, would doubtless have been laid at his door.

THE OTHER SIDE.

While it is true that many who are successful in other lines find themselves out-classed when they undertake to make brick, brickmakers are notably successful in all outside business ventures—and are potent factors politically in nearly every community. The truth of this statement is well illustrated by the illustrious examples afforded by Pittsburghers. The junior member of one of her principal brick firms, Booth and Flinn, has held down a senatorial chair in the National Congress for several terms. The "four-year-old," Edwin McGraw, is said to be coining money in the hotel business, and several others are equally successful in different lines of contracting, thus proving that the successful brickmaker has a mental equipment equal to the best—even when compared with the learned professions.

The brick business in Pittsburgh this year has been rather slow. The demand has not been equal to that of former years, and prices have gone down in a very uncomfortable manner. Seeing trouble ahead, that nothing could avert, the local association known as the Western Pennsylvania Brick M'f's Exchange, which has been able to maintain prices for several seasons, let down the bars and a free for all scramble for.



contracts followed with the usual results. Some of the members who be-

lieve in making brick for revenue only, having acquired their full share of glory in former years, closed their yards and have made no brick at all this year. A majority of the yards have been running most of the season, and a few have been run to their full capacity, having secured contracts ahead that kept them going full handed. Among the latter is

THE WITTMER BRICK CO.

This Company was established in

1884 by the Wittmer Brothers, Xavier and Henry, who had been engaged in the ice business and found they had considerable leisure time during the summer season. Since entering the brick business they have had no occasion to complain on that score. During the past season they have had all they could do to supply their customers and are now thinking seriously of starting a new yard next spring. Whether it will be a soft clay or stiff clay outfit they are still uncertain. Originally they run a Martin soft mud machine and a Whitaker dry press. The latter did its work in a thoroughly satisfactory manner but their clay was not adapted to that process so they discarded it and put in a new Martin machine, which is still in use. At first they tried to temper their clay with a wet pan but soon



WITTMER'S BRICK CO'S WORKS—FILLING A KILN.



MARTIN WITTMER, Superintendent of the Wittmer Co's Works.

gave it up and put in a pair of Fisher's Dry Pans, which proved a decided improvement.

Their clay deposits are extensive and form a great hill, on the side of which the works are built. This necessitates a character of architecture not common to brickyards. The clay is taken from two or three different levels, the face of each bank ranging from 30 to 60 feet in height. That from the upper level is carted to a small platform and dumped in a chute, down which it slides and is deposited in a car at the bottom. The cars run over portable tracks, and are in turn hauled by horse and cable to the dry pans. After being ground to a powder the clay is passed through a coarse screen, (3-16 mesh), the tailings going back to the dry pans, then into iron pug mills, where water is added, and thence into the machine. The brick molds are placed on spring

trucks, holding five each and quickly run to the dry floors, where the brick are dumped on iron pallets. These are simple sheets of iron $\frac{1}{8}$ inch thick 10 x 27 inches. They also have an apartment they call the "sweat box," in which the brick are piled twelve high. It is heated by gas and dries the brick very rapidly but is only used for emergencies. The hot floor dries the brick in 20 to 24 hours when they are stacked on trucks and taken to common up-draft kilns, in which they are set forty high, and burned with natural gas. The kilns being 20 feet or more above the cars, they ship all their brick by rail, a novel inclined railway has been

built to convey the brick from kilns to cars. Two trucks loaded with brick are run on to a wedge shaped car, the bottom, or rather the top, of which is level with platform leading to the kiln. A boy moves a lever and the car with its load runs slowly down to a platform along which the freight cars are lined. The loaded car as it descends, pulls up the other with the empty trucks and so the work of loading is simplified materially. Prices have ranged from \$5 to \$5.50 per M. for run of kiln, on cars at works. They make an excellent grade of brick and to that fact Mr. Xavier Wittmer attributes their success which has been almost phenomenal the past



WITTMER BRICK CO'S WORKS—FROM KILN TO CARS.

year. His competitors say it is due not so much to the quality of the brick, for they all make good brick, as to his far

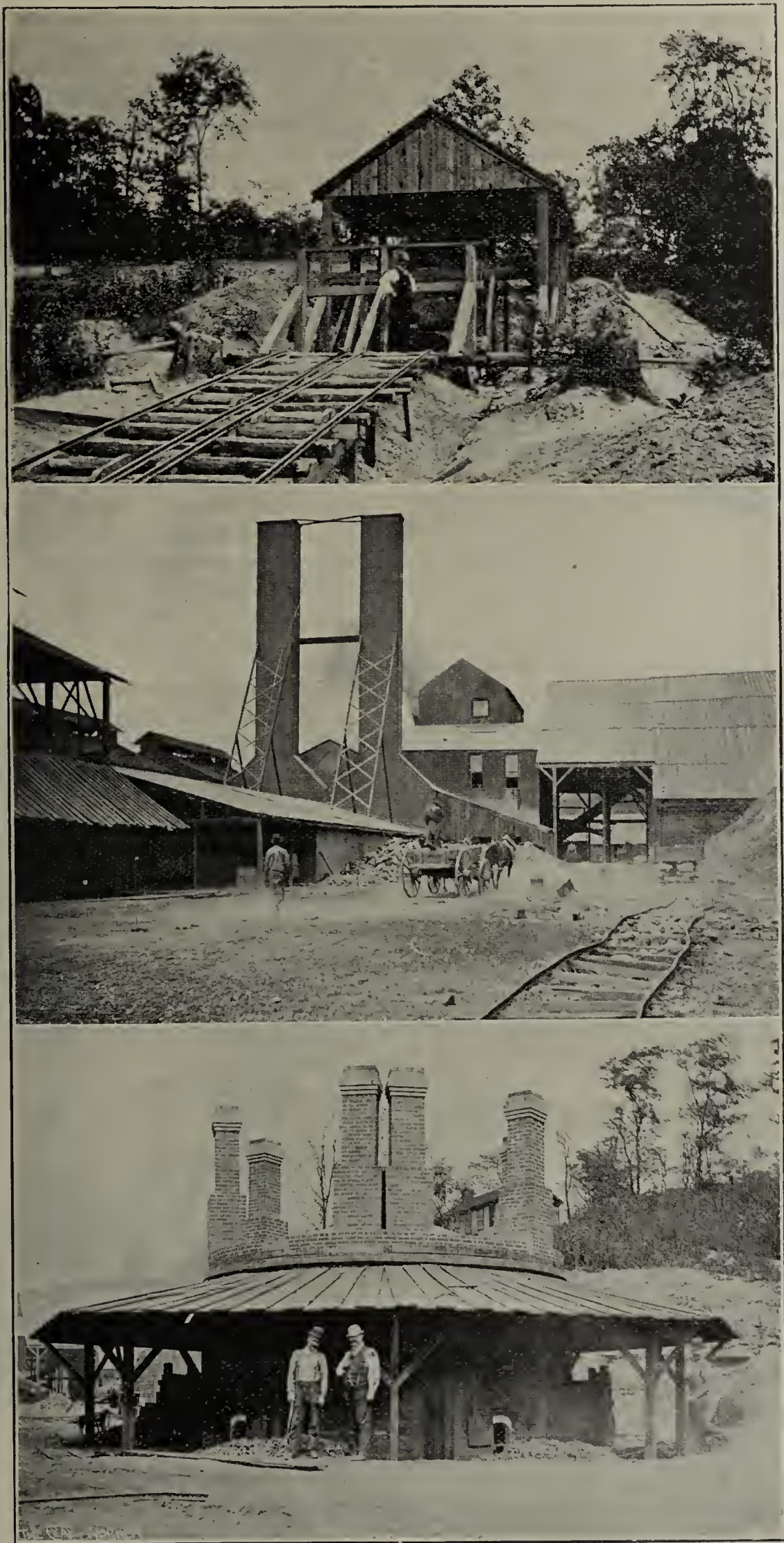
sighted and thorough going business faculties. However that may be, we know him to be a most kindly gentleman.

THE KENSINGTON BRICK CO.

Twenty miles north of Pittsburgh near the rapidly growing little town of New Kensington, is the new and admirably equipped and managed works of the Kensington Brick Co. In company with their efficient treasurer and general manager, J. P. Cappeau, we visited this plant last summer and found them quite busy for a dull season.

This plant was erected early in '92. They started out with the purpose of making 60 M. common brick a day, by the stiff clay process. A complete equipment was purchased from the Frey-Sheckler Co., of Bucyrus, Ohio, consisting of a set of dry pans, and a No. 1 Giant brick machine, with automatic side cutting device. The latter was a new feature then, but worked admirably from the start. The brick are cut 13 at a time and moved forward on a belt that first separates them and then carries them along a distance of 30 feet or more. Boys pick them off as they are carried along and pile them on double deck cars, nine high—four high on the lower deck and five on the upper. They then go to a twelve tunnel Iron Clad Dryer, which dries 60 M brick in 24 hours, bone dry. From this they go to common square up-draft kilns, of which they have five, each holding 300 M. They watersmoke with coke and finish in ten days from start with coal which they mine from their own land at a cost of about 65 cents a ton.

Finding that they had a large variety of clays (ten or more different kinds) adapted to the manufacture of pressed brick, they purchased a Simpson dry press outfit in the spring of '93 and were soon turning out a good quality of front and ornamental brick, and are now able to furnish in short order, brick of almost any desired form and color ranging from a deep, dark red to a very light buff. Their mottled and fire flashed Roman and Pompeian brick being very handsome. This branch of their business increased so rapidly that they soon found it necessary to put in an additional Simpson press. Their dry pressed brick are dried in the Iron Clad drier, before going into the kiln the same as the common brick. Mr. Rathbun, the superintendent, who is very evidently the right man in the right place, and whose portrait is given on a preceding page, says that the quality of their pressed brick is improved by this method of drying, and thinks



AT THE WORKS OF THE KENSINGTON BRICK CO.—AT THE TOP OF THE CLAY BANK—
A PART OF THE WORKS—THE "HURRY" KILN.

the dry press manufacturers err in putting green brick in kilns, as better results can be obtained by artificial drying. The pressed brick are burned in the Eudaly square down-draft kilns, of a capacity of 110 to 150 M. They also



EDWIN MCGRAW, THE "FOUR YEAR OLD."

have a small round down-draft Eudaly kiln, in which they burn special orders that must be filled quickly. They are fortunate in having clays that dry rapidly and withstand rapid changes of temperature without injury. Commenting on this feature, Mr. Rathbun said that in all his many years of experience he had never worked clays that compared with these in that particular. At one time being in a great hurry for a certain lot of brick, they turned the hose on a cooling kiln with no apparent injury to the brick.

The Kensington Brick Co., are fortunate in many ways. They have not only an inexhaustible supply of varied and valuable clays but an executive force that will develop its every resource, Mr. Cappeau alone possessing sufficient vital force for a dozen ordinary mortals. This, backed by a cool, even temper and keen business instinct forms a happy combination. "Joe" is a good friend but a bad enemy.

MCGRAW BROS. BRICK YARDS.

Most of Pittsburgh's brick yards are located within the city limits and are easily reached by street car. An invitation to visit McGraw Bros. works was gladly accepted and a pleasant fifteen minute ride with Edwin "the four-year-old" brought us to the scene of his former triumphs in the brick line. The works were shut down in the fall of '93 and not a brick has been made since. A kiln that had been burned last year

was just being opened. Grass was growing in odd places about the yard where mother earth was still on top and all in all the aspect was rather depressing despite "Ed's" cheery voice. A brick yard in operation is not the most inviting

place imaginable, and an idle one is grim and dreary in the extreme, so we only tarried long enough to see that they have a soft clay outfit with a daily capacity of 40 M. Hot floor drier and old style permanent walled kilns.

When prices that admit of some little profit, again prevail, and not till then, work will be resumed. McGraw Bros. also have in connection with the brick works a factory for the manufacture of prepared roofing. This too has been idle the past season, Mr. McGraw finding it more

profitable to devote his energies to other commercial interests.

Friend McGraw is blessed with a very cheerful disposition and a good appetite. Our readers may see by the accompanying picture—a snap shot taken while at the brick works—that his massive figure has lost none of its rotundity. He has not lost flesh over the vicissitudes of the past year. He is by far too philosophical for that. It will take a great deal more

than an off year to sour "Ed." on the brick business and his N. B. M. A. friends will find him at the Cleveland meeting backed by the largest delegation Pittsburgh has yet sent to our National Convention.

In the immediate neighborhood of McGraw's works are several similar yards where some signs of life other than vegetable were visible but nothing was seen that indicated a rush of business.

BURNING BRICK IN KILNS OF STONE.

One very unusual feature was observed, namely, a group of stone brick kilns, or brick kilns built of stone. They are of the old dutch type and have been in use for six years. They were constructed by Evan Jones contrary to the judgement and experience of every other brickmaker in the city, nevertheless, they have given the very best of satisfaction. Natural gas is the fuel used and the inside of the walls, and that portion most exposed to the heat is thickly coated with clay.

COPY SHORT.

It very often happens that
In making ready for the press
There is a corner to be filled—
An inch or two, say, more or less.
In such a case, with copy short,
It's handy just to have about
Some fellow who can write a verse
Like this, to fill the column out.
—Nixon Waterman in Inland Printer.



BURNING BRICK IN KILNS OF STONE.

Written for the CLAY-WORKER

HINTS ON BRICKMAKING.

No. 94.

BY R. BRICK.

BRICK MACHINES—SOME SUGGESTIONS.



PERHAPS in no other line of machinery has there been progress equal to that of brickmaking machinery in the last two decades of years. These great improvements have in that time revolutionized the business of brickmaking, and the brickmaker as well. The inventors of improvements in machinery of this kind deserve high praise, as well as the success they have achieved. Soft clay machines have for several years been turning out bricks superior in every

mon work, that is for foundations and all walls except facing. There are several firms that manufacture machines for making plastic or stiff clay brick. Their machines do excellent work, turning out from 20,000 up to 60,000 bricks in ten hours. The faces are fine, brick are firm and strong, especially is this true of end cut brick. So far they are good, but when we come to examine the end it is not a brick; it has been sawed off and is left in an unfinished condition. In fact, it is not a perfect brick, it has not been formed in a mould, as a thoroughbred brick should be.

The inventor that will give us a machine that will make a finished plastic brick, like the soft mud or dry press brick, will fill a long felt want—and his purse. The point is this. A brick ought to be made in a mould, this insures uniformity of

mould with it. Dry clay when pulverized will flow into the mould, while damp clay will not. The old Sword machine made plastic bricks in a mould, but had not sufficient strength for the pressure that is required to give smooth, solid surface to the bricks. The pressure was not directly downward into the mold, much of its force being lost by friction of oblique pressure, this also caused the bricks to be thicker on one edge than on the other. The ends, however, were as good as the sides and the bricks very dense and strong.

If a machine can be made that will prepare plastic clay, of sufficient fineness, with a mould with a horizontal movement, the clay to be pressed into the mould, by pressure sufficient for this purpose, then move horizontally to a second plunger and there receive a final pressure sufficient to form perfect sur-



BRICKYARD SKETCHES—MCGRAW BROS. BRICK WORKS AND PREPARED ROOFING FACTORY.

respect to hand-made bricks. This class of machines has reached a place of excellence that leaves little to be desired.

Then we have the other extreme, known as dry press machines, turning out bricks practically perfect, from a mechanical point of view, ready to set in the kiln direct from the machine. The practical success of this process is established and for fine front bricks they are best. By this method will the face brick of the future be made, as they present a smooth surface perfect in shape and uniform in size.

The common bricks will hardly be made by this process. For many reasons, plastic brick will be used for com-

shape and size, and the stiff clay is firm enough to bear handling and retain its shape. These are self evident truths. This process is the golden mean between the extremes of soft and dry brick, and is at present the most popular, generally, among brickmakers. It is true that in order to make plastic brick in a mould and turn out brick with smooth surfaces and clear cut lines, there are some formidable obstacles to overcome, but the American inventor is equal to every emergency that has yet arisen and will, I am sure, always be.

To pulverize clay in its plastic state is one of the difficulties that presents itself, and when this has been accomplished, another arises in charging the

face, then move a little under pressure before it is delivered.

If this can be done the result will be a plastic brick with perfect sides, ends, and bottom and top. This is the machine a majority of brickmakers are looking for. These requirements must and will be met in the near future. The writer has heard prominent brick manufacturers, by the plastic process express their views on this line. They want a machine such as is described above.

This can be accomplished in a measure by using power represses, repressing the brick after they have passed through the machine. This adds to the expense of making, and in the case

of end cut brick, still leaves the ends imperfectly finished. Another objection to the auger and die machine is when the bar of clay becomes a little soft the bricks swell after passing from the die. There is also some variation in the length of the brick. These are the defects of these otherwise excellent machines and yet they are undoubtedly the favorite at present among a majority of brickmakers.

I do not wish to appear as antagonizing the interests of manufacturers of plastic clay machines, only wish them to become still more popular, for working clay about as it comes from the mine is indeed a great point of vantage. These suggestions are offered in good faith, and I trust will not bring down the wrath of my good friend "Tim Tinker" who represents one of the best machines of the class under discussion.

While my friend "Peter Simple" was still alive, I had a wholesome fear of his virile pen. Since his decease my articles are written with more freedom. Poor Peter, we all miss him in the columns of the *CLAY-WORKER*, he was an expert grumbler. There was however method in his grumble. When Father Crary and Brother Waplington read their dictionary alike, and agree on the meaning of chemical terms there will be greater "affinity" between them, and they may find time to throw their search lights upon the subject of this article, and find some way to remedy the defects mentioned.

By the way, the writer is proud to be one of your corp of contributors, and would suggest we hold a reunion at Cleveland in February next during our annual convention, where we can shake hands over our little differences of opinion, and get better acquainted.

What say you "Old Timer," "Anon," "Nimbus," "Fax," "Brix," "Village Brickmaker," "Bric-a-Brac," "Orton," "Lederer," and all the others.

A GOOD SUGGESTION.

THE prices of all the belongings of a steam plant are held at remarkably low prices, and those who fail to put them in complete order in these times will miss an opportunity they are not likely to find again for years. If steam engines are wanted the price is away down; the same is true of boilers and all engine and boiler belongings. It is true that it seems out of the way to spend money on a steam plant in dull

times, but it will cost more when times get better, and there will be less time to spare for doing it. The place to begin to save money in a manufacturing business, and the way to encourage an engineer in the saving, is to furnish him with modern means for doing so. —*American Machinist.*

Written for the *CLAY-WORKER*.

ANSWER TO SPECIAL INQUIRIES OF VARIOUS CORRESPONDENTS

About the Best Way to Use Certain Kinds of Clay and Remedy the Defects of Brick Machinery.

BY J. W. CRARY, SR.



NE brick manufacturing company in Tennessee writes: "We have read so many excellent articles from your pen on the subject of brickmaking in the *CLAY-WORKER*, we feel that you, more than any other correspondent of that valued Journal, can give us light on a problem that we have battled with for some time, without thoroughly solving, and should you aid us in its solution, we will feel profoundly grateful. It is this: We use an Auger machine and the clay bar cracks or splits open lengthwise on the top and bottom immediately on coming from the die, not along its whole length, but about 2 to 5 feet apart, and on drying the cracks open larger and get still larger when burned. Our clay is a tough, plastic clay, and shrinks a good deal in burning.

"You will not think us impertinent and over-bold in thus addressing you, for you seem to us as an old friend and land-mark on the highway to brick-making. Your article in Oct. number of *CLAY-WORKER* is full of interest to the craft, and that part of it addressed to E. E. R., of Ga., is especially interesting to us, for we have had the same experience from a like clay. We thank you for that article, and trust that you will enlighten us, and that you will still continue to let your light shine through the columns of the *CLAY-WORKER*."

If my very kind friends above quoted, are as expert in the manufacture of brick as they are in paying personal compliments, I am sure that they take high rank in their business. I fully appreciate what they say, (for no true,

honest human being can be insensible to praise, even the staid *CLAY-WORKER* don't get mad at it), yet I confess that I am only a student in clay work.

I have pretty fully discussed the different ways and modes of making brick in former writings, and will here confine myself to the consideration of the so-called "Stiff mud process."

THE AUGER PROCESS OF TEMPERING AND PRESSING IS PECULIAR.

It does not "puddle," it does not compress like the soft mud tempering machines. It crushes the lumps by abrasion, or pressure and the particles of clay are only made wet, not plastic and tough, so that when the clay is compressed in the "forming die," it is what may be called "short." It is not adhesive like soft mud particles, and when it escapes the forming die, under heavy pressure, the natural tendency is to spring or expand, and thus as the centre of the clay bar has received the greatest pressure and compactness, the tendency is to part at the centre. I have found that the outside of the clay bar is wetter than the centre, so that the greater part of the water in the bar is forced to the corners and sides, and as soon as freed from the die it expands slightly, and of course the tensile force is increased from the centre of the bar. I had the same difficulty that my friends above complain of, in using a plunger machine, and the only remedy I have found is in using an extra forming, or rather finishing die. This is placed about an eighth of an inch from the first die, and is a little smaller, so that when the bar leaves the first die with a tendency to split, it is closed up by the outside finishing die, and the tendency to crack is only from the drying of the brick. The outside being the wettest, of course, a little crack a half an inch deep, will be seen on some of the edges of the brick if side cut; if end cut, would show the crack lengthwise of the brick, as above complained of.

If you should try the remedy I have suggested, the two finishing dies must be a little apart, so that a little stream of water can be kept running between them. Let us see if we can make my theory more plain by a simple illustration: Take two lumps of your clay, each enough to make a good size marble, temper one lump partially dry, as is done by any auger machine, roll it between your hands briskly, a few minutes until you get it like a marble, you will see that it becomes laminated,

the pressure between the hands acting much like the pressure in a forming die. The centre of the marble is more dense and drier than the outside, and there being a natural tensile force exerted from the centre to the circumference. When the centre is more dense and solid than the outside, it follows that as soon as the body is relieved from outside pressure a slight expansion takes place. You may not see cracks on the marble with the naked eye, still they are there, and a very light pressure will split the marble.

Now, take the other lump of clay and wet it and temper it thoroughly until it becomes tough and plastic, then roll it between your hands, as you did the first lump, and you find a perfectly compact, adhesive body of particles which have arranged themselves in a solid body by the natural process of crystalization common to clay in a soft, comminuted, well mixed state.

THOROUGH PUGGING WOULD IMPROVE STIFF MUD MACHINERY.

If clay be thoroughly wet and soaked and then tempered, say in a Horizontal Mill until it becomes stiff enough to make a clay bar that can be cut into brick, most of the trouble now found with stiff mud machinery would be remedied. Thorough homogeneity and tempering, are the essential words for the clayworker to know, when he starts to make first-class clay goods.

BRICK MANUFACTURERS IN ST. CATHARINES, ONTARIO, CAN., WANT TO KNOW MORE ABOUT THE BEST WAY TO REMEDY THEIR TROUBLES IN WORKING THEIR CLAY.

They write, in substance: "We have a clay bed about 38 feet thick, eight feet of the top part is a red and comparatively a soft bed of clay, so that it works in an auger machine without much water. There is two feet of loamy soil clay on top. Below this bed of red clay there is a 30 feet thick vein of blue clay; it burns to a buff color, while the top, 8 feet red clay, burns to a red color. We use a stiff mud machine for the 8 feet of top clay, and a dry press machine for the 30 feet bottom. The red clay brick is hard and pretty, but very brittle. * * * * We want to know how to prevent the brittleness, and also if any part or all of our clay will do for pipes and paving brick."

I would say that if you want to make good, fine red brick, throw off all the

loam on top of your red clay. The loam is what makes your brick brittle; it may, however, add brilliancy to the red color. If you want to make a fine front brick, you must repress them after coming from your auger machine, and rub them with fine dust of your red clay. If you desire to make fine buff front brick, you can do so with the blue clay and work it in your auger machine. You can also make front brick in your dry press machine by rubbing them with fine dust of the clay as they come from the machine.

If you use your top and bottom clay together in your auger machine you will make a motley colored brick, but perhaps a better, stronger brick, especially for paving, than if you use the clay separately.

As to drain or other pipes, I think your blue clay would do well for all kinds of pipe, glazed or unglazed, but in all cases throw off all loamy clay. Your only sure way to success is to make full and proper practical tests of your clay, then you will know just what to do. As to machines, your clay will work in any machine if properly manipulated to suit the machine.

Written for the CLAY-WORKER.

EXPERIMENTS IN BURNING BRICK.

Degrees of Temperature Required to Dry and Burn Clays.



SEVERAL years ago a series of experiments were made to determine the drying capacity of a continuous kiln, which, incidentally, were the means of giving us a little information in regard to the temperature at which the chemically combined water leaves the clay.

The experiments were conducted as follows: A green brick was weighed and placed in an iron frame. By means of a long rod attached to the frame, it was lowered into the kiln through a sight hole, and held suspended in the center of the kiln. Each day the brick was lifted out and the loss in weight noted. This was continued until a faint color became distinguishable, at which point the heat began to effect the iron. In every case the weight became constant showing the expulsion of all the moisture several days before it became

necessary to discontinue the test. The test brick were then put into a kiln and burned, and the final weight noted. This final weight showed a further loss, due to the expulsion of the combined water.

In the first stages, the weights showed the gradual change, due to the passing off of the moisture, then a series of constant weights while the temperature increased to a faint redness; and finally, a subsequent loss at same higher temperature, due to the hydrated silicate of alumina giving up its water of combination.

To determine the temperature up to the time of withdrawing the brick, little holes were drilled into the end of one of the test brick, and tin, lead, zinc and antimony, were put in, covering each with a little plug of clay.

The melting point of these metals we give as 455° F., 625° F., 725° F., and 800° F., respectively. The brick thus changed was put through the regular course of the experiment, and the loss in weight noted each day.

The second day after the weight became constant, showing the expulsion of all the moisture, we found the tin had melted; on the third day the lead had melted; on the fourth, the zinc; and on the fifth, the antimony. During this time the weight of the brick remained constant. The brick was then removed and placed in a kiln to burn. The final weight of the brick showed a further loss of two ounces. This final loss was less than usual. Other tests, the temperatures of which were determined with an ordinary stem pyrometer, gave a final loss of five and six ounces, which would be nearer the correct amount of combined water.

Recently we made a few tests to determine the rate of drying in a down draft kiln. A green brick was weighed, placed on a heavy flat iron bar, and carefully slid into the kiln, through a hole in the wicket, after which the hole was bricked up and daubed. Each day the bar was taken out, and the brick weighed. The temperatures were determined with a Siemen's copper ball pyrometer. Two tests were made on the level of the twelfth course from the bottom and one on the second course. Very interesting curves were obtained. We note in one from the twelfth course, that the third day after the weight became constant, the temperature read 475° F.; on the fifth day the temperature was 550° F., and the brick lost one

ounce. There was no further change during the sixth, seventh and eighth days, except in the temperature, which had climbed up to 750° F. On the ninth day we have a loss of four and one-half ounces, while the temperature read 1075° F. On the tenth day there was a further loss of one ounce and the temperature read 1400° F. The brick was then put into the kiln and allowed to burn. Its final weight showed no further loss.

The second test differs but little from the above. There was a loss after the brick became dry, of one-half ounce at 375° F.; another half ounce at 500° F. The rapid decline in weight was going on when the temperature registered 1050° F., and was found to be complete the next day when the temperature read 1300° F.

We have omitted the detail of the experiments relative to the moisture but in connection with its passing off we note that there was no shrinkage, or so little that we would not be warranted in saying there was any, only after making a series of careful tests. This we believe, is not the case with the majority of clays. On the other hand during the expulsion of the combined water, there was no appreciable expansion, which we have come to recognize in the measurements of our kiln settles. This, too, may be peculiar to our clay.

In conclusion we believe there is much important information to be derived from a series of carefully conducted experiments in this line in connection with chemical analysis.

The combined water does not begin to leave the clay until a temperature of over 800° F. is attained except, perhaps, the clay contains hydrated minerals other than the kaolin: At 1000° F. the combined water is passing off very rapidly from which we conclude that the temperature at which the mineral Kaolin gives up its water of crystallization and ceases to be the mineral kaolin lies between 800° F. and 1000° F.

The losses we found at the temperatures of 375° F. to 550° F. may be due to hydrates other than kaolin, or they may be due to the last traces of moisture. The fact that the weight became constant, long enough to show the expulsion of all the moisture, before this intermediate loss occurred, and remained constant several days before the final loss began, inclines us to the opinion that it can be neither moisture nor kaolin water of constitution, but is

the chemically combined water of some other mineral. If this be true, may not careful tests in this line lead us to determine the presence of these other hydrated minerals, their quantity, their effect, explain perhaps, some of the mysterious antics of clay, and in the end assists us in the discovery of a more rational analysis.

ELLIS LOVEJOY.



OFFICIAL ANNOUNCEMENT.

Ninth Annual Convention of the National
Brick Manufacturers' Association,
to be held at Cleveland, Ohio.
Feb. 12, 13, 14, 15, 1895.

To the Members of the N. B. M. A.:

Unforeseen events have made it impracticable for the Pittsburgh brickmakers to entertain the National Association this winter, as it was their desire and intention to do.

Learning this fact the Brickmakers' Association of Cleveland, Ohio, has extended to us a very cordial invitation to hold the Ninth Annual Convention in their city in February next.

A similar invitation has been received from the brickmakers of Philadelphia, but as we have held one very successful convention in the latter city, and as the city of Cleveland is much nearer the territory from which we draw our largest membership, we deem it best to accept the invitation to hold our next annual meeting in Cleveland, believing that we can reasonably hope for a much larger attendance there, than at a more remote point.

Those desiring to join the Association are requested to address the Secretary at Indianapolis, for blank application and full instructions as to requisite membership, etc. All who are interested in the manufacture and use of brick are eligible to membership and are cordially invited to send in their names for enrollment and attend the coming Convention, which bids fair to be a very large and interesting gathering.

The officers of the Ohio Brick, Tile

and Drainage Association, which has heretofore held its yearly meetings at Columbus, Ohio, have decided to meet at the same time and place as our National body this winter, holding night sessions only, so there may be no conflict of interests.

Satisfactory arrangements will be made for reduced railroad rates, hotel accommodations, etc., as usual, and further announcement giving full particulars will be made subsequently.

Respectfully,

THE EXECUTIVE COMMITTEE,

WM. H. ALSIP, *President*

THEO. A. RANDALL, *Secretary*.

AFRICAN HEAD DRESSES.

Queer Ornaments of Clay Used In Them.

THE African puts ornaments in his hair as we more civilized mortals do, but his taste is different. For where we decorate with gold and silver pins and combs, he proudly uses little balls and discs of clay, hanging to the end of his braided locks or long, braided beard. Sometimes he plasters a great crescent-shaped lump of clay on the back of his head, and one old prince, particularly vain and loving of ornament, rolled his entire beard into a ball and so plastered it with mud that it hung, a great clay ball, from his chin. Just fancy how pleasant it must have been to wear a five-pound weight on one's chin! It would be a great discourager of conversation, for one certainly would not wish to lift that weight any oftener than was absolutely necessary.

Some of the women, with long hair, weave it over and around little reeds



stuck in at right angles to the head, so that it finally looks like a great straw hat or basket all around their faces, much like the old poke bonnets that our grandmothers used to wear. The women of the lower Congo, whose hair is more woolly than that of some of the other tribes, part their hair in three great thick locks, one on each side of the face and one in front. These they

grease and twist until they look like wire, then they curve them until they look like short cow's horns, sticking out on both sides and in front.

The natives of Rua braid their hair in two or three long plats right on top of the head. These they stiffen with clay until they stand upright exactly like the funny little horns the unsociable snail sticks out as he saunters along with his house on his back. If the man of Rua happens to have short hair, he braids in false hair until he gets it to what he considers a fashionable length—that is, about twelve or fourteen



inches. They likewise share the fondness of so-called civilized nations for changing the color of the hair, and are particularly addicted to the use of red clay, which makes their hair a brilliant red. They also use a preparation of henna for the same purpose, and when they want to hide the gray hairs they mix henna and indigo, which makes a fine black, and, unlike some European dyes, does not affect the brain.—*Ex.*

AN ADAPTATION.



Written for the CLAY-WORKER.

WASHING OF CLAYS.

BY E. H. LONSDALE.



VERY season in the clay industry results in the accomplishment of some onward steps; some development of a course which previously has stood as seemingly impossible; some arrangements as to methods and system or some previous wiser selection or combination of raw materials. This advance is not alone beneficial to the individual or company who had been instrumental in the bringing about of the successful prosecution of the anticipated good, but ends alike profitable and encouraging to the trade and the fellow. Be this step but a perfecting of the system or arrangement of the principal and subordinate parts of the plant in their relation to one another, or no matter what else, the success in that line is indicative of advancement. This state of affairs has ever been from the earliest days of ceramics, until now the craft concedes the industry to be in a high state of perfection; and so it is, yet, nevertheless, there is a great progress still to be reached. A lack of further anticipation along this line would surely be deplorable.

The many efforts, experiments and the long experience has taught many advantageous points applicative to the individual factory and many of these to-day appear as the important factor toward success. Perhaps, however, there are none more thoroughly valuable and appreciated than those which have instructed the manufacturer as to what treatment to give the raw material before it passes to the press. It may be said that invariably is it the case that the more complete the working of the clay beforehand the more worthy the product and the less loss through breakage either before or after burning. To avoid the loss is an effort of no mean importance.

In every populated region there is a demand for structural brick, the clay accessible may or may not be of such a character as to warrant the utilization of the same without some previous artificial process for purification. Again the material may make a marketable product, but at the same time if attention be given to the clay and the deleterious

portions, or that which detracts from the quality of the manufactured article be removed, the market value of the same will be enhanced many fold.

There are various means for getting rid of this impurity; many troublesome and inexpensive, yet decisive, and others simple and effective. The latter must ordinarily be the kind adopted. There are different replete systems for destroying every stubborn quality inherent in the clay.

In Switerland, Germany, England and many other foreign countries the practice of washing clays has been carried on for a great period. The clayworkers in some localities look upon this as one of the regular branches of the treatment and not as one superfluous or non-remunerative. In America, especially in western, central and southern United States, the factories putting out washed clay products are indeed few. This fact, however, may be attributed to several causes. The great regularity with which workable clays are found, naturally precluded any research for deposits of a character necessitating a treatment to extract the impurities and a consequent additional cost; also a realization of the value of such operations. Another explanation is shown in the satisfaction in the product already put out without regard to what might be accomplished with a little judicious procedure.

Some of the potteries find this washing indeed beneficial and practice it, but only occasionally is there found a brick manufacturer but who takes the clay to the mill or crusher directly from the bank. The effort in making pottery is to secure a light colored firm article with a smooth surface; one susceptible of a brilliant lustre when glazed. It so happens that many of our pottery clays hold a considerable percentage of iron oxide which effects an undesired color and also some coarser grit which stands out on the burned surface and even protrudes through the glaze. Both of these substances in the composition are readily removed. In some of our brick clays there exists that undesirable component lime. Its troublesome effect when present in the burned product is fully known. There must therefore be some plan for relieving the clay of these detracting impurities.

Perhaps the least expensive and simplest process is that which is here given.

From the mine or bank the clay is hauled to the yard where it is dumped and utilized at will. The washing ap-

paratus consists of a circular tub with a cross-beam attached to a central pivot, and suspended at one end, and into the tub, almost touching its bottom, there is an old harrow or some other article which is used as a stirrer as the revolutions are made by horse or steam power fastened at the opposite end. Water is inserted in sufficient quantity, to allow the clayey material to become thoroughly soaked and even into a state of suspension. While thus suspended the entire mixture is drawn off through an outlet faced with a sieve with very fine meshes. In this manner the clay and water are transferred into capacious vats. It is surprising to note how much matter collects on this sieve. The stirring in the tub involves but a short time and the same vat answers for a number of tubfulls. Other vats are arranged conveniently and utilized in turn. When one is full the clay settles, the surface water is drawn off and the mud is allowed to dry or to reach that stage at which it may be moulded. This washing process once finished, the mud requires no pugging other than that necessary for the proper tempering; its stubborn character, so common in certain clays, is entirely destroyed and there is left a mass fully homogeneous in texture, one whose plasticity is brought to its strongest possible eminency and one which is mouldable in any desired form more readily than if another particular treatment rather than washing had been observed.

For common brick clay this method for purifying is commendable for another reason, in that it being reduced to a thoroughly homogeneous body the color of the burned product is ever persistent; so alike in unglazed pottery ware.

Could this washing be carried on, even where the impurities in the clay are not strictly deleterious, the expenditure for the process would at least to a large extent be overcome by the consequent gain in the quality and advanced price of the product.

Of course in the larger factories it may justly be claimed that the improvement is impracticable but certainly this is not the case in most of the potteries and in many of the small brick and drain tile plants, especially where the original clay is somewhat inferior, and clays for refractory products could certainly be vastly improved. The advantages of the method are numerous. The cost in the construction is but very

slight; the work can be done by almost any one no matter how inexperienced and, further, can be accomplished at any season except in the extreme winter. It is common practice to close down the brick factories if not the potteries in late summer time; this avails the remainder of the season until cold weather and from then until the next brickmaking season for the preparation and storage of clays. In this manner a large supply of superior workable material is secured. The work of preparing the raw material may also be carried on while the factories are running.

In Iowa, for instance, there is but a single brick plant wherein the raw material is first subjected to these artificial measures; while less than half a dozen plants manufacturing stoneware use a washed clay. In every instance, however, the variety of the product is superior, the demand increased and selling price raised.

This is given as the simple process, one sufficiently effective for the purposes mentioned, but for the preparation of clays which are to be moulded into the finest wares the adoption of more intricate systems would appear expedient. The more nearly perfect the arrangement the more effectual is the process and consequently is the body of the manufactured article reduced to approximately the desired texture. These expensive operations are the ones to be employed also when the simpler form fails in the breaking up of the original body-mass on account of the extreme plasticity or of the inherent toughness. But even then, a dried and pulverized clay would be successfully treated by the former method.

The result in any instance is primarily dependent upon the size of the meshes of the sieve through which the suspended clay passes.

A HAPPY THOUGHT.

VERY many of our readers no doubt are already considering what they can buy their friends for Christmas. No gift is more appropriate for old or young than a good book. For those interested in brickmaking the books mentioned on page 563, would be both interesting and instructive. If a less expensive offering is desired we would suggest that a yearly subscription to the CLAY-WORKER would prove a most acceptable gift. Its monthly visits will

be a twelve-fold reminder of the donors kindly interest.

There are many manufacturers who might profit largely by making their superintendents and head burners a Christmas gift of a year's subscription to the CLAY-WORKER. Try it. Single copies \$2.00 a year; three copies \$5.00. You can't invest the same amount to better advantage.

ILLINOIS' CONVENTION.

The Seventeenth Annual Convention of the Illinois Brick and Tile Association will be held at the Capitol Building, Springfield, Ill., January 15 and 16, 1895.

PROGRAMME.

- Address of Welcome,
A. L. Converse, Springfield, Ill.
"The Importance of Clay Industries in the State,"
Hon. John P. Altgeld.
"Burning Brick in Round Kilns,"
Frank Lawrence, Ray, Ill.
"Brickmaking Fifty Years Ago,"
John McCabe, Rushville, Ill.
"Shall we have a School for Future Clayworkers,"
Alex McLean, Trustee University of Illinois.
"Experiences in the Manufacture of Brick and Tile,"
J. Will Anderson, Woodland, Ill.
"Tile Drainage in Different Soils,"
Experimental Station University of Illinois.
"The Importance of Tempering Ware in Kiln,"
W. A. Eudaly, Cincinnati, Ohio.
"The Management of Men,"
E. A. Curtis, Grant Park, Ill.
"Hard Roads,"
J. Dixon Doyle, Chicago, Ill.
"Continuous Kilns for Drain Tile,"
Max A. Th. Boehncke, Centinela, Cal.
"Oil Burning in Round Kilns,"—Discussion,
Led by Wm. Hammerschmidt, Lombard, Ill.
"Let us Keep our Wares Before the Public, by Having a Display of Raw Clay and its Manufactured Product, Annually at the State Fair at Springfield, Ill.,"
D. V. Purlington, Chicago, Ill.
"Paving Brick,"
Mr. Bronough, Virden, Ill.

Headquarters will be at the Hotel Palace. The Executive Committee particularly desire a full attendance, as the programme will be of interest, and they wish all to lend their influence toward perfecting arrangements for the proposed display at the State Fair.

J. E. CHANDLER, *Pres.*,
G. C. STOLL, *Sec'y.* Bushnell, Ill.
Grant Park, Ill.

OUT OF THE ASHES.

The Mill Hall, Pa., brick works which was recently burned are being rebuilt. The Standard Dry Kiln Co., of this city will furnish the dryer, Fate-Gunsaulus, of Plymouth, Ohio, the brick machinery and the Valley Iron Works, of Williamsport, Pa., the engines and boiler. The work of rebuilding will be pushed as rapidly as possible.



THIS DEPARTMENT IS DEVOTED EXCLUSIVELY TO INVENTION AND PATENTS RELATING TO THE CLAY INDUSTRY, AND IS EDITED BY MR. EDWARD C. WEAVER, ATTORNEY AND COUNSELOR, IN PATENT LAW, 900 F ST., N. W., WASHINGTON, D. C. COPIES OF ANY PATENT WITH DRAWINGS WILL BE SENT AT COST, NAMELY: FIFTEEN CENTS FOR EACH COPY. ANY INFORMATION AND ADVICE IN REGARD TO PATENTS WILL BE GLADLY GIVEN. ADDRESS ALL COMMUNICATIONS TO THE EDITOR.

INTERFERENCES.

WITHIN a very short time, I have had brought to my attention the fact that the nature of an interference proceeding is not well understood outside of the attorneys office. A client of my own permitted another party to file an application for his invention knowingly, and although I entreated him to fight the matter, he has permitted the patent to issue.

An interference in the United States Patent Office is a proceeding instituted for the purpose of determining the question of priority of invention. In the award of this priority, it has been decided in a number of interesting cases that the crucial test is to whom the world is indebted for the use of the invention in an available form.

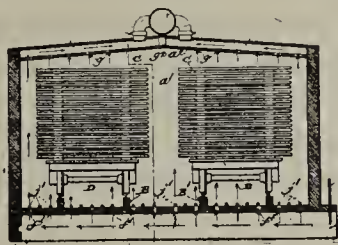
Briefly, the proceeding is before a special examiner, Mr. Johnson, in the patent office, and is entirely in the nature of an equity cause. Testimony is taken by the parties before a commissioner or other officer and the case argued and decided upon the record thus formed. From the decision of the Examiner there are two appeals, first to the Board of Appeals, and from thence to the Commissioner. An interference may also be declared between an application, and a patent already issued, and in this case, if the pending application also secures an issue, the prior patent may be annulled by a special proceeding in equity. Although this seems a very round about way, and an expensive one, in case of patents of value, the money is well spent in securing the monopoly.

At this point, I am reminded, that there are a great many inventors who have very little idea of the value of their inventions. They are penny-wise, and refuse to fight out an interference, not realizing that if the patent is of such value that others are willing to fight it

out, they themselves might find it worth while. To tell the truth, there are a great many applications filed that even if allowed are of no value whatsoever, and an inventor with a good business head generally meditates over his invention before filing to determine whether it is really worth while. And then if it is, there is poor policy in being stingy with attorneys fees. In patents, the best alone is of any value.

528,496—DRIER, by Horace D. Williams of Poplar Bluff, Mo. Filed September 26, 1892.

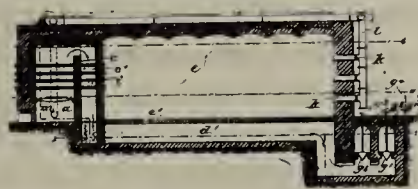
The air is admitted till it issues with the same temperature and humidity



with which it entered, when the temperature is raised by means of extra furnaces.

528,807—DRIER, by August Rueben-camp, of Dortmund, Germany. Filed August 16, 1892.

A series of drying chambers have beneath each, a channel that opens into both of two conduits with valved outlets.

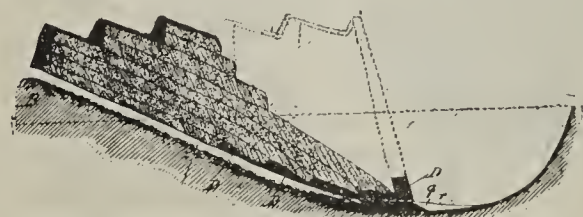


There is also a valved inlet from one conduit to each channel, and a source of heat to each channel.

529,480—METHOD OF BURNING CLAY TO MAKE BALLAST, by Henry G. Butler of Kenosha, Wis. Filed January 27, 1894.

In constructing the kiln for this purpose, walls are built inclosing the mass of the material to be burned, such walls being upon a slope or incline. When the material of the first burn is completed, another wall is built in front of the old, the latter is thrown down, and

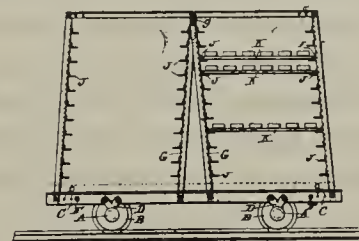
a new lot of material placed upon the mass and burned. Thus, kiln after



kiln is burned on and before the last, the final wall ending the burn.

529,675—BRICK DRIER CAR, by Albert T. Bemis of Indianapolis, Ind. Filed June 1, 1894.

The frame work of the car comprises rectangularly disposed sills from the central portion of which rise similar pairs of standards which being a short distance apart at the bottom are bolted together at the top. End standards are erected so as to lie parallel to their nearest central standard, and the whole is tied with proper plates. The standards carry pallet brackets, there being



two sections to the car. It is altogether a very neat contrivance, although the claims seem to be rather narrow and constructive.

529,931—FURNACE FOR BRICK KILNS, by Ben. W. May of Chicago, Ill. Filed February 1, 1894.

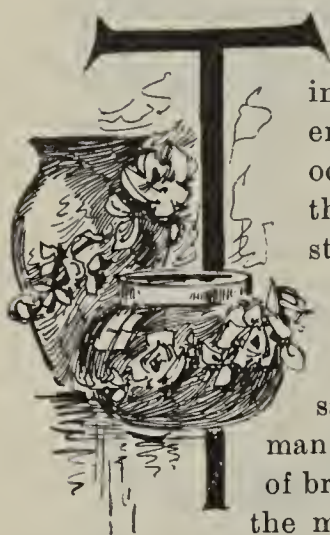
The furnace comprises two portions, that in which the combustion of fuel is begun, and that in which it is finished; these being separated by a door through



which the fuel may be thrust. The air to the first chamber is admitted from above, but that for the other enters below the line of combustion.

Written for the CLAY-WORKER.

THE ADVANTAGE OF PUGGING AND TEMPERING PAVING BRICK MIXTURES.



HERE are certain general principles, in relation to the properties of clay and methods for manipulating them which are demonstrated to every practical brickmaker through his daily factory experiences, and can be safely applied in the manufacture of any grade of brick. In contemplating the manufacture of paving brick, it is well to be governed to a large extent by such practical knowledge, to be sure that every virtue of the raw material is brought out, in the direction of producing not only the necessary qualities of hardness, thorough vitrification and homogeneity of structure, but in giving the brick as much toughness as possible. There are so many different styles of brick machines it would be rather of a difficult matter to find material which could not be made into green brick by one of these numerous processes. Now the necessity of working the mixture down to a particular degree of fineness, or tempering and pugging it to a certain state of softness, before it is made into brick, has become a matter of choice to be determined by the manufacturer alone.

Just here lies a matter of vital importance to the man who purposes making paving brick, but has yet to select the method of producing the best article. We will assume that he has an ambition to excel in his pursuit, but to succeed in rivalling the achievements of the best manufacturers of paving brick in the country, he must consider with great care the nature of his raw material before his factory and machinery is built. As he procrastinates over and gradually settles upon some course to pursue, in his eagerness to choose the process which will turn out a thousand brick at the least expense, he loses sight of the important feature of quality.

The point which I desire to bring out in this paper will seem most pertinent to those who are making paving brick from material possessing any trace of plasticity, and at the same time, I want to offer the suggestion without criticiz-

ing any particular styles of brick machinery.

If I were to revise my subject with a view of showing in a more comprehensive way its real technical essence and aim, I might express it thus:

INCREASED TOUGHNESS WHICH A BURNED PAVING BRICK ASSUMES, DUE TO THE EFFECT OF TEMPERING AND PUGGING THE BRICK MIXTURE.

A few illustrations with a pinch of theory sprinkled in here and there, will serve to demonstrate my point and to prove the value of its consideration in practice.

There are high grades of plastic fire clays which are practically free from all fluxing impurities, such as lime, magnesia, oxides of iron and the alkalies, and are composed of quartz, hydrous silicate of alumina (kaolinite) and water. The plasticity of such sedimentary or thoroughly disintegrated fire clays increases directly with its percentage of hydrous-silicate of alumina and inversely as its percentage of quartz.

Suppose, for instance, we have several samples of plastic fire clay of different chemical composition with respects to quartz and hydrous-silicate of alumina, and from each we make a green brick. If we burn them properly in a kiln and after they have been annealed and become cold, examine them with regard to their toughness, it will be noticed that the brick made of the fire clay containing the most quartz and the least hydrous-silicate of alumina is the weakest in character; while the brick, which carries in its composition the least quartz and the most hydrous-silicate of alumina, is by far the toughest and hardest. To be sure a brick made from an extremely "fat" clay, which contains little else but hydrous-silicate of alumina and water, has such an excessive shrinkage as to cause serious cracking when the brick is burned; however this does not explode, or even disturb, the theory that the hydrous-silicate of alumina (kaolinite) not only gives clay its plasticity, but when burned imparts of itself a decided bond to the calcined product.

In the manufacture of paving brick the fluxing impurities, which cause the vitrification of the material, are the principal elements upon which such a burned brick mixture relies for its hardening and toughening effect. This, together with the examples of burned plastic fire clays, which we have

just been considering, show that the compactness or closeness, non-absorbent character, hardness and toughness are imparted to the burned paving brick chiefly by the fluxing impurities, though the last properties, especially, is strengthened and re-enforced by the presence of the plastic hydrous-silicate of alumina in the green brick. In manufacturing paving brick the importance of thoroughly tempering and pugging the mixtures should always be remembered. However great or small quantity of hydrous-silicate of alumina there may be in the clay, it will not be able to exert its strongest bond until all the lumps of clay have been broken up, it is in a fine state, and the mixture has been tempered and pugged to an even and sticky consistency. Every mixture for making paving brick should be slightly plastic. It not only produces a firmer and sounder green brick but it can be burned with more certainty of satisfactory even results.

Toughness, as applied to fire brick, is a very important property. The brick may be hard, yet due to careless and unintelligent treatment in the factory, or perhaps poor chemical composition, it has become brittle.

As modern science and skill have combined in devising means for making green brick out of clay of most any character, so it has proved itself quite as versatile in furnishing methods for burning almost as many varieties of material in a kiln, and producing vitrified brick.

It is just as easy to make and burn paving brick from different grades of clay, which will look equally superior, as it would be to produce samples of pig iron, made from as many kinds of ores, that would appear indistinguishable.

But how would these several classes of brick and iron stand the test?

Then it is that people are convinced that the finished product of even a brick yard may look satisfactory and give the most disappointing results.

There are wide differences between the numerous brands of paving brick which are on the market to-day and they, as in every industry, represent a comparison between anything from a superior article, down to the most inferior product.

In such extreme cases, one man spends his whole time, thought and a generous share of his profits in experimental work, trying to bring his brick up to the very highest degree of perfec-

tion, while another who owns property containing nothing but the poorest sort of material is satisfied to make an indifferent grade of paving brick, so long as they can be made cheaply and can be sold at a price upon which he is able to realize a small profit.

These methods, that govern in the larger way, the entire object of one factory, reflect solely upon those who control and direct its operations.

CHARLES FERRY.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN BY CORRESPONDENT. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

The Burning Question.

Editor Clay-Worker:

So much has been written on the subject of burning paving and fire brick that but little can be added, but burning is of so great importance in brick-making that the same thought expressed in different words may help some member of the craft in his effort to do better work. Good burning comes from long experience—coupled with good judgment. It requires watchfulness from start to finish and he who does not profit by past experience can never expect to be a successful burner.

The brick should be set to give good draught and the brick when set should be bone dry. Both are very important and success can only be had to the degree to which the rule is adhered.

Watersmoking requires a slow fire—gradually raising the fires till the steam has disappeared from the smoke. Fast watersmoking often causes a reddish color to brick usually burning a light color. Sooting is also another trouble arising from this cause. The first twenty-four hours after watersmoking the fires should be put on full, but leaving the doors or openings of furnaces open or partly open. By doing this, the heat is driven to all parts of the kiln, being heated gradually and driving out all moisture that might still remain. The gradual heating of a kiln in this way will in the end save time and give better results.

By closing furnaces on starting full fires a greater heat will be made the first twenty-four hours on the front benches, but at the end of the twenty-four hours the kiln is not in as good condition for the next three or four

days firing as by the first method. The heat being diffused through the kiln, the heat in the last three or four days goes to all parts of the kiln, is not clogged and the same work is done with less fuel.

After the twenty-four hours firing a very important matter presents itself and that is draught. Up to this stage of the firing, draught has not been considered of much importance. Too much or too little draught is wasteful. Too much draught carries the heat through the brick and up the stack so quickly that the firing must be done often and at the expense of the coal pile. Too little draught causes poor combustion and poor combustion makes but little heat and clogs the kiln. By the intelligent use of the damper, the heat is retained in the kiln long enough to do the work for which it was intended. Enough draught should be given to make perfect combustion. The burner by experience will know when his fires are burning bright and clear, and the noise made by the roar of the kiln will warn him when to open and close his damper. Burning brick and baking bread have many points of similarity. The woman who does not damper her stove, although she may have a very hot fire, bakes the top of her bread thoroughly and leaves the bottom soggy, but she who closes the damper drives the heat to the bottom and equalize it throughout the oven—thereby producing a perfectly baked loaf. Good burners must learn to utilize all the heat made, save their muscle and the proprietor's coal pile. The heat in all kilns is necessarily greater on the benches nearer the fire than on parts farther away from the furnaces. Enough air should be admitted through holes in kiln wall above furnaces or through furnaces to drive and distribute this excessive heat to more distant parts of the kiln. The annealing of paving brick requires great care and improves very much the quality of the brick. After the last fire burns down all openings in the kiln should be closed with brick and daubed, and the damper closed, allowing only enough draught to carry away what sulphur or impurities may be still in the kiln. Care should be taken before damper is moved to allow enough heat to escape so that brick will not be caused to stick, as heat will largely increase on moving damper. The cooling should be started by uncovering openings on

top of kiln and gradually allowing air to enter at furnaces. All clays cannot be cooled in the same length of time and only by experience can one learn what his clay will stand. The theory of burning is good and well to understand, but it will avail us little if we cannot apply it in a practical way, and the writer hopes someone may be able to use some idea in this letter in this manner.

LAND O'FLOWERS.

Is Oil a Practical and Economical Fuel For Burning Brick?

Editor Clay-Worker:

Mr. W. S. Purington, in his interesting paper on "Oil as a fuel for burning brick," page 155 Convention Number of CLAY-WORKER, 1894, says: "As to cost of oil and coal, will say, that from tests made the following results have been obtained: As an average, three barrels oil equals one ton of our Illinois coal. The better the coal the better the results. This is based upon the use of oil and coal under boilers."

This, as can at once be seen, is not given as the writer's own experience in burning brick, and is therefore almost valueless as data for the craft to go upon. Strange to say, however, this estimate is corroborated by Mr. Taylor, who says: "Mr. Purington is right in his statement, that three barrels of oil is equal to one ton of best coal. I make the assertion that 140 gallons of oil is equal to a ton of best Wilkesbarre coal." Mr. Taylor arrives at his conclusion in this way: He takes the number of kilns burned with coal during a certain period, and calculates the amount of coal consumed by kiln; and then the number of kilns burned with oil during another period, and the number of gallons used per kiln, which, by the way, varies from 3,200 to 2,400 gallons per kiln. This method of calculating the cost is, I consider, largely guesswork, and consequently rather unsatisfactory. I have a shrewd suspicion, also, that Mr. Taylor's figures must be somewhat at fault. Four barrels of oil of 42 gallons each, is generally considered to be the pretty well determined equivalent of one ton of 2,000 pounds of good bituminous coal. But even at Mr. Taylor's low estimate of 140 gallons, the cost, at average prices for both, would be about double that of coal.

Captain Crafts' practical statement, "I did not find three barrels of oil the equivalent of one ton of coal," corroborates above estimates.

Mr. Taylor also says: "The more air you use, the less oil you will burn." This statement, coming from a man of Mr. Taylor's experience and ability, is likely to prove misleading to those of the craft who have not thoroughly mastered the "Fuel Question." It would appear as if all users of oil have, perforce, to be included in this category. The simple fact of their adopting so costly a method of burning so low-priced an article as brick, seems conclusive evidence on this point.

One pound of carbon gives perfect combustion when combined with $2\frac{3}{4}$ pounds of oxygen, and one pound of hydrogen, with 8 pounds of oxygen. One pound, therefore, of petroleum, containing six parts carbon, and one part hydrogen, requires say 3 and three-sevenths pounds oxygen for complete combustion; and, of course, the nearer to complete combustion you get, the less fuel you burn. Any oxygen over and above this amount, simply goes through the kiln as unconsumed gas, and actually tends to lower the temperature it is intended to raise. Mr. Waplington has made this point very clear in his writings in the CLAY-WORKER, and as to its correctness there can be but one opinion.

Those who have had the wisdom to follow Mr. Waplington in his able and instructive articles, cannot fail to have gained a lot of knowledge, simply invaluable in the burning of brick. In this business it is especially desirable to understand the "Why."

Let us now glance, for a moment, at the analysis of petroleum, and see how it compares with coal. According to Benjamine J. Crew, the following fuels contain approximately:

| | | | |
|-----------------|-------------|----|---------|
| Anthracite Coal | { Carbon | 93 | per ct. |
| | { Ash, etc | 7 | " " |
| Bituminous Coal | { Carbon | 85 | " " |
| | { Hydrogen | 5 | " " |
| | { Ash, etc. | 10 | " " |
| | { Carbon | 86 | " " |
| Petroleum | { Hydrogen | 14 | " " |

From these data it is easy to calculate that

| | heat units: |
|---|-------------|
| 1 pound Anthracite coal will produce..... | 13.526 |
| 1 pound Bituminous coal will produce..... | 15.465 |
| 1 pound Petroleum will produce..... | 21.192 |

or about 50 per cent. more, in comparison to its weight, than coal. If, then, we estimate the price of coal at \$4.00 per ton, the cost of petroleum, to compete with it in economy, should not

exceed \$6.00 per ton; which, except under most peculiar circumstances, is a quite impossible price, \$20 per ton being a low estimate of its average value.

Of course these figures are purely theoretical, and, in actual practice, considerable variation is certain to occur, most probably somewhat in favor of the liquid fuel; but not sufficient to materially affect the value of the comparison.

Captain Crafts, in his memorable discussion with Mr. Waplington, in the CLAY-WORKER, on the subject of "Gaseous Fuel," said: "You cannot get more heat out of a fuel than there is in it." This is just exactly what is the matter with petroleum. The heat producing power simply is not in it, *in comparison to its cost*, or to any cost at which it is possible, considering (compared with coal) the small and steadily decreasing supply, ever to produce it in the United States. Russia, with its practically inexhaustible oil regions and lack of coal supply, is the only exception to this rule.

Several governments, England, France and the United States, have, from time to time, appointed commissions to investigate as to the practicability of oil as a fuel under marine boilers, etc. The reports of said commissions, after exhaustive and costly experiments, have invariably been virtually the same: "It cannot advantageously compete with coal." It is worthy of note that, while Chief Engineer Isherwood of the U. S. Navy, gave every possible credit to petroleum as a fuel, he failed to recommend its use in the U. S. Navy. Among the advantages claimed by Mr. Isherwood for liquids, over solid fuel were: "1. Reduction of 40.5 per cent. in weight of fuel. 2. Reduction of 36.5 per cent. in bulk. 3. Greater storage facilities. 4. Reduction in number of stokers to one-quarter. 5. Greater speed in raising steam. 6. Fires can be extinguished instantly. 7. No smoke, no ashes, no waste. 8. No loss of heat from opening furnaces to feed coal. 9. Ability to command increased temperature without forced draught.

This, coming as it does, after thorough investigation from a perfectly competent authority, seems to me a most reliable summary of the advantages of oil over coal. Let us now see how far these advantages hold good in brickyard use. Nos. 1 and 2, reduction in weight and bulk of fuel, while very important in a vessel, where the same can be added to

carry capacity, are of little or no value in a brickyard where space is seldom at much of a premium. From Nos. 3, 7 and 8, some little advantage could doubtless be had and considerable gain from No. 4, though not, in any case, so much as on board ship; while from Nos. 5, 6 and 9 absolutely no advantage whatever can accrue.

But this is not all. Anyone who has seen the process of stoking a steamer in a storm, with the floors sometimes at an angle of nearly 45 degrees, where it is absolutely a matter of life and death to all on board, that the boilers, above everything else, do not fail to do their duty, cannot feel convinced that the difference in cost must be something very serious indeed, to prevent the adoption of a fuel, in every way so very desirable as oil.

If then, in the face of all these advantages, Mr. Isherwood was unable to recommend its use; if neither England nor France after costly investigation, can see their way to adopt it in their navies, where any expense, *within reason*, is never considered; if none of the great ocean steamship lines can afford to use it, how, I ask, *how* can oil by any possibility, be profitably employed in a brickyard, where the finished product is only worth from \$2.00 to \$4.00 a ton; and where the only advantage gained is the dispensing with a few coal and ash shovellers and the *convenience* of the burner, not forgetting, however, the "progressiveness" with which "burning with oil," seems to be looked upon by all those who do not know anything whatever about it? "*I pause for a reply.*"

If brickmakers who are using oil will only make a strict and *impartial* investigation, they will find that, although these advantages may, as Mr. Purington says at the close of his paper, "Help to make up this difference"—viz. costs (faint praise to come from a champion of the oil burning process), for said "progressiveness," they are paying at the rate of one to two hundred per cent. in extra cost of fuel.

Not only can oil never, by any possibility, come into general use for burning bricks, but those at present using it must, I fear 'ere long be forced to abandon it.

R. M. GREER.

Tuxpam, Mexico.

P. S.:—I understand that the New England brick manufacturers are experimenting with a view of introducing oil instead of wood and coal. If said.

experiments are honestly and impartially made and candidly reported, there will be no oil used in that district. I congratulate the New England brick manufacturers upon having among them a man of Captain Craft's common sense and experience.

The Situation At Chicago.

Editor Clay-Worker:

The building trades in Chicago probably have less cause to complain on account of the inactivity in the building lines than any other city in this country. It is quite hard to define or give any good reason why so many buildings are being put up, both apartment and dwelling houses and factories, as is the case. No doubt the fact that buildings can be constructed at least 25 per cent. less than they cost two years ago has very much to do in encouraging capital to invest in Chicago realty and make it an income paying property, by putting up some sort of structure upon the same, that will bring in a fair rental. There seems to be a continual building of homes, and while not so many as in the past, yet very satisfactory to the trade under its present conditions. Some of the recently completed apartment houses have been rented before completion, and it is very interesting to know that there are several large houses, contracts for the construction of which are about being let. On the West and North sides, in addition to apartment houses and private residences, there are a great many steady improvements being made in the way of manufacturing plants. The West side seems to be a favorite location for manufacturing, owing no doubt to the convenient railroad facilities both east and west.

Since the announcement has been made that the N. B. M. A. of the U. S., will hold its meeting on February 12 to 15, at Cleveland, Ohio, enquiries are being made from one to another as to who will attend from this city. My impression is that there will be a large delegation from Chicago. The very interesting meeting with which the Association favored Chicago last year, I trust has so much interested Chicago manufacturers and dealers that it will be continued in the future, and I look for a large attendance from Chicago. While the profit side of the ledger has shown a small balance during the past year and all the brickmakers are not as happy as they were wont to be, I think

they feel that it is good for them to meet together, talk over the situation and become better acquainted with each other. I fail to talk with anyone, who has attended the meetings of the Association in the past, who has expressed anything but gratification and satisfaction at so doing, for the result in their own individual cases. There can be no question but that it is good for the craft to meet together and compare, notes both as to successes and failures, thereby being far better able to enlarge the one and diminish the other. It is necessary for the successful business man in all lines to keep in touch with those of his own craft, keeping himself posted upon what is being done by his competitors in the way of improvements, economies, and the advancing of sales. The information that has been gathered by the Association since its organization has been valuable to its members, and through its efforts the quality and general good character of the clay product has been greatly improved. The social side of these meetings is very pleasant and should be cultivated to the fullest extent; for our membership is composed of very bright and clever men.

For about three months past there has been carried on in the very heart of Chicago, a strike, which has thus far been the cause of the killing of two men, and the serious injury of 25 or 30 more. There has been little said about it by the daily press, but we think the situation will be of interest to readers, while not distinctly affecting the clay working interests. The first man killed was James A. Doyle, vice-president of the Junior Plumbers' Association, who was shot by Harry K. Burgess, a laborer who was assaulted by Doyle and others on November 10th. Burgess was arrested and turned over to the grand jury, who refused to indict him on the ground that the shooting was done in self defense. With this verdict the general public heartily agree, while the Building Trades' Council declares it to have been an unprovoked murder. The next man killed was Donald Gruer, a walking delegate for the Carpenters' Union, who was shot on December 3rd by John Kempermann, and died at St. Luke's Hospital a day or two afterward. At the coroner's inquest the testimony showed that the killing was done by John Kempermann, and after testimony was all taken the jury, after an hour's deliberation, rendered a verdict to the effect that Donald Gruer came to his

death from paralysis and hemorrhage resulting from gunshot wounds, and recommended that John Kempermann be held to the grand jury. They also recommended that Cornelius Bink and Herman Kempermann be held as accessories to the crime.

The strike was caused by the fact that the Chicago Edison Co., attempted to work men in the building that were not members of the Building Trades' Council. The fight between the Council and the Edison Union has been of several years standing. Wherever they attempted to work in company with the others a fight resulted. When it was learned that the Edison Company had secured the sub-contract for the electrical work on the Marquette building, it was feared that trouble would ensue, and the first day the Edison men attempted to work they were attacked by members of the Building Trades' Council. Without going into the details from the first strike to the present time, it is sufficient to say that continual warfare has been carried on between the Building Trades' Council, and the members of the other trades unions not affiliated with them. Nearly all the trades unions in Chicago, excepting the Electrical and Plasterers' Unions and the Brick Layers' Association are connected with the Building Trades' Council. The strikes is a sympathetic one carried on by the Building Trades' Council in their effort to force other unions to join them, their policy being and having been from the start, that whenever any question came up between any union belonging to the Council and any contractor, all the unions belonging to the Building Trades' Council should strike and stay out until the matter is settled.

The police force in Chicago seem entirely unable to protect the workmen, or else they are not inclined to do so. The police are in the habit of conducting the men from the street cars to the building in the morning, and from the building to the street cars in the evening, and the streets in close proximity to the building are so well looked after that the policy of late on the part of these outlaws is to station themselves at some point which the men will have to pass after leaving the street cars on the way to their homes to make their brutal attacks. It seems to me that public sentiment must rise and take this matter in hand. Certainly there does not seem to be any such thing as the pro-

tection which the Constitution of the United States has declared to give to every man, viz.: the privilege of doing honest work for the maintenance of himself and family.

There has been no question as to the pay not being sufficient, as full union wages have been paid to all the workmen upon this building. The question of wages has cut no figure whatever. It is simply a fight between the Building Trades' Council and the unions not affiliated with them. It is claimed by the officers of the Council that it does not counsel violence, but still the fact remains that the members of the Council are found attacking their opponents. Where is this going to end if our Government does not take it up, and protect its citizens and put down lawlessness? Where is our "Land of the free and home of the brave," that we have been singing about for so many years? The lawless man seems to be the only man free, and is not the brave man that we hear the most about in these days the man who strikes for trades unions, strikes his brother laborer who is trying to earn honest bread, and strikes him in the dark? Now let it be distinctly understood that I have no word of condemnation for such labor organizations as are, by legitimate methods, trying to advance their interests, or elevate the standards in any regard. The methods to be condemned are such as are being followed by the Building Trades' Council in attacking the weaker unions and trying to force them against their inclination and better judgment to join their forces; and the course of intimidation by brutal attacks usually followed in strikes.

COSMOPOLITAN.

The Composition of Slip Clay.

Editor Clay-Worker:

In response to an inquiry from one of your Canadian subscribers, asking for the analysis of Albany Slip Clay, I take pleasure in submitting the following as a result of a recent test:

ANALYSIS OF A SAMPLE OF ALBANY SLIP CLAY.

| | | |
|-------------------------|-------|---------|
| Silica..... | 19.66 | per ct. |
| Alumina.. | 16.90 | " " |
| Water Combined..... | 7.49 | " " |
| Quartz | 38.79 | " " |
| Lime..... | 6.19 | " " |
| Magnesia..... | trace | |
| Iron Ses-qui-Oxide..... | 3.72 | " " |
| Alkali-Chlorides..... | 8.85 | " " |

CHAS. FERRY, B. S.

Troy, N. Y., Dec. 7th., '94.

Philadelphia News.

Editor Clay-Worker:

Brickmakers are still delivering a great deal of material to builders in town and out of town. The latter are doing their best to close up operations before the cold snap now threatening. There is quite an amount of work on hand yet, and even late as it is, some new work is undertaken. Permits still show builders are alive. The latest important enterprise is for a 12 story hotel of big dimensions corner Broad and Locust, which involves practically the tearing down of the newly erected hotel Monopole, and the new theatre (the Empire). It will be one of the largest hotels in the country, cost \$2,000,000 and be built in red brick. Philadelphia needs such a hotel. Godet the New York millionaire, is at the head of it. Red brick is still in favor here and makes quite an artistic appearance, when an architect does his work right. There are quite a number of enterprises underway. Some of which will be started in January. In fact the winter season promises to be a busy one among builders, especially those who look after small jobs.

At last we have "histed" Billy Penn to his pinnacle on top of City Hall tower, where he will gaze down for ages on the city he founded, over 200 years ago. The building has cost the people so much, \$20,000,000, as against \$5,000,000 estimated, that they are out of all patience and refused to have a big time over the elevation of the statue. It was simply hauled up and put in place. The Commission legalized to superintend construction has for 20 years been independent of any authority, and the building cost millions more than it could now be reproduced for. It has been a costly lesson.

Philadelphia is keeping an eye on New York and Chicago in their expansions, and would like to do a little on her own account, but Baltimore is the nearest big city and the Marylanders might object to annexation. We could vote in a county or two if the constitutional lawyer would allow, but we have already as much farm land and forest in our city limits as we need. So we must be content to fill up the land we have, and we are doing that at the rate of 6,000 houses a year.

What is to be the price of brick next year? is asked. Several manufacturers have spoken on this point. That depends partly on the cost of labor. Will

there be labor strikes? Hardly. Wages are about as good here as elsewhere, yet a general revival of business would no doubt lead to agitations for higher wages. There is a deep discontent among wageworkers, not only among brickmakers and in the building trades but outside. Very little is said about it for two reasons; first, it is no use; next, there is no organization. Organization has been weakening for a long time and just now there are more men than jobs. Next spring it may be different. If the men ever see a chance to pull up, there will be music. We are extremely anxious to have smooth sailing next year, and there is a disposition to meet men in advance and have things settled. But to ask them to meet would involve an anxiety they would take advantage of.

Builders, investors and others are now laying plans for next year. So far as they have been matured they point to active building, material is cheap and house building has not yet been overdone. Our building and loan associations have money to buy and the membership is struggling to get into their own houses.

There is a gradual transformation on the fronts of houses. New buildings all have a finished and artistic appearance, and contrast severely with the old brick surroundings. Front alterations has got to be quite a business and as times improve this transformation will continue. This means more business for the builders and an increased demand for brick and terra cotta. ANON.

Information Wanted.

Editor Clay-Worker:

I have a plastic clay which has more or less pebbles or nodules of limestone in it, but which burns a nice pale buff color. It makes a very satisfactory stock brick, and burns safely as a rule. Wishing to adopt the cheapest and best method to produce a No. 1 pressed brick from this clay, I would like to have the opinions of some of your readers who may have the time and inclination to help a poor "clayworker." Now, will they help me to decide which plan will give the best and cheapest results. To work the clay soft and dry fit for repressing; or, to dry the clay, to proper condition, first and then form into brick.

If my questions are too general, your readers must excuse me, and rest assured that any replies they may make will be highly appreciated by

LIME NODULE.

THE CLAY-WORKER.

OFFICIAL ORGAN OF THE NATIONAL BRICK
MANUFACTURERS' ASSOCIATION OF THE
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to Clayworkers is solicited. Communications
from practical men will always be welcome.
Address all communications to

T. A. RANDALL & CO.,

CHRISTMAS GREETING.

The gladdest season of all the year, Christmas time, with its leaven of love and kindness is upon us. In every household, especially those blessed with little children, there are unmistakable signs of Santa's approach. Stories of the wonders to be wrought by that good saint, are told to willing ears and little tokens of affection, precious for the spirit of love they bear, are being secretly hoarded for the day of all days when "Peace on earth, good will toward men" is echoed around the world.

The CLAY-WORKER enters heartily into the spirit of affection and good cheer, which awaits its thousands of readers, and earnestly wishes each and every one a Merry Christmas.

THE NEW YEAR.

Before the CLAY-WORKER makes its next monthly visit, the year 1894 will have passed away and the year 1895 will have begun. Such an event always deserves a momentary halt in the affairs of life. It is wise to not only review business interests and note their profit and losses, and consider how the mistakes of the year may be avoided in the future and how the successes may be improved upon, but it is well also to take an inventory of our social and moral condition. It is a trite truism to say that the years of our life are one more in number, but are we as much

wiser and better than we were a year ago, as we ought to be considering our opportunities? In taking our annual inventory of our material interests let us not forget the more important review of our intellectual and moral status.

OUR NATIONAL ORGANIZATION.

Can the National Brick Manufacturers' Association broaden its sphere of usefulness? There are those who argue that it can and should. So far as the influence of fraternalism can be of benefit, and no one will question its power for good, the National Brick Manufacturers' Association does all that it can do. It is of great benefit to its members technically. Hitherto that has been its strongest and best work. While we will live to learn a great deal more about brickmaking than we now know, it must be admitted by those who have studied the question and those who have had experience in other lines, that the great and large work of developing the operative features of the art of brickmaking has been done. We do not know it all, but we know the fundamental principles. Brickmaking methods are taking to themselves academic forms. It is resolving itself more into the lines of school work. We now have what we did not have a few years ago, much good literature for clayworkers. Thus it is that there is not the same occasion for brickmakers conventions and organizations in that way that there was in times past for purely technical purposes. It is true, however, that if no other occasion offered than that which now exists, the Association would flourish and prosper. The fraternal spirit which has been developed and the impulse of its former movement would carry it along indefinitely.

But there may be other work for it to do. We have been dealing very largely with matters pertaining directly to manufacturing, to the science and the art of production. Now it remains for us to consider brickmaking more as a business. The commercial side should receive more consideration, for while the National Association cannot hope to control the brickmaking business of the country, it is possible for it to encourage local organizations and advocate sensible and business-like combinations that if lived up to will prove of incalculable value. Questions of common interest involved in the marketing of products may be considered and a general policy

adopted or advocated that will in the end redound to the direct commercial advantage of every brickmaker in the land.

OUR VISITORS.

The eighth instant was a red letter day in the CLAY-WORKER office, for we had the pleasure of welcoming within our sanctum Mr. and Mrs. D. V. Purington, of Chicago.

Mr. Purington said all was serene at Chicago. The brick business there is still comparatively dull, nevertheless the Purington-Kimbell Brick Co., has made and sold over 60,000,000 brick since the first of the year, a very large per cent. being sewer brick; one job alone called for 17,000,000 of that quality and the order was filled without the rejection of a single load. They have been very fortunate this year in the quality of brick turned out, their burns being uniformly good.

The paving brick business has continued fairly good. The Purington Paving Brick plants at Galesburg, the largest in the country, have run full handed most of the year. Several innovations have been made at the factories, the most notable being the addition of complete equipments for repressing the entire products of both plants. The results have been very gratifying and we opine that "D. V." will have something interesting to say on that subject at the coming Convention. He says that the trial pavements put down in Chicago are proving very satisfactory and there is no doubt but that annealed brick will soon rank with the very best paving material in use there.

On the same eventful day we were favored with a visit by Mr. W. A. Eudaly of Cincinnati. He bore no evidence of having been out in the late political cyclone; on the contrary he presented an unruffled front, and talked so cheerfully of the improved business outlook that we feel sure that if any thing has happened that he was sorry for, he is glad of it. The demand for Eudaly kilns continues unabated, and so long as that is the case, the worthy inventor can well view the outer world complacently. During the past season he has introduced some improved features that make his down-draft kilns well nigh perfect, especially for burning pavers. He has booked several good orders recently, among them one for several large kilns for McAvoy's new paving brick works at Perkiomen, near Philadelphia.

THE NATIONAL ASSOCIATION OF FIRE BRICK MANUFACTURERS.

The yearly meeting of Fire Brick Manufacturers will be held at the Broadway Central hotel, 667 Broadway, New York, Tuesday and Wednesday, December 18th and 19th. A very interesting programme has been arranged by secretary Henry Gleason, and a large attendance is anticipated. The annual dinner will be served Tuesday at 5:30 and will be followed by a theatre party the same evening.

TRADE LITERATURE.

WE ARE INDEBTED to the Dean Bros. Steam Pump Works, Indianapolis, for a copy of their new 1895 catalogue. The cover is unusually artistic in design, the front page showing a miniature view of their immense new factory, which, by the way, is a model modern plant, and having been erected under their supervision during the past season, is equipped with every conceivable convenience for the manufacture of the famous Dean Pumps. On the back cover of the catalogue is a complete index of contents, which embrace engravings and descriptions of something like a hundred different kinds and styles of pumps. If you want a steam pump for any purpose don't fail to write Dean Bros. for prices and a copy of this catalogue. It is a work of art as well as utility, and a credit to Baker-Randolph Litho. and Engraving Co., who did the printing and made the engravings, a large number of which are beautiful half-tones.

THE COLUMBIAN Automatic Power and Perfection Hand Brick Re-Presses is the title of a neat little catalogue now being sent out by C. W. Raymond & Co., Dayton, O. It tells all about these well-known presses and something about re-pressed, front and paving brick as well. Write for a copy, mentioning the CLAY-WORKER.

MORRISON'S IMPROVED KILN RECORD is given in a condensed form in a little booklet a copy of which can be secured free by any of our readers who will address R. B. Morrison & Co., Rome, Ga. It is a record of seven years of uninterrupted success in burning building brick. If you want to know how it is done, write them for a copy.

"THE UNIVERSITY OF ILLINOIS" has favored us with a neat though diminutive brochure, telling the story of that

institution both by words and pictures. There are a large number of the latter, giving views of the grounds, buildings, work rooms, students and employes, which are very graphic. We presume a copy will be mailed free to anyone sufficiently interested to write to W. L. Pillsbury, Registrar, Urbana, Ill.

LEGAL AND MORAL OBLIGATIONS.

The controversy between capital and labor is bringing to the front an entirely new question in sociology: Has the employe such an interest in the plant or general business of his employer that the aid of a civil court may be evoked to protect it? The common thought has been that any employe, however true and faithful, has no interest in his master's business beyond rendering faithful service and receiving stipulated wages. This certainly involves many hardships. If a skilled workman devotes his time to the interests of his employer is he not entitled to more than his daily wages? Without his co-operation and aid, the enterprise might prove a dismal failure, yet he knows not at what moment he may be discharged. He has little inducement to build a home with or without contracting a debt, and he can feel but little interest in any of the thousand enterprises which belong to civilized life.

That there is a moral obligation to retain a faithful employe, at least, while he can do effective work, and even longer on less wages, no one denies, but unhappily the moral obligation is not always the controlling force in such cases. But the obligation to retain a faithful employe implies the obligation of an employe to remain in the service of his employer until the relation can be dissolved by mutual consent.

We do not mention this subject for the purpose of discussing it now; there is too much in it for our space, but, having among our readers many of the most thoughtful of American citizens, we simply call attention to it as a coming question which must be met in the near future. It is a part of the legacy left us in the transition from individualism to combinations—from hand labor to machine labor. For the present it is enough to say that something in this line will be done, because it must be done, but just what it shall be we do not venture to say. It involves also the question of arbitration, voluntary or involuntary where wages are in dispute,

for arbitration is possible only where each party to it has equitable claims. If the employe has a right to stay, the conditions of his staying may be a proper matter of arbitration. But this equally implies that the master has a right to command his services on such terms as the arbitrators may determine. Thus we see several new points are to be settled.

THE CLOSE OF VOLUME 22.

With this issue the CLAY-WORKER completes its twenty-second volume. Eleven full years of usefulness, each one in turn bearing an increased measure of value to our readers, is a record of which we are justly very proud. With eleven years of success behind us, and a constantly growing field, we face the future with brave resolutions to go on, striving to make each succeeding issue better and better. Our motto has never been "How cheap," but always "How good," believing confidently that the best and most lasting success is built on that line.

The CLAY-WORKER for '95 will show the same progressive spirit that has characterized it in the past. In addition to our present large and able corps of contributors, all of whom will continue to give us the best they have in their think shops, we have arranged with several authors of well known ability for a number of instructive papers on all the important features of clay work. Brickmaking is a progressive industry and those who want to keep up with the procession read the CLAY-WORKER. Are you with us?

A MANUFACTURERS' ORGANIZATION

A Committee of the Manufacturers' Association of Cincinnati and Hamilton county, Ohio, are arranging for a meeting in that city of representatives of all the manufacturing interests in the United States for the purpose of securing a National Organization to advance the interests of manufacturers both in this country and abroad. It is thought legislation both National and State, favorable to those interested, can be secured through such organized effort, that cannot be hoped for otherwise. Sufficient interest in the movement has already been manifested to insure a very large attendance. E. P. Wilson, secretary, will be pleased to correspond with those desiring further information. The meeting will be held Tuesday, January 22nd.



THE JUDGE'S CHRISTMAS PHILOSOPHY.

*Oh, parent, fill the flowing sock
Until it doth run over.*

HE is the wisest man who keeps the heart of a boy.
Let him labor and plan, but hold to his power for joy.
Let him smile at his pain and have in his heart no guile,
For the heart of a boy is gain and the lips were made to smile.

What shall the long years give us that shall not pass away?
Wealth and honors shall leave us—they are ours for but a day.
Peril and care and trouble, they shall not always annoy;
We shall count the good things double if we have the heart of a boy.

Hang up the stocking of faith and it shall be filled with cheer,
Though grief and its wrath attend us through every month of the year.
Take the world as it comes and give it as good as it brings.
Welcome the year with drums and the heart of a boy that sings.

The wrecks of life are a doll with the sawdust gone from her legs,
A Punch with his nose smashed in and a Judy off her pegs,
What of the hobbles we rode in the days that are far away?
The bugle-blast of a boy in the wantonness of play.

Come, thou Hero, and fiddle while your Rome goes down in a blaze.
Draw your pleasantest picture from the old-time happy days,
Sit in memory's ashes, in the wreck of your broken toys,
And laugh that you're living and loving, with the heart of one of the boys.

—I. M. Gregory, in Judge.

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- "BRICKMAKER'S MANUAL,"
Morrison and Reep, \$3.00
- "BRICKMAKING AND BURNING,"
J. W. Crary, Sr., \$2.50
- "TABLE OF ANALYSES OF CLAYS,"
Alfred Crossley, \$1.00
- "DURABILITY OF BRICK PAVEMENTS,"
Prof. I. O. Baker, \$.25

Mailed, postage free, on receipt of price. All of them to one address for \$5.50. Address T. A. Randall & Co., Indianapolis, Ind.

We also fill orders for the English work entitled "THE MANUFACTURE OF GLAZED BRICK," H. Greyville Montgomery, \$2.00.

ITTNER'S BRICKS.

27,000,000 Made Annually at St. Louis and Belleville, Ill.

ESTABLISHED 1859.

Red Pressed and Ornamental Brick of unsurpassed quality a specialty and can be furnished in any desired quantity. Builders who desire the finest pressed brick at reasonable prices, are requested to write for illustrated catalogue and price list.

Rock-faced and Roman brick, red and brown, granite, mottled and other colors made on order.

Orders for special designs and ornamental patterns solicited.

ANTHONY ITTNER, Telephone Building, ST. LOUIS, MO.

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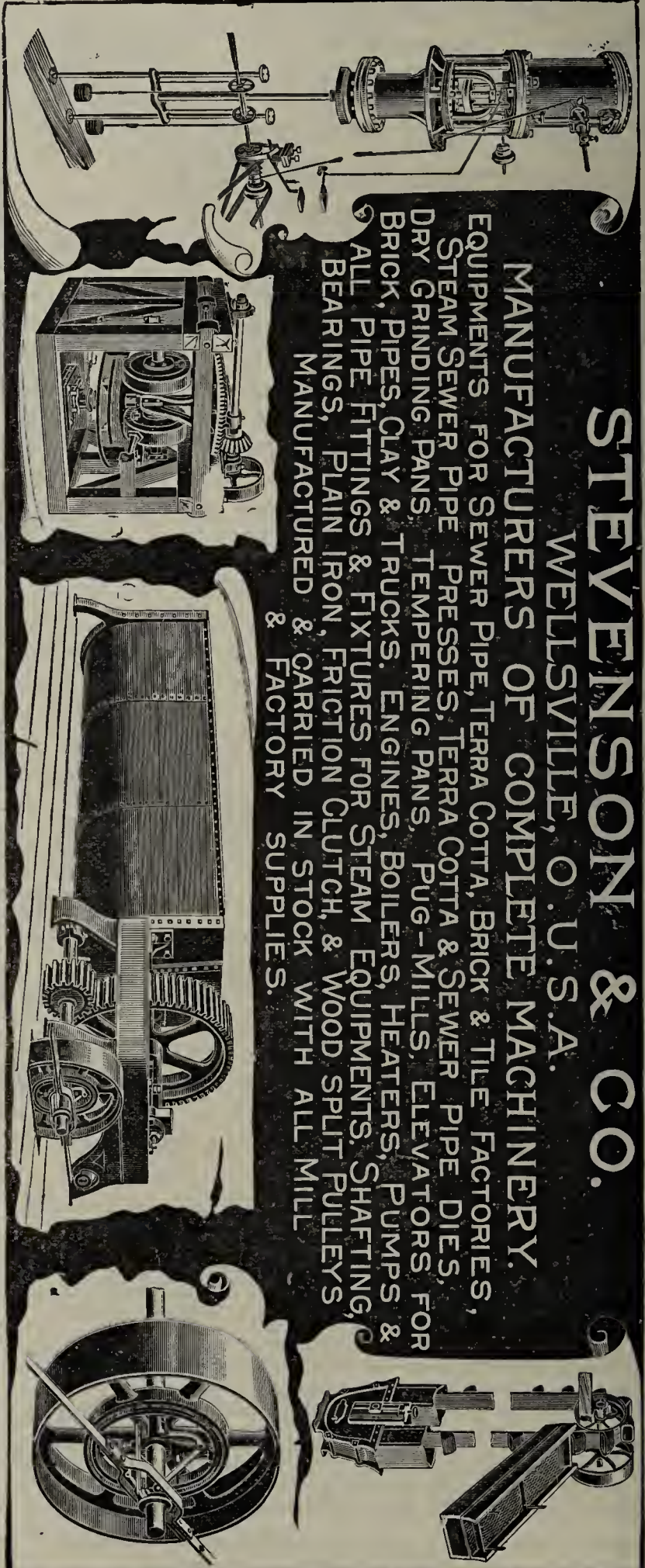
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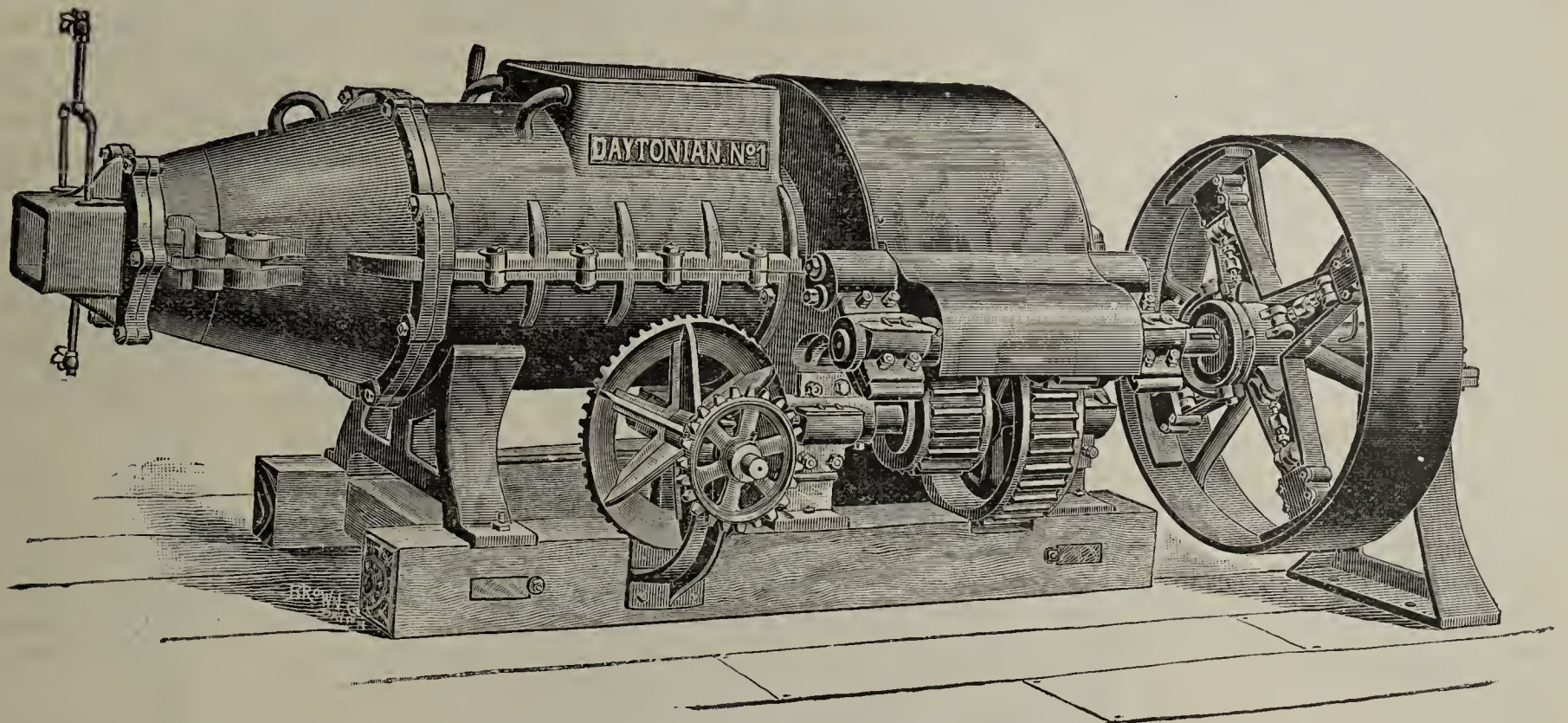
STEVENSON & CO.
WELLSVILLE, O. U.S.A.

MANUFACTURERS OF COMPLETE MACHINERY.

EQUIPMENTS FOR SEWER PIPE, TERRA COTTA, BRICK & TILE FACTORIES,
STEAM SEWER PIPE PRESSES, TERRA COTTA & SEWER PIPE DIES,
DRY GRINDING PANS, TEMPERING PANS, PUG-MILLS, ELEVATORS, FOR
BRICK, PIPES, CLAY & TRUCKS. ENGINES, BOILERS, HEATERS, PUMPS &
ALL PIPE FITTINGS & FIXTURES FOR STEAM EQUIPMENTS, SHAFING,
BEARINGS, PLAIN IRON, FRICTION CLUTCH, & WOOD SPLIT PULLEYS
MANUFACTURED & CARRIED IN STOCK WITH ALL MILL
& FACTORY SUPPLIES.

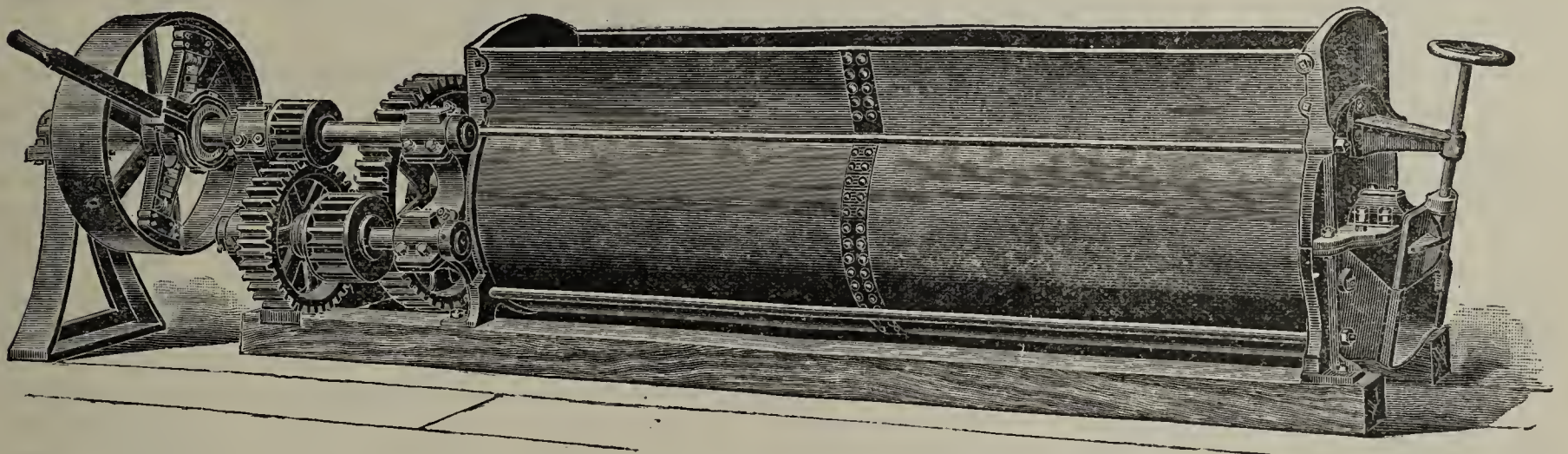
RAYMOND'S

✦ Brick ✦
Machinery.



DAYTONIAN No. 1 BRICK MACHINE.

The mechanical perfection of our modern line of brick machinery is astonishing the World.



No. 1 COMPOUND GEARED PUG MILL.

*Brick Machines,
Cutting Tables,
Pug Mills,
Revolving Screens, Etc.*

*Disintegrators,
Crushers,
Dry Pans,
Re-Presses* Adapted to
ALL USES.

C. W. RAYMOND & CO., Dayton, Ohio.

EDITORIAL NOTES and CLIPPINGS.

A new brick plant will be erected in the near future at Weatherly, Pa.

The Monroe Brick & Tile Co., has been incorporated at Stroudsburg, Pa.

Donald Bros., are contemplating the erection of a vitrified brick plant at Atchison, Kan.

Good men out of employment can find situations through an "ad." in our "Wanted" columns.

The Blaine Ditch & Tile Co., is the name of a new firm organized at Alliance, Ohio, with a capital stock of \$25,000.

G. C. Stoll, of Grant Park, Ill., writes that they are still operating their brick plant, having had a fine business the past season.

Damage to the amount of \$5,000 was caused by a fire which started in the dryer at the Weber-LaBahn brick plant at Chicago, Ill.

Fire in the kiln shed at Rodgers, McDonald & Co's brick plant at New Lexington, Ohio, caused a loss of several hundred dollars.

Chas. T. Woodruff, formerly connected with the Woodruff Brick Co., of Watertown, N. Y., died at his home in that city on the 3rd inst.

T. J. Radcliffe, of University, N. D., contemplates the purchase of flower pot machinery, etc., for a small plant to be located near his town.

The Oskaloosa Paving Brick Co., of Oskaloosa, Iowa, are contemplating adding the manufacture of enameled brick to their present plant.

H. B. Becker, Herman Renching and others are the incorporators of the Mt. Pleasant Brick & Quarry Co., a new enterprise at St. Louis, Mo.

A subscriber in North Carolina wants to purchase some iron T. rails, and desires that anyone having same for sale address N. C., care this office.

The Peerless Brick Co., of Philadelphia, Pa., will improve their plant; among other things they will build a new engine and boiler house.

The Enterprise Pottery, at Beaver Falls, Pa., has been purchased by Fred. J. Parker, who will at once repair the plant and start it up as soon as possible.

The tile factory at Brighton, Iowa, formerly owned by Andrews Bros. was purchased at sheriff's sale by Wilson & Cresco, who are making arrangements to operate same.

The plant of the McCoy Brick and Tile Co., Augusta, Ga., was destroyed by fire the 23rd ult. The loss is \$10,000, partly covered by insurance. The company will rebuild.

The Sparta Brick & Tile Co., has been incorporated at Sparta, Mich. The incorporators are D. M. Warner, of Sparta, and Henry D. Brown and Jas. L. Davidson of Grand Rapids.

Jas. V. Rose a brick manufacturer of Sharon, Pa., has leased 140 acres of good clay land near Mahaffey, Pa., and contemplates removing his plant to the latter place in the spring.

The immense brick and terra cotta plant of Wm. Galloway, Philadelphia, was entirely destroyed the 30th ult, entailing a loss of \$100,000, which is fully covered by insurance.

The T. B. Townsend Brick & Contracting Co., of Zanesville, Ohio, are in the market for a continuous kiln of 30 M. daily capacity. They want to erect same early the coming spring.

Jno. T. Scherpe, president and treasurer of the Enterprise Brick Co., St. Louis, Mo., committed suicide Nov. 22. His business affairs were in good shape and it is supposed he was driven to the deed by domestic troubles.

Jos. Hermann, a well known brick manufacturer died at his home in St. Joseph, Mich., the 4th inst. Mr. Hermann was closely identified with the building interests of that city and did much to promote its growth.

John Randall, of Mio, Mich., has discovered a fine bed of clay, which he has had tested. The same makes a fine white brick, equal to the Milwaukee product, and Mr. R. is contemplating the establishment of a brick plant.

Peter Frederick Spahr, one of the prominent brick manufacturers of Carlisle, Pa., died at his residence in that city on the 7th. inst., in his 55th. year. Mr. Spahr had been engaged in the manufacture of brick the better part of his life.

A. C. Spahr formerly of Fernbank, Pa., writes that the new plant at Maysville, Ky., which was started last spring, and of which he is president has been running full force all summer. They

are using a Henry Martin machine with a capacity of 40,000. The prospects for next season are very flattering and they are contemplating the purchase of a dry press machine.

The Lehigh (Iowa) Brick & Tile works has closed down, presumably for the winter. It was their purpose to run all winter, if their employes would accept a slight reduction in wages. This the men refused to do, hence the shut down.

The Whippany Brick and Clay Mfg Co., whose main office will be at Plainfield, N. J., has been incorporated, with a capital stock of \$75,000. The plant will be located at Whippany, N. J. Tadelbert Dunham of Plainfield, is interested.

S. K. Fletcher, Indianapolis, reports the following sales this month. A complete heavy steam Quaker brick-making outfit, including engine and boiler at Elwood, Ind; two Quaker machines in Illinois, one in Texas and one in Mississippi.

Willis H. Lawrence, Milton, Pa., advises us that he will erect works in the spring near Birmingham, Ala., to manufacture the Lawrence Patent Clay Fence Post, and thinks the prospects are good for the rapid introduction of the posts in that section.

Clay which is thought to be of a superior quality has been discovered on the property of W. W. Ward, at Whitney, Fla. If expectations are realized a brick plant will be erected. J. H. Curry of Ocala, Fla., is superintending the testing of the clay.

The death of Hon. D. W. Connolly, president of the Scranton, (Pa.) Fire Brick Co., occurred at his home on Main street on the 4th inst. Mr. Connolly was a very active business men and one of the foremost lawyers in Lackawanna county.

T. F. Marder of Winterset, Iowa, in sending subscription says, "I am 57 years old, and have worked in clay since I was big enough to roll a marble, but find the CLAY-WORKER teaches me many things about clay and the best method of handling it in order to obtain the best result."

Meckler & Co., of Callahan, Fla., in a recent letter say that they have considerable trouble in drying their brick. They have a bluish

Continued on Page 568.

Special Bricks.

14x16in x5ft. long; weight 1,265 lbs. Made of Fire Clay, for one of our customers. We illustrate this Solid Block of Clay to show the wide range of work the Wonder Brick Machines are capable of performing.



The Little, Intermediate and Big Wonder Machines issue a **Single Bar** of clay 2x4x8 inches at 25,000, 40,000 and 75,000 per day of ten (10) hours, which are cut by Cunningham's Improved **Single Bar** Automatic Cutter **without swelling or straining** the Bar of Clay, permitting us to make and cut brick from clay of the most tender nature automatically.

The Wallace Mfg. Co.,

See back inside cover page.

FRANKFORT, INDIANA.

Editorial Notes and Clippings.

(Continued from Page 566.)

joint clay, thickly interspersed with red and yellow particles, which has a fine grain and makes a very hard, strong brick, but they crack badly if exposed to sun or wind when first made, and they are thinking of putting in an artificial dryer in order to overcome the difficulty.

S. K. Fletcher, successor to Fletcher & Thomas, Indianapolis, says business in his line is looking up and he feels very much encouraged regarding trade for the coming season. Mr. Fletcher will soon have out a new and attractive catalogue, showing all the latest improved clayworking appliances.

J. C. Stribling, Pendleton, S. C., writes us that he is in the market for a small dry house and an improved brick and tile kiln. Mr. S. says his business has been steadily increasing every year and he has to make the improvements so that he can keep up with the orders. He has a fine bed of clay and wants to manufacture tile and sewer pipe as well as brick.

A Pacific Coast subscriber writes that they want to secure the services of an experienced man to take charge of their plant. They have a clay that is giving them a lot of trouble. It is strong and plastic in character, there being five distinct stratas, which together aggregate nearly 15 feet in thickness. The top and bottom being very light in color, smooth and very strong; the middle stratas are darker, more mixed in their nature, one being joint clay, and the other having some traces of iron. In the lot there is a little hard material that does not readily grind fine, and they think their difficulty comes from the little lumps left in this material. A competent man experienced in handling such clays and capable of managing twenty or thirty men successfully, can secure a good permanent situation by addressing "Sunset," care this office.

Some days since, when in St. Louis, we had the pleasure of examining the four mould machine built by the Ross-Keller Co. This press, like the large six mould press, has the "Triple pressure" movement, and, if we mistake not, will, as soon as known, become one of the most popular machines made in this country. It is simple in construction, open so as to be easy of access for lubrication and adjustment, runs easy, and is one of the most powerful machines

we have ever seen. It makes the finest quality of face brick and is so arranged that Edge and Roman brick, and all kinds of shapes can be made, the change from one form to another being made in a few minutes time. The Ross-Keller Co. built this press to supply the great demand for a smaller machine with their triple pressure movement. If you want a press go and see this. It will pay you.

C. J. Edwards, Sec'y of the Newberg (Ore.) Pressed Brick and Terra Cotta Co., writes: "Enclosed find \$2.00 for one year's subscription to CLAY-WORKER, and please accept our thanks for the sample copy we received. We have thoroughly examined same and feel we cannot get along without it, even here in Oregon. We are at present investigating the subject of drying our brick, which are dry press, in a dryer before putting them in the kiln. Kindly advise us what has been the result of such a process with a very tender or strong clay."

To attain success—true success—you must be enthusiastically interested in your work. The pleasure of its pursuit has always been its best reward.—*Ex.*

THERE are many advertisers who believe that an ad is known by the company it keeps.—*Ex.*

OHIO VALLEY NEWS.

Trade continues good at the brick and sewer pipe works, and they all look for a general advance in the price of clay products early in the new year.

Owing to rises in the Ohio River in November, about 4,000,000 brick and several barges of sewer pipe were sent by water to Southern markets. When the river is navigable, this region has practically a monopoly on the Southern trade on account of this cheap means of transportation.

On Nov. 5th the boiler of Congo Fire Clay Works, located at Empire, Ohio, exploded with terrific force and badly wrecked the plant. The boiler was, by the force of the explosion, carried 150 yards and landed quite a distance from shore in the river. The accident occurring at the noon hour, the works were deserted and no one was injured.

There is some talk of the Markle Fire Clay Works of Toronto, being bought in by several of the large sewer pipe manufacturers of that place. This

works will be offered at Receiver's Sale early in January.

The Sewer Pipe Exchange has rooms in the Goucher Block in Toronto. The officers of this organization are J. W. Roller, president; E. E. Francy, secretary and R. M. Francy treasurer. It has been in existence for two years and is made the headquarters of all the sewer pipe firms in and about Toronto. The rooms are elegantly fitted and furnished, and it is a great resort of the patrons of the members as well as all sewer pipe men from other regions. They have a reading room, card room, billiard room, gymnasium and room for business meetings. These rooms were occupied Nov. 27th and 28th by representatives of firms from all the works in Ohio, West Virginia and Western Pennsylvania, endeavoring to form a combination, and it is claimed the chances for the long sought combination are very good. They adjourned to meet again the second week of December, when several important committees will be ready to report.

Three large brick works in this valley were destroyed by fire inside of forty-eight hours.

The Rocky Side Fire Brick Works, one of the seven large brick plants of the Mack Mfg. Co., of New Cumberland, W. Va., and their best equipped and most modern plant was completely destroyed by fire on the morning of Dec. 1st. Machinery and all is a total loss, which amounts to \$40,000. The insurance was \$18,000. The works will be at once rebuilt of iron, so as to be absolutely fire proof.

On the morning of December 3rd., the upper works of the Park Fire Clay Co., of Freedom, Pa., was totally destroyed, and that same morning the paving brick works of the Brady's Run Fire Clay Co., of New Brighton, Pa., was also completely destroyed.

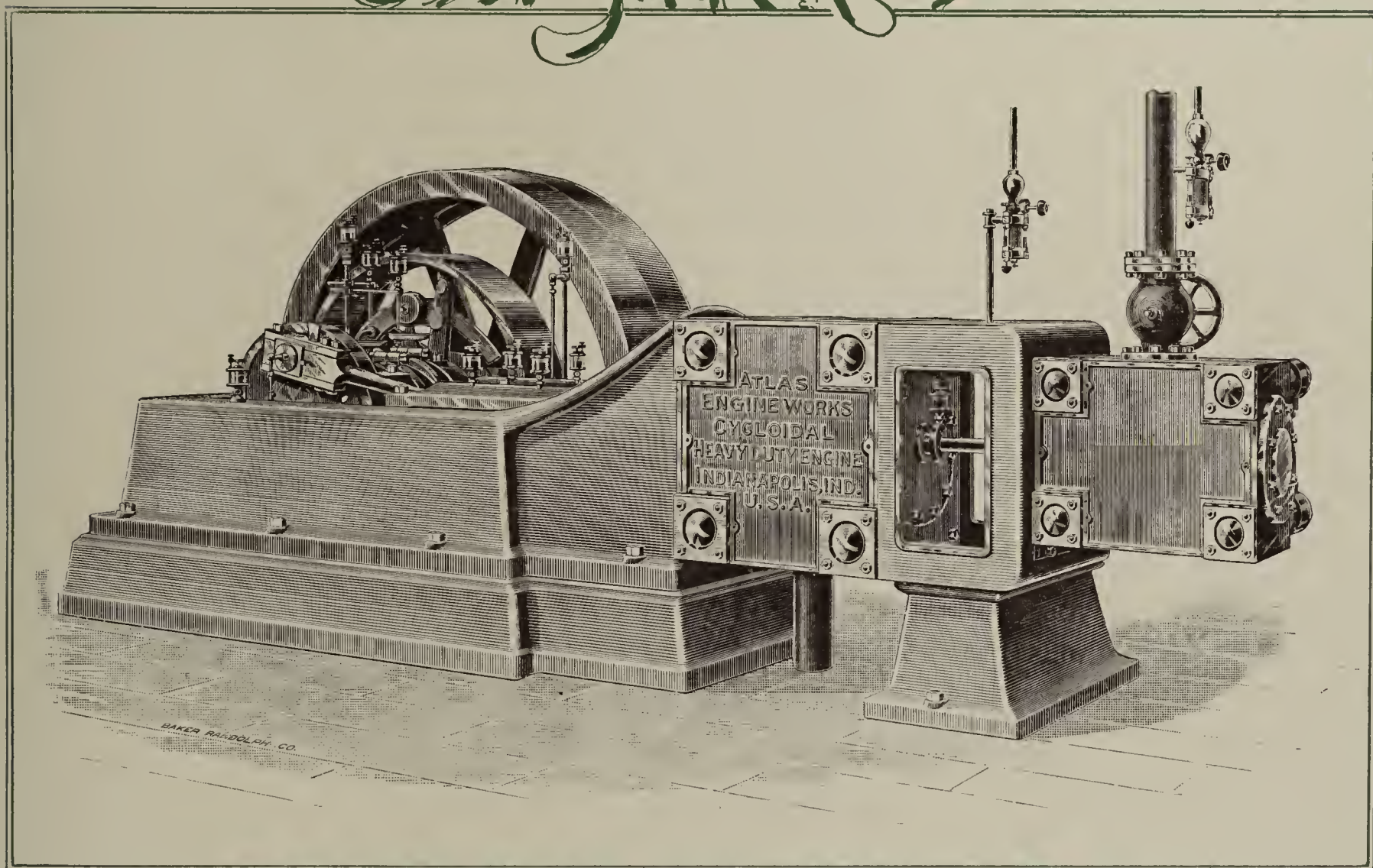
BUCKEYE.

To secure an advantage over a competitor, use twice as much advertising space.—*Ex.*

THE way to fame is like the way to heaven—through much tribulation.—*Sterne.*

For experienced help see the "WANTED, FOR SALE, ETC." columns.

A MAN one time a good thing had
Which people would have prized,
But he never sold a single one,
For he never advertised. —*Exchang*

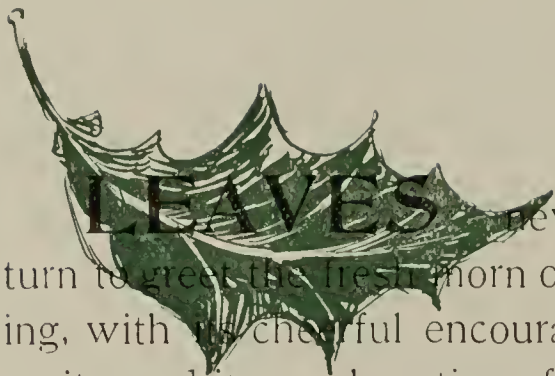
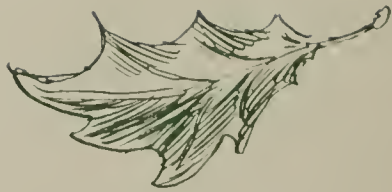


DESIGNERS,
ENGRAVERS,
ELECTROTYPERS,

BAKER-
RANDOLPH
COMPANY.

PRINTERS
BINDERS.
BLANK BOOKS.

INDIANAPOLIS, IND. U.S.A.

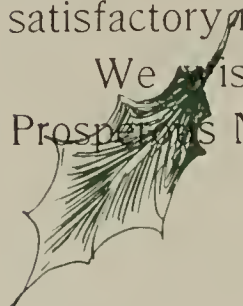


new leaves, myriads of them, will turn to greet the fresh morn of the new year, fast approaching, with its cheerful encouragement, its promises of prosperity, and its proclamation of general amnesty to commercial offenders and forgiveness for past offenses.

Among the new leaves turned over will be many evincing a determination for better and more effective general advertising, and a higher grade of illustrations and catalogue work. Believing in the wisdom and practicability of this resolution, and that the coming year will bring fresh life to every interest, we are led to invite anew the attention of the readers and patrons of THE CLAY WORKER to our complete facilities for the making of illustrations by Half-Tone, Zinc Etching and Wood Engraving, and the printing and binding of fine catalogue work.

If YOU are resolved to turn over a NEW LEAF or keep the one you have turned over in the past, we would gladly assist you in any way and every way with information as to methods, processes and prices that would insure you a satisfactory result.

We wish you a Merry Christmas and a Happy and Prosperous New Year.



RIGHTS AND LIABILITIES UNDER CONDITIONAL SALE OF BRICK PRESS.

A brick press was sold under a contract containing the following stipulations: "It is understood and agreed that the title to and right of possession of said brick press remain vested in the party of the first part absolutely until the whole of the purchase price is fully paid by the party of the second part as herewith provided; and it is further understood and agreed that the accepting of notes by the party of the first part as evidence of said indebtedness shall not be taken as payment of said purchase money until said notes are fully paid." The seller simply agreed to place the press on board cars at Cleveland, Ohio, addressed to the purchaser. The contract was dated May 20, and the press was shipped, at Cleveland, July 16. An action was subsequently brought by the seller to recover the press, he alleging its wrongful detention by the purchaser. A counterclaim was set up by the purchaser, based upon the delay in shipping the press. He sought to prove that immediately after signing the contract he tore down the old buildings, and dismantled his brickyard, so that he was unable to manufacture brick to supply his trade, and fill contracts already made, and thus lost the profit on the same.

The Supreme Court of South Dakota, in passing upon the case (Simpson Brick Press Co. v.

Marshall, 59 Northwestern Reporter 728) holds that, where, in an action, the seller makes a claim against the purchaser for damages for detention, the latter may plead and prove a counterclaim, arising out of the same transaction, against such claim for damages. But damages which are not the direct or natural result of the party's default, but of intervening and exceptional causes, are consequential, and are only recoverable against such party when it is shown that he knew or ought to have known or foreseen that such causes or conditions did or would likely exist, and so may be considered to have contracted with reference to or in contemplation of them. Consequently, assuming the delay in shipping unreasonable, it is held that the purchaser in this case was not entitled to prove, in support of his counterclaim for damages for the delay in shipping, that soon after giving his order for the press he disabled himself from the further manufacture of brick in the old way, or that he did not have on hand sufficient brick to supply his trade during the ensuing sixty days, or to fill contracts for that time, or that he had any contracts to be filled, in the absence of any showing that the seller of the press knew, or ought to have known, that such damages would be necessary or provident or would be made.

The damage to the purchaser of the press was consequential, not flowing directly or immediately from the seller's alleged default, but from changes made by the purchaser himself. They

were neither the direct result of the seller's default, nor, upon the facts shown, were they the result of any conditions known to the seller of the machine when he made the contract. Under these circumstances, such consequential damages were not provable against him. Judgment from the seller is, therefore, by the court affirmed.

FREE! FREE! FREE!

The Latest Novelty in the Book Line
Sent to You Free.

The passenger department of the Cincinnati, Hamilton and Dayton Railroad, have issued one of the quaintest little publications ever put out by a railroad company, under the title of "C., H. & D. Chap Book." It is printed on hand finished paper, with ragged edges, and in two colors, and abounds in odd conceits. While the cost of getting out such a publication is very considerable, we concluded to put it in the hands of everybody along the line, and on receipt of your name and address, together with 5 cents in postage stamps to pay for postage, etc., same will be mailed to you free.

This book will contain a complete story each month, written by the best authors of the day, and will prove an acceptable addition to the home and fireside.

The supply of the first issue is limited, and if you desire a copy, send in your name and address, enclosing stamps at once to

C., H. & D. Chap Book Department,
Cincinnati, Hamilton & Dayton Railroad,
Carew Building, Cincinnati, Ohio.

FLOWER POT MACHINERY.

The day for hand-made Flower Pots has gone by. Better and cheaper Pots are now made with our machinery. No expert workmen required. Capacity from 1,000 to 6,000 seven to two inch Pots in ten hours.

Send for circular giving full particulars.

THE ROCKWOOD MFG. CO.,

We also make a cheap
but effective CLAY GRINDER.

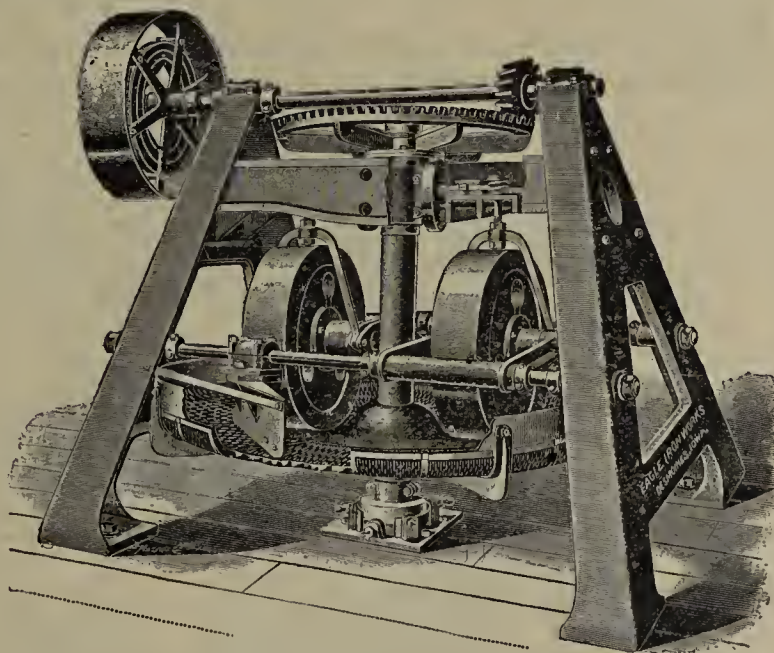
INDIANAPOLIS, IND.

OUR NEW 9 Ft. IRON FRAME DRY PAN

SEND for catalogue and read up on our patented features of this machine. Our motto in its construction and design is

"NOT HOW CHEAP.
BUT HOW GOOD."

EAGLE IRON WORKS, Des Moines, Ia.



SOLVED AT LAST. The problem of drying brick on the **DOWNDRAFT** principle brought to perfection; results are wonderful. For circular containing full information, address,

MINERVA DRYER CO.,

Minerva, Ohio.

MACHINERY FOR SALE

OUR New Patent Disintegrators.

One 24-inch Disintegrator.

One 30-inch Disintegrator.

One 36-inch Disintegrator.

One 40-inch Disintegrator.

One 48-inch Disintegrator.

One 60-inch Disintegrator.

We also have two disintegrators of different makes.

One Shale Breaker.

One 6x6 upright engine.

One 6x8 upright engine.

One pair 14x14-inch Marine Engines.

One pair 16x20-inch Marine Engines.

One 10x10 horizontal self-condensing engine.

One 10x16 slide-valve engine.

One 12x24 slide-valve engine.

One 16x30 slide-valve engine.

One 18x30 riding cut-off engine.

Two pair mining engines.

One Duplex Steam Pump, 6-inch suction, 5-inch discharge.

One Duplex Steam Pump, 5-inch suction, 4-inch discharge.

One double-acting steam pump, 4-inch suction 3-inch discharge.

One double-acting steam pump, 3-inch suction 2-inch discharge.

Also big lot of smaller pumps.

One Gates rock crusher.

Two builder's hoisting engines, with boilers.

One portable engine and boiler on wheels.

Eight stationary boilers, different sizes.

Two hydraulic elevators.

One Steam elevator.

A big lot of large pipe, valves, etc; also, shafting, pulleys, hangers, belting and supplies of every description.

For particulars, prices, etc., apply to

SCHOELLHORN-ALBRECHT MACHINE CO.,

1014 d 609 and 610 North Levee, St. Louis, Mo.

FOR SALE, WANTED, ETC.

Advertising rates in this column 25 cents a line, or 4 cent a word, each. insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad. inserted for less than \$1.00.

WANTED. A lot of sixteen pound T rails. Address, quoting price. N. CAROLINA, Care of "Clay-Worker." 12 1 d.

PARTIES wishing services of expert in dry press process to superintend the erection of new or the reconstruction of old works, at a fair remuneration, please address **PRESS,** 8 tf d Care "Clay Worker."

WANTED. An Eastern agent to sell Machinery for complete dry press brick plants. Address, Box 30, Care "Clay-Worker." 12 1 d.

WANTED. To buy a stamp press for making flower pots. Address, MISSOULA BRICK & SEWER PIPE CO., Missoula, Mont. 12 1 d

FOR SALE. One 7 ft. Eagle Iron Works Dry Pan. One F. D. Cummer Son & Co. Clay Dryer, No. 3. Both in good order. Only been in use a few months. **MESSENGER & RANEY,** Fairfield, Iowa. 12 3 d

FOR SALE. Mansfield Pressed Brick Co. Plant. 19 acres of land. Good clay, Machinery, Dryer and four Kilns. Best location in Ohio. Will be sold at a bargain. **J. P. RUMMEL, Receiver,** Mansfield, Ohio. 12 1 d

HERE IS YOUR BARGAIN. A "Lion" style Dry Press, practically as good as new, at \$2,000 less than factory price. Address, **F. A. H.,** P. O. Box 402, St. Louis, Mo. 12 1 p

FOR SALE. One Brewer Tile Machine. Also entire tilemakers outfit at Melvin, Ill., which may be operated there or removed therefrom. **EDGAR M. HEAFER,** Bloomington, Ill. 12 tf d

FOR SALE CHEAP. Complete Brickyard outfit, consisting of a good four-mold "Simpson" Brick Press; Four-mould Andrus Brick Press, comparatively new; two two-mould beater, stiff mud machines, disintegrator; pulley wheels; line shafts, and all necessary equipments for a first-class brickyard. Reason for selling, out of clay. Address, **THAD. SMITH,** No. 4029 Pine St., St. Louis, Mo. 12 4 d

FOR SALE. 35 pieces of flanged spiral riveted 5-inch pipe with returns, double gate valve, etc. A complete dryer. Price \$100 00. 1 Potts Disintegrator, \$90.00; Martin machine, \$75.00; 26 feet 2 1/4 in. shafting with 3 pulleys, 42, 30 and 42, and 3 post hangers, \$50.00. Address, **J. H. KENNEDY,** Columbus, Miss. 11 1 lp m

WANTED SITUATION. By experienced man. Can take entire charge of plant. Thoroughly acquainted with the manufacture of fire, red, and other clay brick; tile blocks, pipe, building, paving and other goods. Up or down draft an continuous kilns, and the building or refitting of old plants. Can give the best of reference. Address, Box 29, Care of "Clay-Worker." 12 1 p

FOR SALE. A brick and tile works, containing 10 1/2 acres of land. Clay suitable for pavers, front and common brick, and tile. 60 h.p. engine, 80 h. p. hoiler, line shafting, elevator, one stiff mud machine, 25,000 capacity; one dry press. Hacking houses, 300,000 capacity. One Morrison Kiln, one Pike Kiln. Two five room houses, barn and other buildings. Everything complete. Horses and mules, carts, wagons. Works in good running order. Will be sold at a bargain, if sold at once. Its a good paying business, suitable for two, one builder and contractor, and one to run works. For any information, write Box 187, 12 3 c Shreveport, La.

W. S. Ravenscroft,

LOCATES all kinds of clays. Tests, analyses, and general information furnished. Factories planned and erected at lowest cost.

You have clay suitable for huff brick right at your door and do not know it, I will show you where it is. Write me.

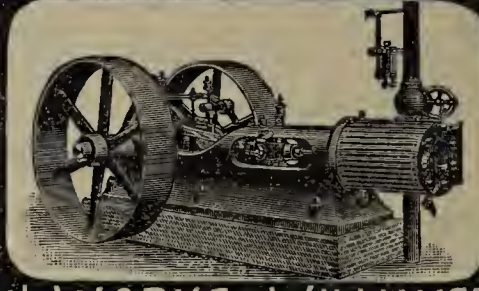
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Complete Steam Power Plants.

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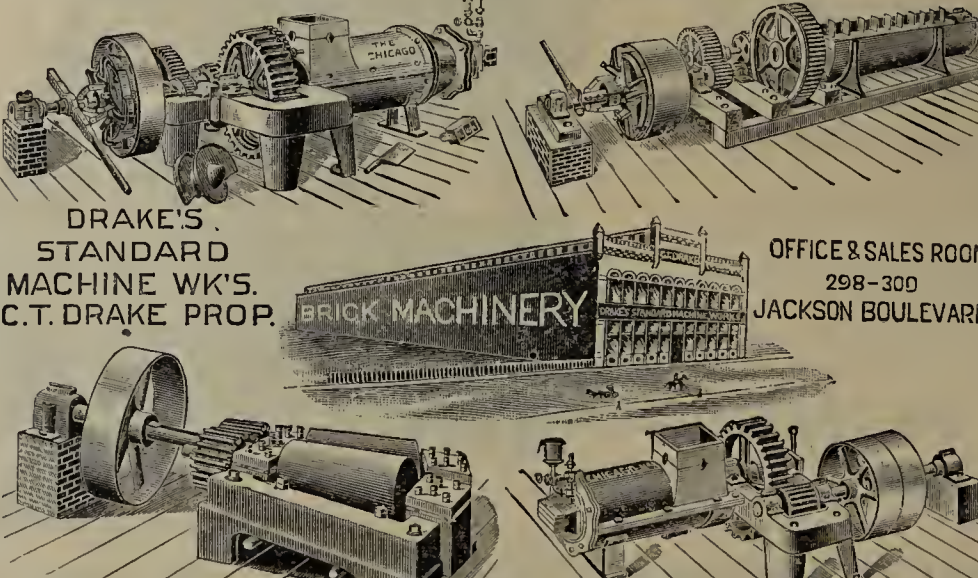
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BRICK MACHINERY

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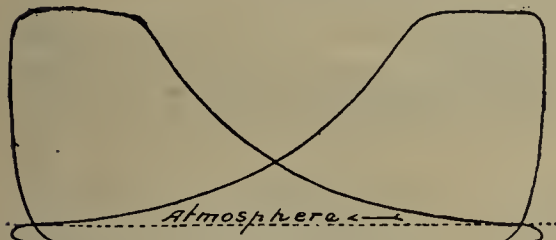
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DEAR SIR—I refer you to the indicator diagrams, showing a vacuum of 5-5.5 pds. You can easily see that the fans will create a vacuum.

The vacuum pump was not employed—neither did any cooling water assist to draw the exhaust steam through the pipes.

You may refer to me for full explanation.

I am yours very truly,

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DEAR SIR:

The above shows 5 lbs of vacuum, and more may be obtained in winter. Mr. Raabe also reports that it cost 16 h. p. to drive the fans, but the 5 lbs of vacuum, due to their use, aided the 16 in. di. "Corliss" engine to the extent of 16.65 h. p., and the 5½ lbs 18.33 h. p.

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S. G. PHILLIPS.

Rahway, N. J.

"And Met the Requirements in Every Case."

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DEAR SIR:—Replying to your favor of recent date, it gives us pleasure to state that all of the Dryers erected by us under your patents for customers have given satisfaction and met the requirements in every case. The bricks have been dried uniformly without cracks. Yours respectfully,

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The Effective Utilization Of Exhaust Steam

A Specialty.

"I think you have the Dryer the brick people are looking for."—Jno. C. Gibson, superintendent of the Fulton Brick Works, Richmond, Va., thus writes after having their Steam Pipe Dryer reinforced to dry in one-fourth of the time formerly required, by applying the fans inside; and the manager writes, also recently: "Not over 12 hours to make them very dry—the best by great odds of any in the market—the writer has looked the matter of Dryers up very fully, and been to see about all of any importance."

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J. A. BUCK'S NEW CHAMPION BRICK MOULD

SANDING MACHINE.

BUCK WINS.

Buck's Title to Patent No. 301,087 sustained by the U. S. Circuit Court, Nov. 7, 1894, in Newton vs. Rider.

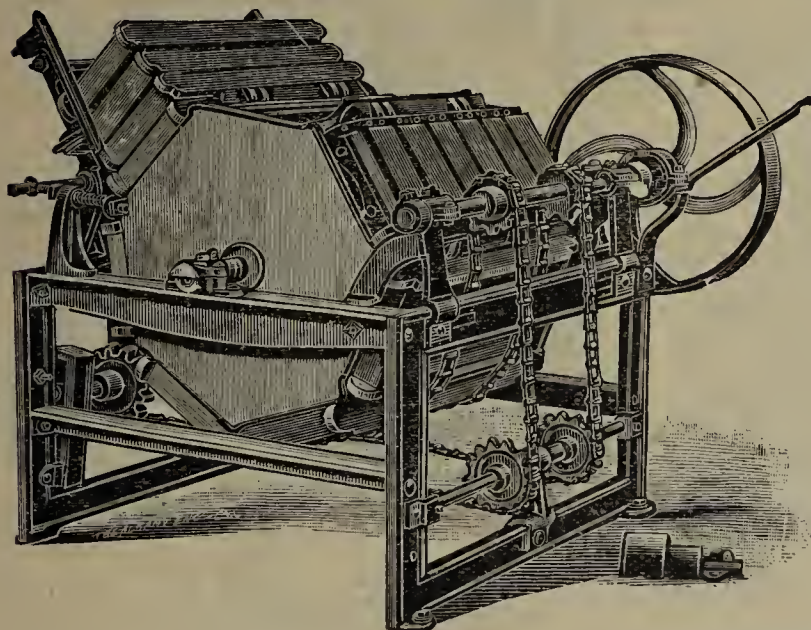
Purchasers of Buck's machines cannot be sued by Newton.

All other patents formerly owned by the Newtons were sold at a Receiver's sale and are now owned by J. A. Buck, who is also the only party authorized to use a spring-controlled feed-rack.

Those who purchase Champion machines from any party other than J. A. Buck render themselves liable to a suit for infringement and damages.

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Mention the Clay-Worker.]



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FOR SALE. Chambers C. C. D. Brick Machine with crusher; good order. LAW & DEVENY, Chester, Pa.

ENAMEL GLAZED BRICKS. Foreman and glaze and color maker seeks employment. Best hard once burn, white and all colors; also majollicas.

TERRA COTTA AND FAIENCE (Architectural). Foreman, draughtsman and glaze and color maker, seeks employment; 20 years practical experience. J. P. NORMAN, 4155 Eaglefield St., Philadelphia, Pa.

FOR SALE. "Little Wonder" brick machine, guaranteed capacity 20,000 per diem; at a big bargain. Apply to BORCHARDT & FENDIG, Brunswick Ga.

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FOR SALE. Several Miller hand presses for repressing Standard press brick. All in good working order. Address W. B. HARRIS & BRO., Zanesville, Ohio.

FOR SALE. Brick yard at St. Johnsville, N. Y. Large bank of clay; Pallet yard; fifty-horsepower engine. Sold on easy terms; nearest yard thirty miles; have lots of business; reasons for selling, poor health. Address Box 1.

FOR SALE. At easy terms, brick plant in a prosperous town of Iowa, located on four railroads. Good clay and good demand. Machinery in good shape. State will use 1,000,000 brick next season. Address, CEDAR, 11 tf d Care "Clay Worker."

WANTED. To purchase a dry press of the Whittaker make second-hand, in good repair; also dry pan. Address L. C. BARNES, Bloomington, Ill.

ENAMELER. I will undertake to enamel in white or colors, "not slip and glaze," any bricks made of clay. Proof given without charge. Only reliable firms will be treated with by 10 3 cm Box 25, Care Clay-Worker.

WANTED. Situation January 1st, as superintendent by a practical brickmaker, who has put in a number of large plants, understand the dry press, stiff and soft mud process. Can give the best of references as to character, integrity and ability, would take \$1,000 stock in a No. 1 Company. Address, RELIABLE, 11 2 2 p Care Clay-Worker.

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FOR SALE. One No. 7 Tile Machine with dies from 3 to 8 in. and endless belt cut-off table. Machine is new and in Chicago. Write for price. NOLAN, MADDEN & Co., E. D. Pugh, Receiver, Rushville, Ind.

SITUATION WANTED. By a man who is thoroughly posted in the manufacture of front and ornamental and common brick by either the dry clay or plastic clay methods. Have held the position as superintendent and foreman of three of the largest brick works in N. Y. State. Address Box 24, Care Clay-Worker

PAVING BRICK WORKS FOR SALE. The controlling stock in The Logan Granite Clay Co., Logan, Ohio, (Hocking Valley), manufacturers of the best paving brick in the West; clays suitable for fire brick and proofing and sewer pipe. First-class machinery, Iron Clad Dryer and cars. Owners of this stock have other business, requiring all their attention. An established growing business at a bargain.

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N. E. Cor. 8th and Plumb Sts.,
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105 c

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A PARTY with \$35,000 cash wishes to meet with some one with like amount to engage in the manufacture of roofing tile. Has several new patents on roofing tile which will be put into the firm without charge, and has an option on suitable clay lands for the purpose, for a nominal price, situated in Illinois near Chicago. Would like to associate with a good business man to attend to office, but would prefer a practical clay man, as advertiser could attend to office himself.

103 c

Box 21 Care Clay-Worker.

SECOND-HAND MACHINERY. We offer the following second-hand machinery cheap for cash:

One Wallace Brick and Tile Machine.
One Ohio Brick and Tile Machine.
One Acme Brick and Tile Machine.
One Hoosier Soft Mud Brick Machine.
One Hoosier Auger Brick and Tile Machine.
One Brewer Brick and Tile Machine.
One Bucyrus Crusher.
One Hoosier Crusher.
One Cunningham Automatic Cutting Table, in good order.
One Adrian Automatic Cutting Table, in good order.
THE DECATUR LEADER MFG. CO.
8 tf d Decatur, Ill.

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WILL SELL FOR THE

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For tickets, rates, time and general information, call on any ticket agent of the above route, or address

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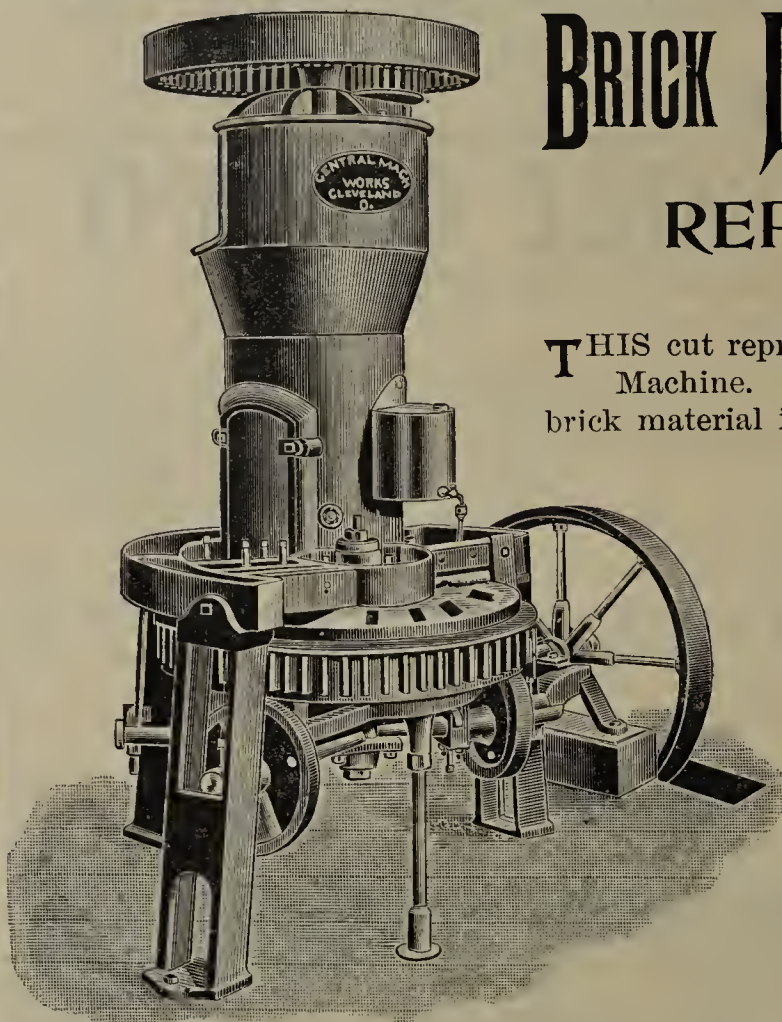
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Send for Photo.

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THIS cut represents our Stiff Mud Brick Machine. It will work any kind of brick material including fire clay, shale or common clay right from bank without the use of a pug mill. Each brick is pressed separately and can be haked 7 or 8 high, or repressed right from machine.

Over 500 in operation.

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THE "AJAX" BRICK MACHINE

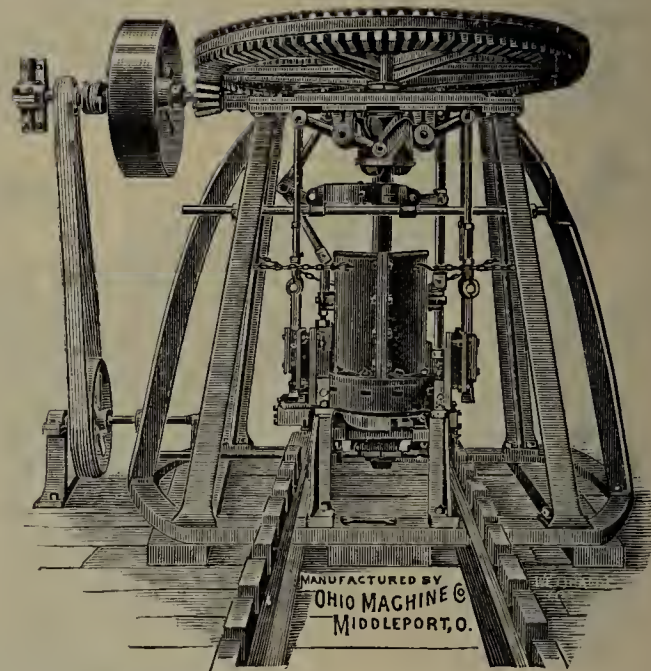
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Under the very Latest Improved Grant-Murray Patent.

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We manufacture the Grant & Murray Patent Repress
Brick Machine, pressing 4 brick each revolution
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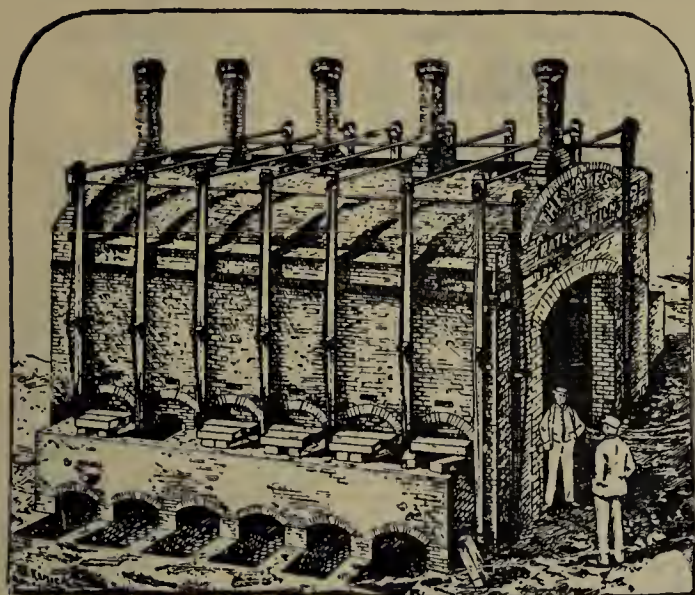
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Don't Fail to Get Our Descriptive Circular and References.

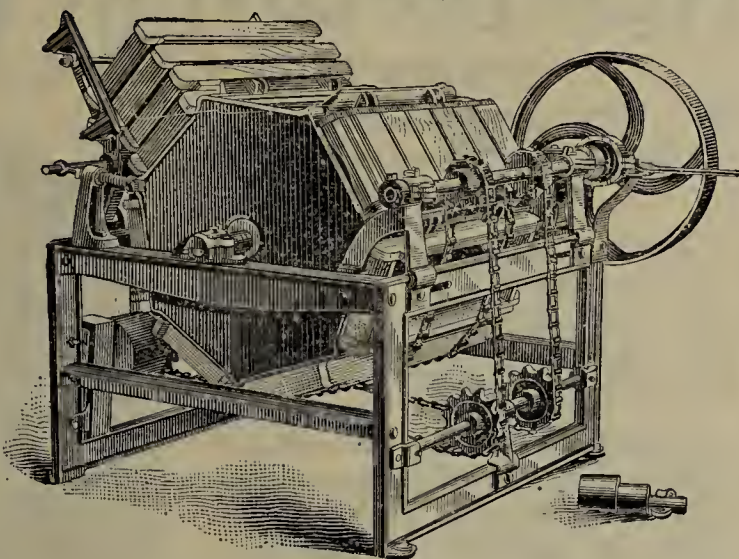
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SANDING MACHINES.

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The suit brought against one of my purchasers by Buck has been abandoned, and suits are now being brought by me against users of Buck Machines as infringers of my patents.

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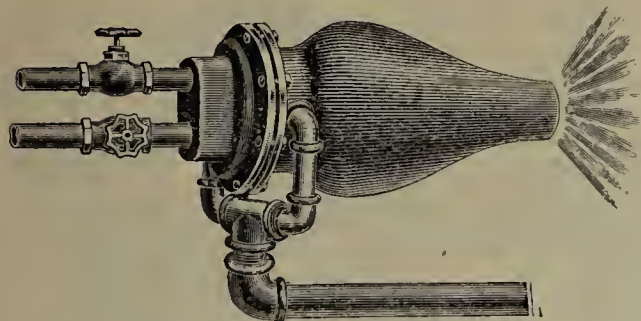
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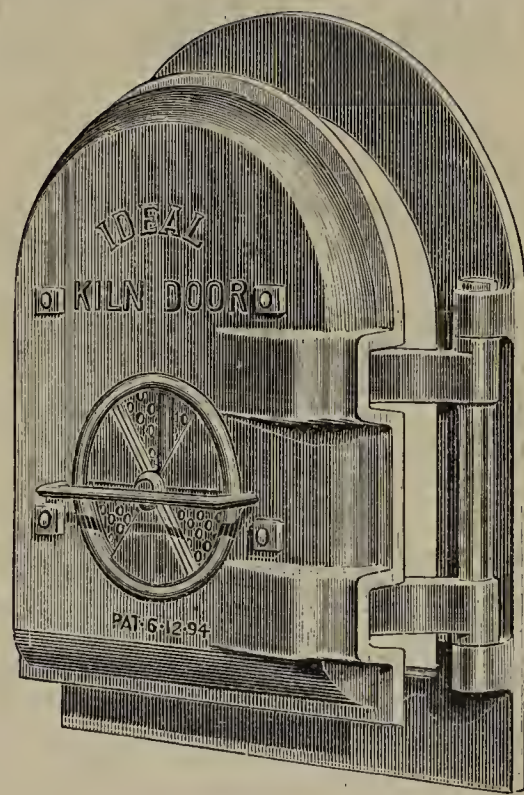
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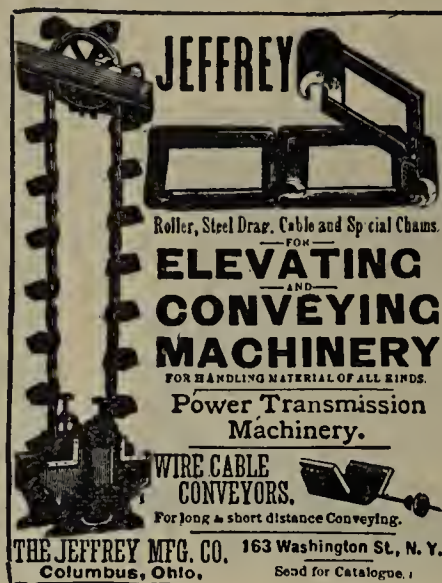
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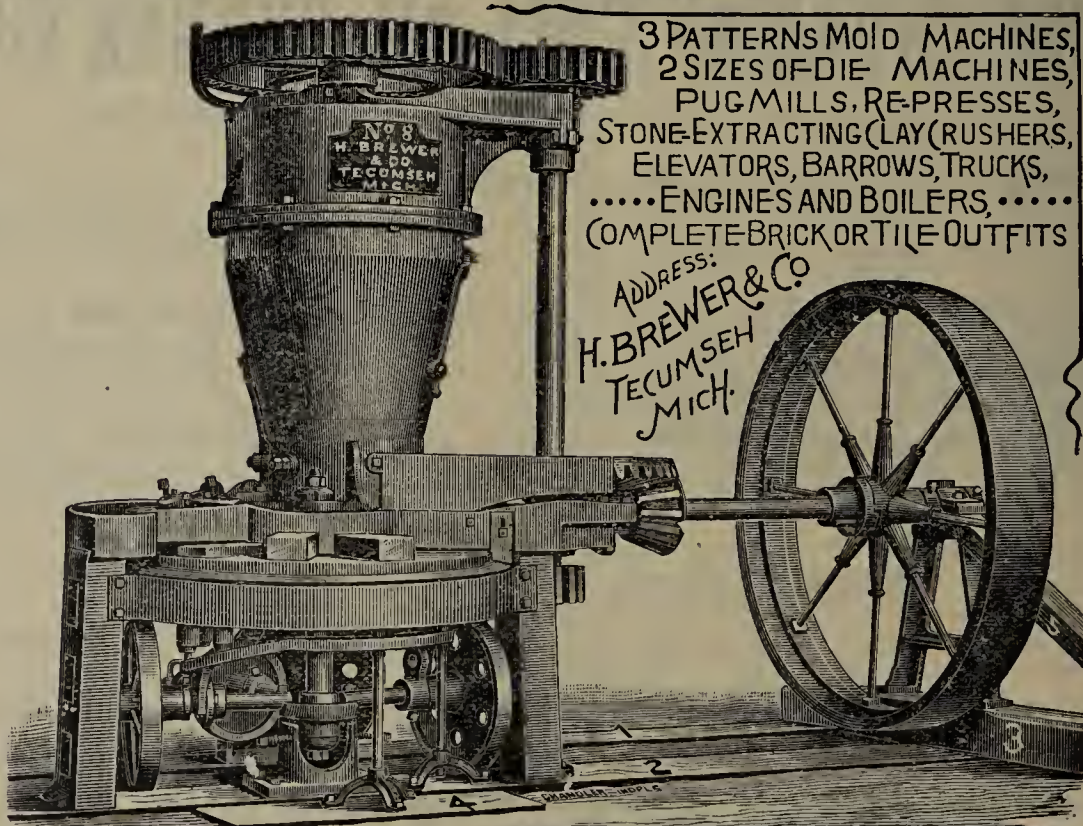
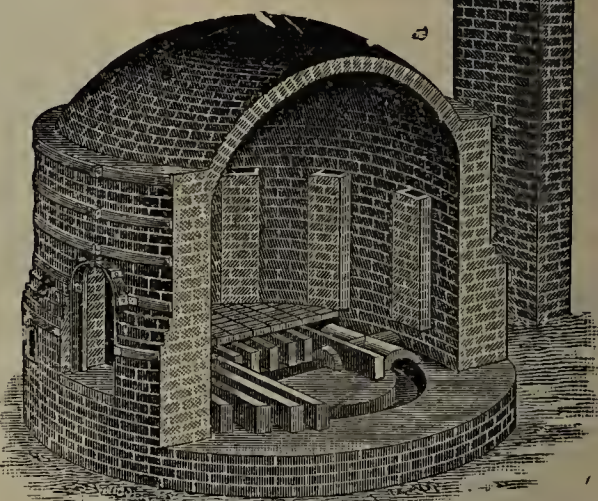
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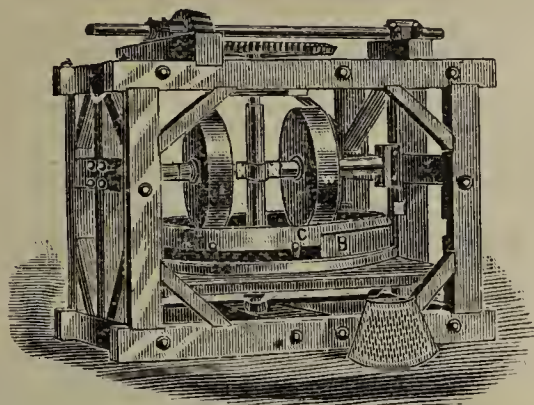
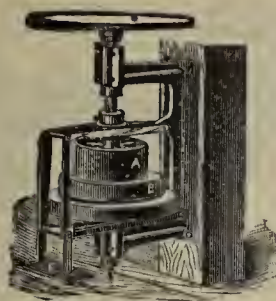
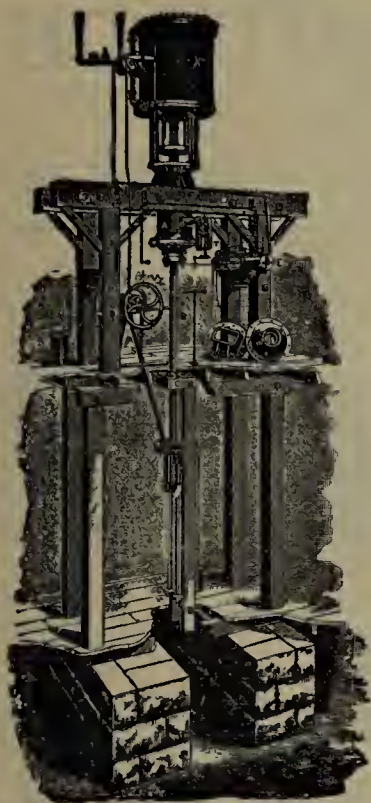
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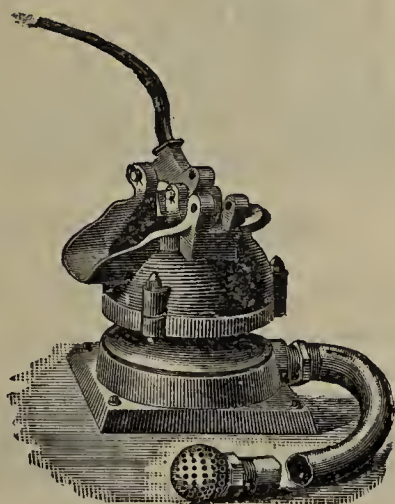
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These Pumps are simple, durable and low-priced.

A large capacity and easy working pump for **Brick Yards, Water Works, Sewer Contractors, Foundation Builders, Miners, Quarries** or wherever it is desired to raise a *large quantity* of water by *Hand-power*. The pump has large valves (*accessible by hand*) and will pump water containing *sand, gravel, mud, sewage matter, etc.*, without *choking* or any *perceptible wear*.

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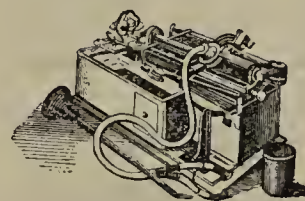
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Kiln Building & Boiler Setting.

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Cement, Lime, Plaster, Stoneware, Etc.

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| Evansville Express..... | *11:20 pm | * 3:35 am |
| St. Louis Express..... | *11:20 pm | * 4:40 am |

Trains connect at Terre Haute for E. and T. H. points. Evansville sleeper on night train. Sleeping and parlor cars are run on through trains Dining cars on trains 20 and 21.

The F. F. V. Vestibule Limited via the Chesapeake & Ohio R'y, is the only Solid train with through Dining Car between New York, Philadelphia, Baltimore, Washington, Cincinnati and the West. Lighted with Electricity. Heated with Steam.

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We have a large bank of a superior quality of SLIP CLAY. Price very low by barrel or carload. Best of reference as to quality. Address

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N. Y. State Drain Tile and Pipe Works

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Potter's Chemist,

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GIVES special attention to the analyzing of clays, flint spar and all materials necessary to the manufacture of pottery, sanitary ware and brick. Clay beds examined and if necessary experiments made on the spot, showing the adaptation of the clay. After twenty-five years of experience as a manufacturer and potter's chemist, Wm. Clayton has now given up the whole of his time to analytical chemistry as it is applied to clays, etc., their compounding and manipulation and practical use. Mr. Clayton gives opinions and practical advice to those intending to build and operate potteries and can furnish bodies, glazes, etc., etc. Particulars on application.

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Established in 1820.

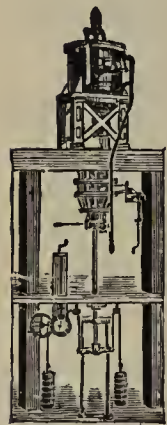
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Making From 2 to 30-Inch
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Pipe, Brick, Tile, Copping,
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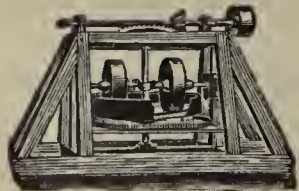
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Every Variety of Iron and Brass Castings
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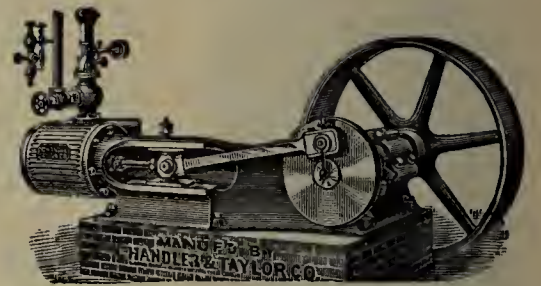
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For handling Coal, Sand, Clay, Grain, Tan-Bark,
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past two years. It takes about 90 tons of clay per day from our dry pan and distributes it
through our cellar. Gives good satisfaction. Yours Truly, IOWA PIPE & TILE CO.

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Steam and Horsepower.

THE BEST MACHINE IN
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The Horsepower Machine
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Machine, 25,000 to 30,000.

These machines are sold on
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Brick moulds for hand and
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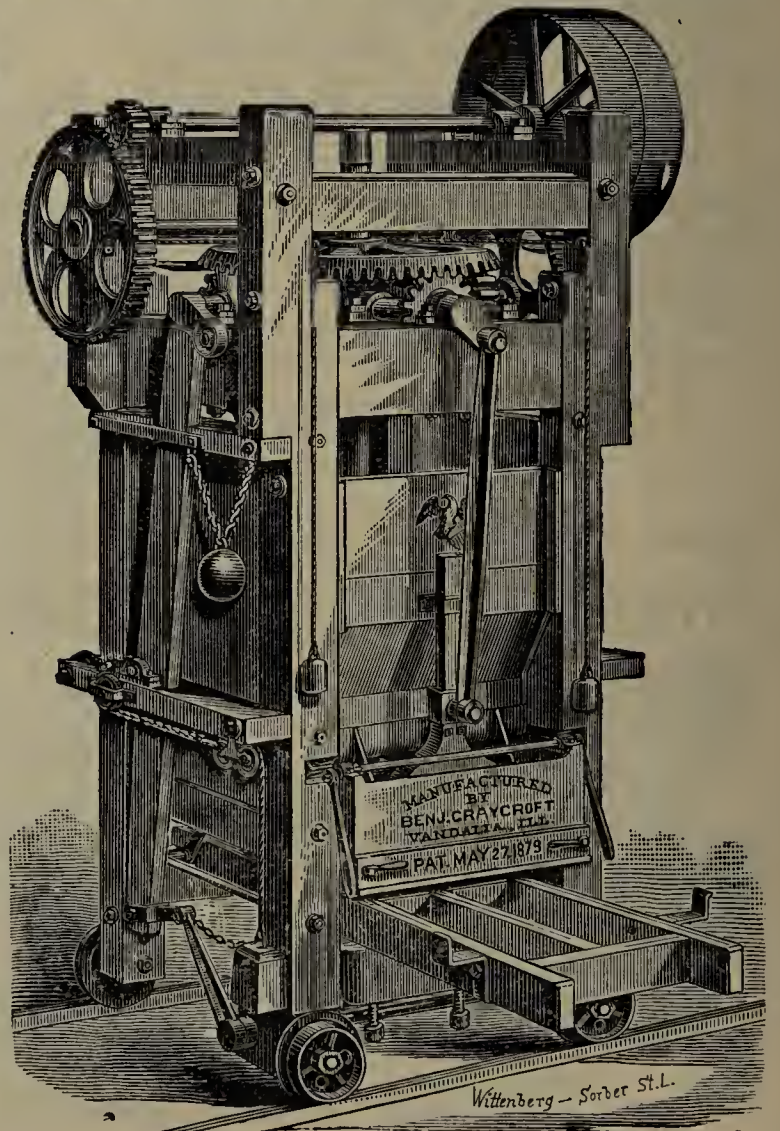
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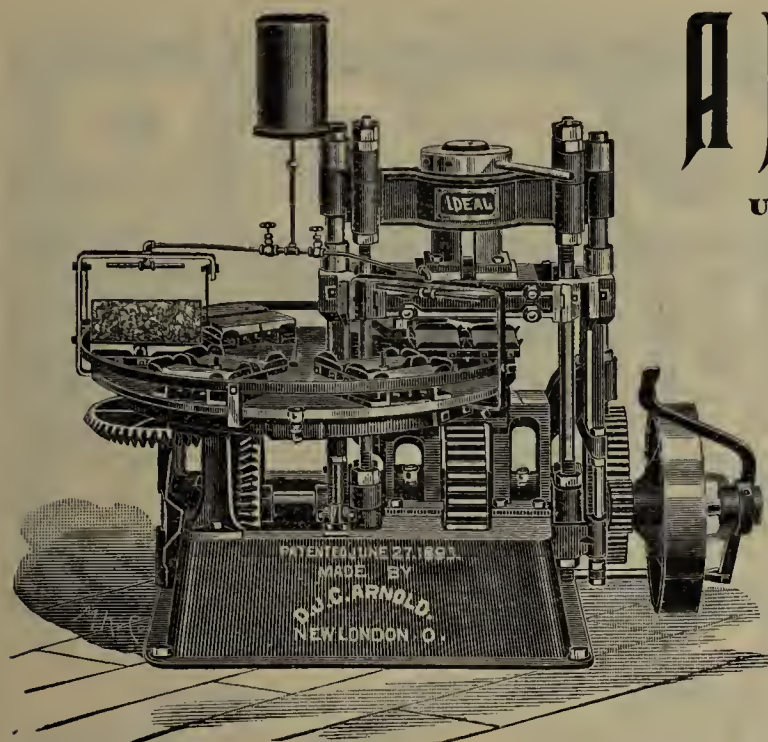
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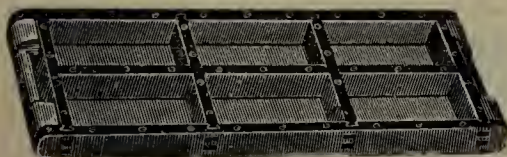


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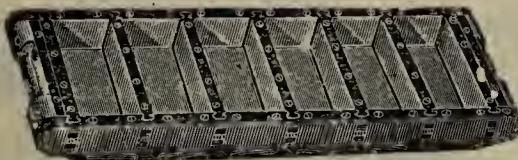
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3 Brick Hand Mold.



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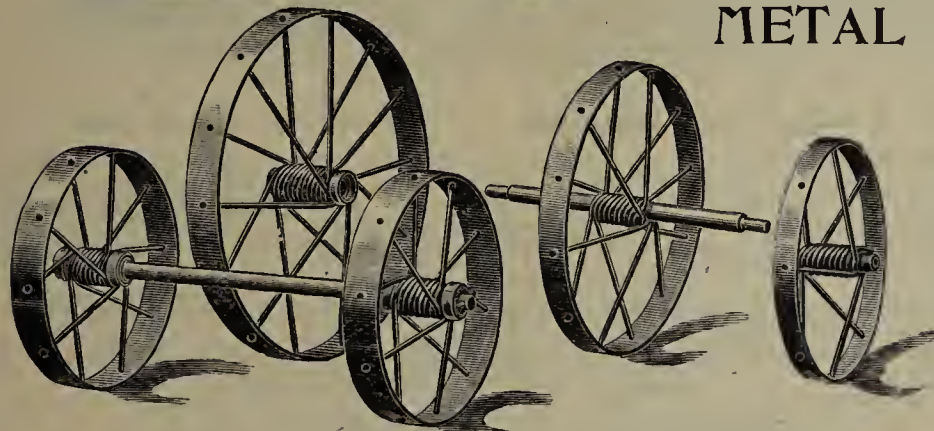
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Not affected by
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About the same
weight of wooden
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Brick & Tile Yards.

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A Full Line of Brick and Tile Yard Supplies.

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FOR A CHANGE IN LOCATION?

If you are not satisfied with your present site, or if you are not doing quite as well as you would like to, why not consider the advantages of a location on the Illinois Central R. R. or the Yazoo & Mississippi Valley R. R.? These roads run through South Dakota, Minnesota, Iowa, Wisconsin, Illinois, Indiana, Kentucky, Tennessee, Mississippi and Louisiana, and possess

FINE SITES FOR NEW MILLS
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INTELLIGENT HELP OF ALL KINDS
MANY KINDS OF RAW MATERIAL

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100 Cities and Towns **WANTING INDUSTRIES**

This will give you the population, city and county debt, death rate, assessed valuation of property, tax rate, annual shipments, raw materials, industries, desired, etc.

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Between
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The Favorite and Best Line

With DINING CAR between

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SLIP CLAY { For Glazing of Pottery } WORKS

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The Baltimore and Ohio Southwestern Railway has arranged a series of Home-Seekers' excursions to points in Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi and Louisiana at one fare for the round trip.

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Tickets will be good for twenty days, with stop-over privileges in State to which ticket is sold.

A splendid opportunity to visit the Valley of Virginia and other points South.

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LOCAL TIME TABLE

In Effect Jan. 1, 1894,
Solid Train Between
Sandusky and Peoria

—AND—
INDIANAPOLIS and
MICHIGAN CITY

Direct connections to and from all points in the United States and Canada. Trains arrive and depart from the Indianapolis Union Station as follows:

| DEPART. | |
|------------------------|------------|
| No. 20 Passenger..... | 7:05 a. m. |
| *No. 22 Passenger..... | 1:20 p. m. |
| No. 24 Passenger..... | 7:00 p. m. |

| ARRIVE. | |
|------------------------|-------------|
| *No. 21 Passenger..... | 10:30 a. m. |
| No. 23 Passenger..... | 2:50 p. m. |
| No. 25 Passenger..... | 6:20 p. m. |

Trains not marked run daily except Sunday
*daily, †daily except Saturday.

No. 12, via Tipton, arrives at Bloomington at 9:32 p. m., making direct connection with the C. & A. fast train, arriving in Kansas City at 8:55 next morning, connecting direct at Kansas City for Denver, San Francisco and all points west. Free reclining chair cars between Tipton and Missouri river for all passengers. Nos. 9, 10, 12 and 13 connect at Tipton with main line trains for Sandusky, Peoria and all points east and west.

For time tables or any other general information call on any agent of Lake Erie & Western or Ft. W. C. & L. railroads, or address C. F. DALY,

H. C. PARKER,

General Pass Agt

Traffic Manager, Indianapolis, Ind.

TAKE THE
BIG 4
TO
ST. LOUIS

VICTOR BICYCLES

OVERMAN WHEEL CO.



BOSTON NEW YORK PHILADELPHIA CHICAGO DETROIT DENVER

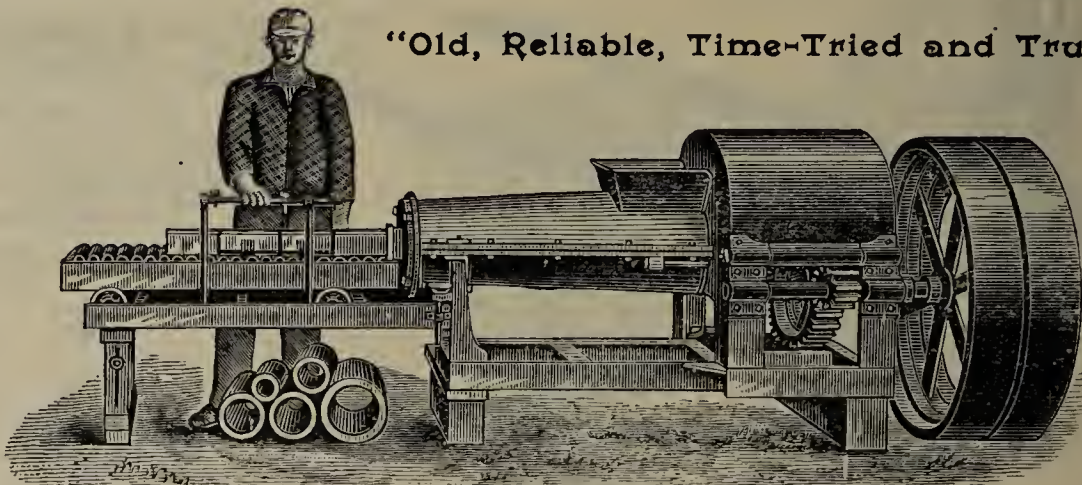
PACIFIC COAST:
SAN FRANCISCO LOS ANGELES PORTLAND

Victor Bicycles have more improvements and give better satisfaction than any other make.

A. NICOLI, ENGRAVER ON WOOD.
12 S. MERIDIAN ST. TELEPHONE 655. INDIANAPOLIS IND.

KELLS & SON'S IMPROVED BRICK AND TILE MACHINES.

"Old, Reliable, Time-Tried and True."



P. H. Kells, the Original Inventor of the Auger Machine.

This machine works clay direct from the bank for both brick and tile. Bricks are taken direct from the machine to the hacks and need no repressing for the finest fronts. It has but one set of gears and makes all kinds of brick and different sizes of tile by changing dies. For strength and durability we except none. We challenge the world to produce a combined machine that will do the same amount of work with the same amount of power. Patented June 22nd, 1880; and February 12, 1884. We manufacture Crushers, Trucks and Barrows. End-cut, side-cut paving brick and Board Delivery—make perfect edges and corners.

We have had Twenty-seven Years' Experience in the Manufacture of Brick and Tile Machines.

We have made an improvement on our No. 1 Machine by which we can make tile from 3 inches up to 12 inches and on our No. 2 Machine we can make tile from 2½ up to 10 inches.

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H. C. BAIRD & SON,
PARKHILL, ONTARIO,

Sole Manufacturers for the Dominion of Canada of the above machines, also makers of the NEW QUAKER BRICK MACHINE.

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VIA THE

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LOUISVILLE, NEW ALBANY & CHICAGO RY.

THE SHORT LINE TO
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Milwaukee, St. Paul, Minneapolis,
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AND ALL POINTS IN

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The only linerunning Dining Cars between Indi-
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Magnificent Pullman Sleeping and Parlor Cars.
For rates, maps, time tables, etc., apply to

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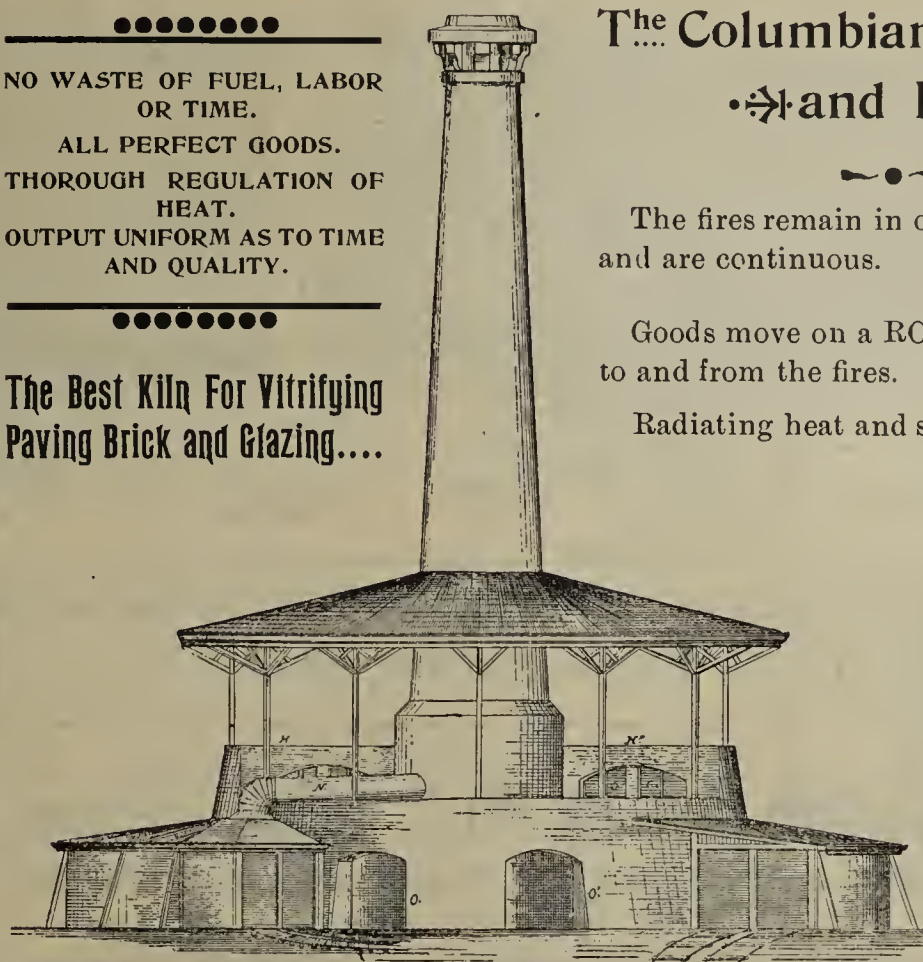
FRANK J. REED, G. P. A., Chicago.

NEW ..AND.. NOVEL,

NO WASTE OF FUEL, LABOR
OR TIME.

ALL PERFECT GOODS.
THOROUGH REGULATION OF
HEAT.
OUTPUT UNIFORM AS TO TIME
AND QUALITY.

The Best Kiln For Vitriifying
Paving Brick and Glazing....



COLUMBIAN POTTERY & BRICK KILN CO.,

Dexter B'ld'g., 84 Adams St.,
CHICAGO, ILL.The Columbian Pottery
and Brick Kiln.

The fires remain in one division ONLY
and are continuous.

Goods move on a ROTATING FLOOR
to and from the fires.

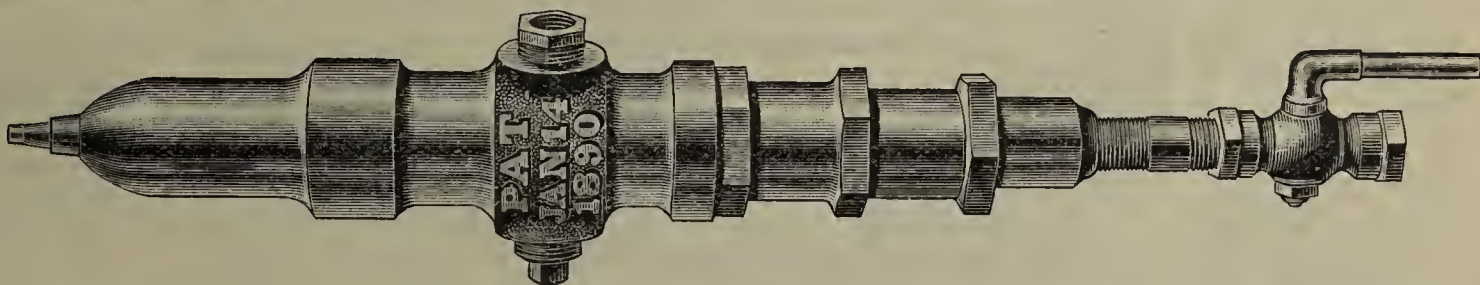
Radiating heat and spare heat are used
for drying and
heating air for
combustion.

A perfect and
reliable factory
Winter and Sum-
mer.

Kiln and dryer
combined.

Full informa-
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GRAVES'



PATENT (ADJUSTABLE) OIL BURNER

Office Waters Pierce Oil Company.

HYDRAULIC PRESS BRICK CO., ST. LOUIS, July 21st, 1894.
CITY.

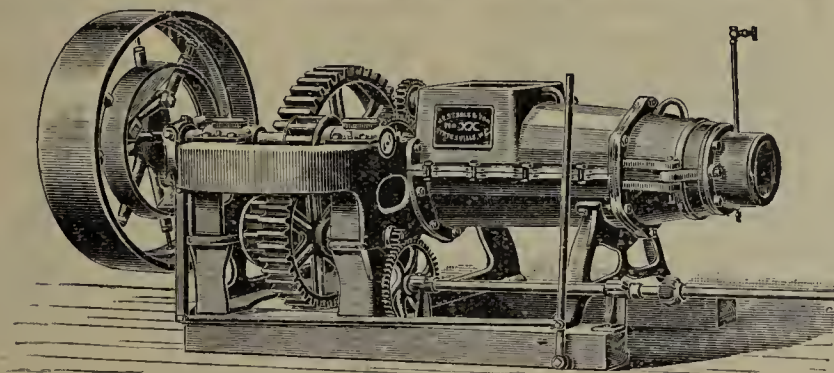
GENTLEMEN:—Thinking you would like to know, we advise you
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a saving of about 16 per cent. in consumption of fuel oil over other
burners we have been using and experimenting with. We will take
pleasure in saying a good word for it whenever opportunity permits.
Yours truly, (Signed) A. M. FINLAY, Vice-President.

Used by Hydraulic Press Brick Companies at Findlay, O.,
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For particulars write

HYDRAULIC PRESS BRICK CO.,

The Best and Most Economical Burner in the Market. ST. LOUIS, MO.



The New South XX.

your X Machine with a 6 h. p. engine from 14,000 to 17,000 bricks per day, as one could wish.

[Mention the CLAY-WORKER.]

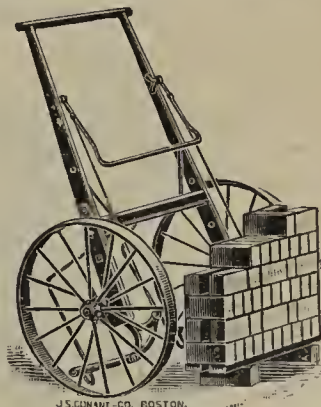
THE NEW SOUTH

Write to us for cat-
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our New South X
and New South XX
with or without our novel Automatic Cutting
Table, and Steam Dies, also Winding Drums, Clay
Cars, Crushers, Switch and Frogs, and our Im-
proved Brick Truck or other Brickyard Supplies,
Etc.

Extract from Col. J. C. Stribling's Letter dated Pen-
dleton, S. C., Oct. 4th, 1894.

Messrs. J. C. Steele & Son,
Statesville, N. C.

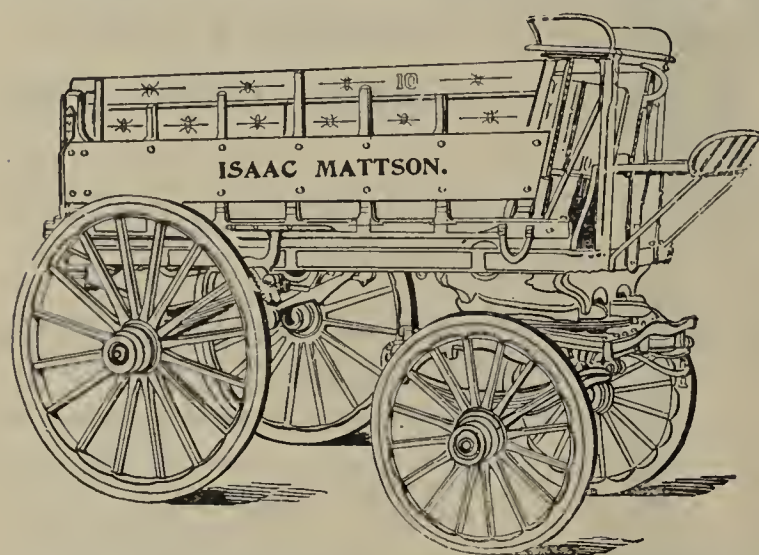
GENTLEMEN:—I have used and seen in use
almost every kind of machine on the market,
but yours is the simplest, cheapest and easiest
running that I have seen. The bricks are as
square and true as repressed brick. We make on



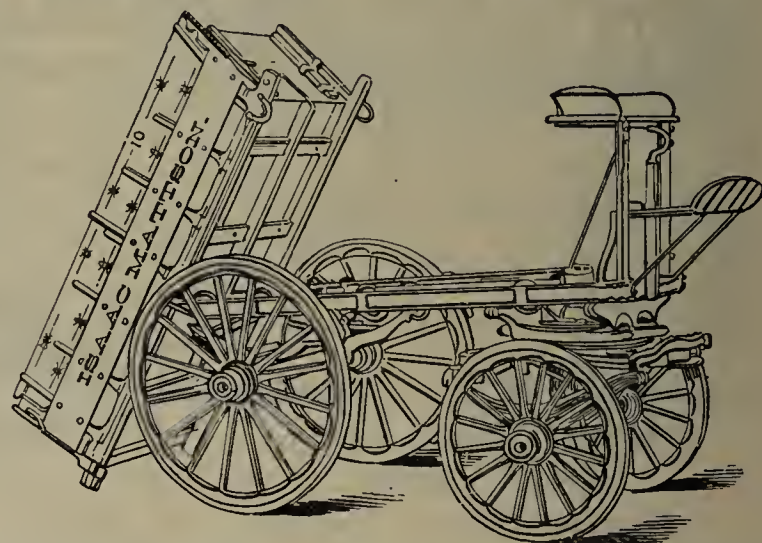
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Mattson's Improved Dump Wagons



FOR
BRICK,
STONE,
LIME,
SAND,
Etc., Etc.



WEIGHT about 2,500 pounds, light running, strong and durable, consequently the best wagon made for brick. Made to carry from 1,000 to 2,000 brick and can be handled as easy as a two-wheel dump cart. The body runs back on rollers. Also manufacture a line of carts, wheelbarrows and brick yard supplies. Send for price list, etc.

ISAAC MATTSON, Wagon Builder, Northeast Corner Gray's Ferry Road and 30th St., Philadelphia, Pa.

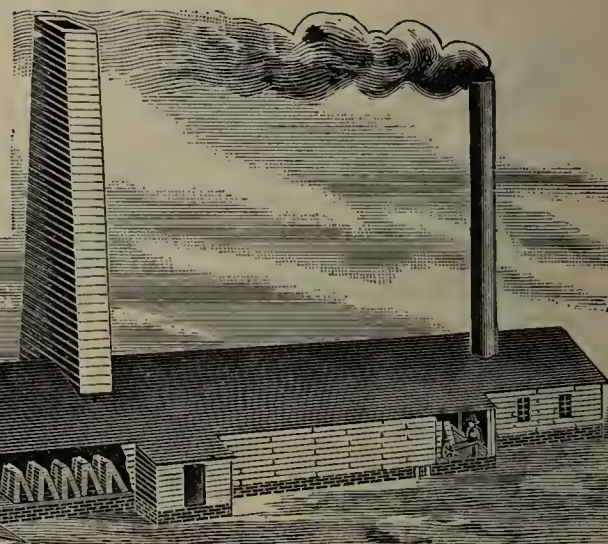
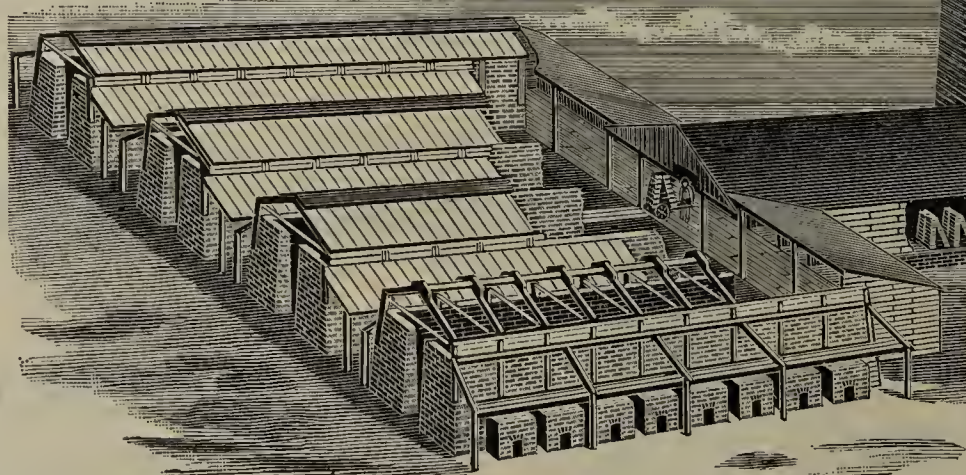
The Mock Portable Rack and Pallet System FOR HANDLING BRICKS.

The Most Expeditious, the Safest and Easiest Method of Handling Brick from Machine to Kiln.

IT SAVES TIME. IT SAVES LABOR. IT SAVES BRICK.

What Users say of the
MOCK SYSTEM.

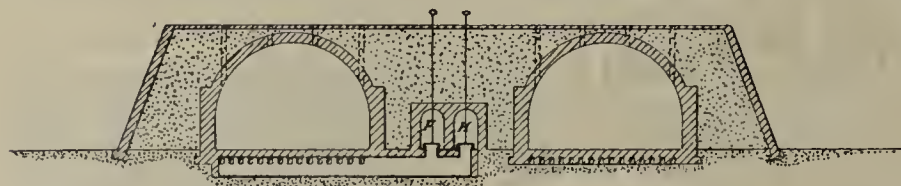
Mr. J. C. Adams, Indianapolis, Ex-Pres. of the National Brick Manufacturers' Association, after using the Mock Portable Rack and Pallet System for four seasons, says: "I have only words of praise for the Mock system of handling brick. We find that it is not only more economical than the old way, but that it handles the brick more expeditiously, and puts them in the kiln in much better condition, for there is no need to touch them at all from the time they leave the machine until they are tossed to setter. I would not go back to the old system for any consideration."



WE are prepared to furnish complete plans and specifications for the erection of brick works of any desired capacity and solicit correspondence from those desiring further information relative to our system of handling brick.

MOCK BROS., Muncie, Ind.

YOUNGREN'S IMPROVED CONTINUOUS KILN.



Marks a Great Advance in the Art of Continuous Burning

Accuracy of results reduced to a certainty.
Burns the brick uniform from top to bottom, from side to side and from one month's end to another, with about 150 pounds of coal slack per M.
Under ordinary circumstances the kiln pays for itself in six months.
Do not decide on kilns before making a thorough investigation.
Choose a kiln that is fully guaranteed as to results.
Read what some of the users say about Youngren's Continuous Kiln and be convinced.

PETERSEN BRICK COMPANY,
MANUFACTURERS OF PRESSED, ORNAMENTAL AND COMMON BRICK.

P. L. YOUNGREN, Oakland, Cal.

DEAR SIR:—In reply to your inquiry as to the working of our Continuous Kiln we take great pleasure in saying that the same is a success in every respect. As you well know our people were somewhat doubtful as to ability of your kiln to burn first quality of pressed and ornamental brick, but we have now demonstrated to their satisfaction, that the same can turn out from 35 to 40 per cent. of the finest quality of press and ornamental brick the color of which is even superior to those we formerly burnt in the E— downdraft kiln. As to common brick will say that every brick comes out hard and of good color. Wishing you success, we remain,

Yours truly

SAN JOSE, Cal., Aug. 25, 1893.

Per H. M. STAMMER, Superintendent.

For particulars address

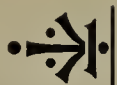
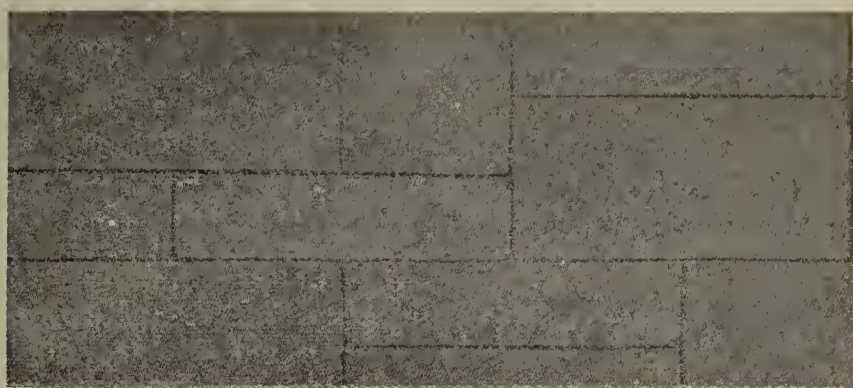
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The BOSTON BRICK ASHLAR

(G. M. FISKE'S PATENTS: Nos. 415,772, 415,773, 415,774.)

ROCK FACE.

TOOLED FACE.



FISKE, HOMES & CO., Boston.

NORTHWESTERN TERRA COTTA CO., Chicago.

LICENCEES.



F. H. C. MEY CHAIN BELTING
ENGINEERING WORKS,

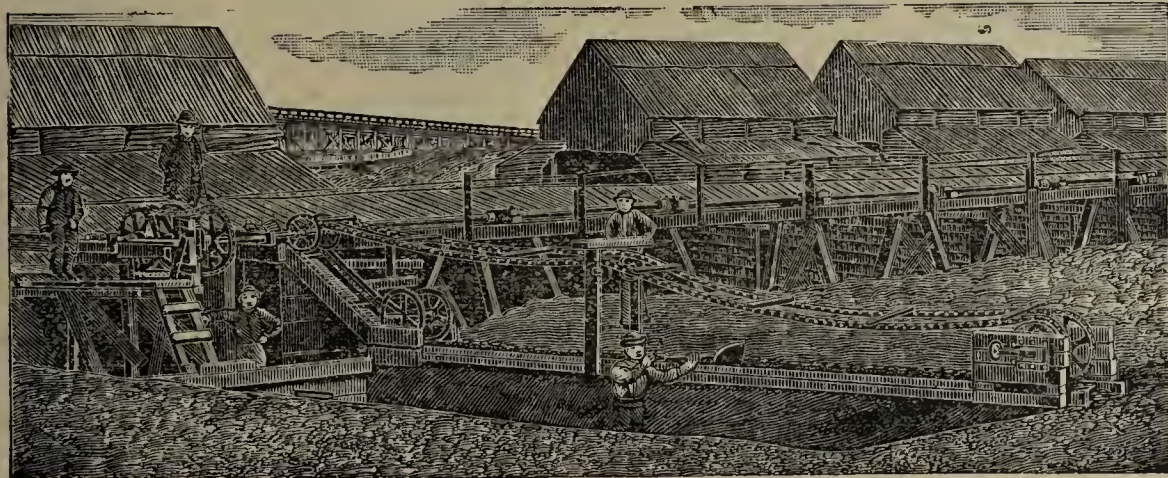
APPROVED APPLIANCES FOR

Elevating, Conveying & Transmission of Power

64 to 68 Columbia St., BUFFALO, N. Y.

Mey Detachable Chain Belt, Patented Feb. 7, 1888.

THIS Elevator is for taking the clay into the brick machine; the tempered clay is shoveled from the soak pit into the trough from which it is elevated into the brick machine. The advantages derived from this apparatus will be noticed



Mey Patent Clay Elevator.

at a glance by every practical brickmaker.

It gives the machine a uniform feed, takes less power and manual labor to manipulate, and the manufacturer is enabled to

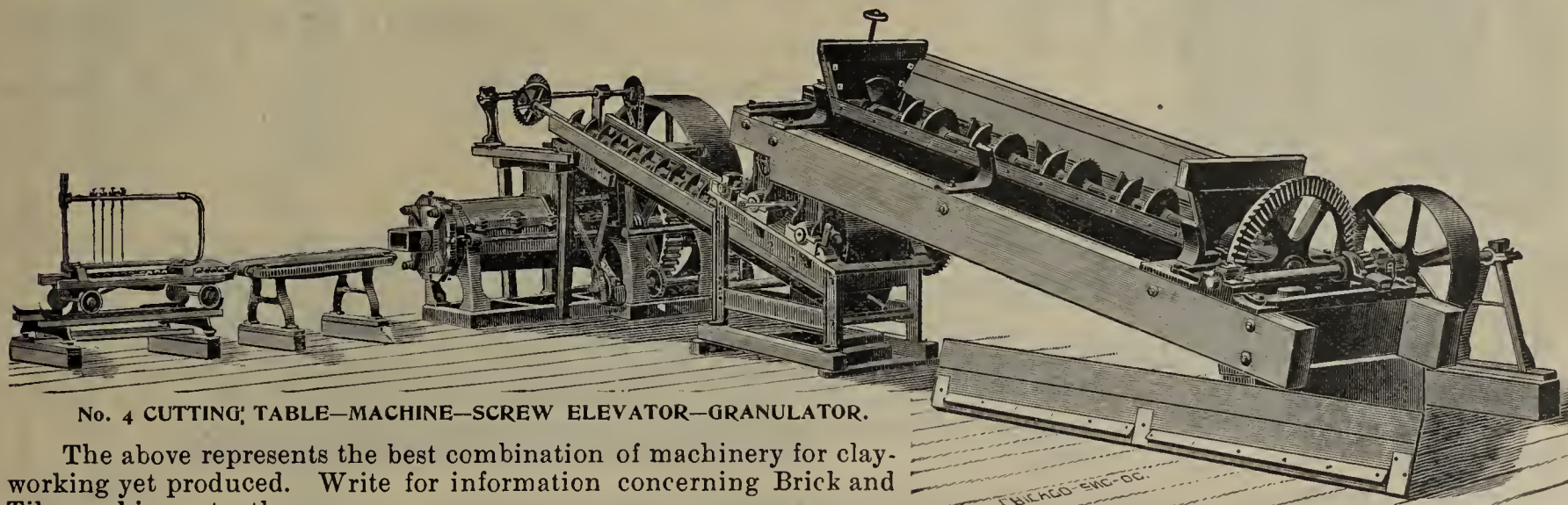
**Make Many More
Thousands**

of the best quality of brick in a day than he can by the old method thereby saving time and making money.

SEND FOR REVISED
PRICE LIST.



ADRIAN BRICK AND TILE MACHINE CO.



No. 4 CUTTING TABLE—MACHINE—SCREW ELEVATOR—GRANULATOR.

The above represents the best combination of machinery for clay-working yet produced. Write for information concerning Brick and Tile machinery to the

ADRIAN BRICK AND TILE MACHINE CO., Adrian, Michigan.

ARE YOU IN BUSINESS FOR PROFIT OR GLORY

If for **profit** buy **STEEL CARS** for economy's sake.

If for **glory** buy **STEEL CARS** for appearance' sake.

BETTER AND CHEAPER THAN CAST IRON.

~ MANUFACTURED ONLY BY ~

The Ball-Bearing Car Wheel & Mfg. Co.,

[Mention the CLAY-WORKER.]

 961-981 Hamilton St., CLEVELAND, OHIO.

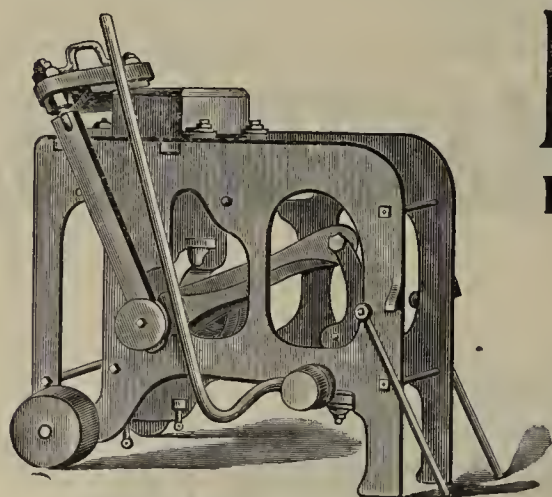
Brick Machines,
Pug Mills, . . .
Disintegrators,

...OF THE **L**ATEST
TYPE. 

COMPLETE OUTFITS A SPECIALTY.

GET OUR PRICES AND EXAMINE OUR RECORD.

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GEORGE CARNELL,

Nos. 1,819, 1,821 and 1,823 Germantown
Avenue and Fifth Street,
PHILADELPHIA, - - - PENN.

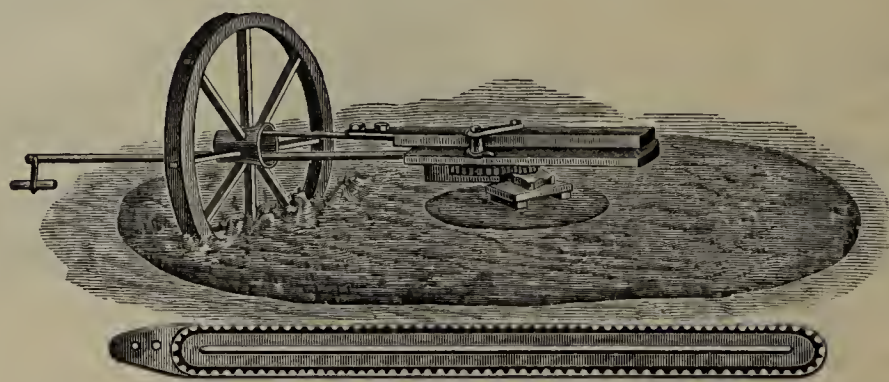
Send for Circular and Price List.

PHILADELPHIA BRICK MACHINE WORKS

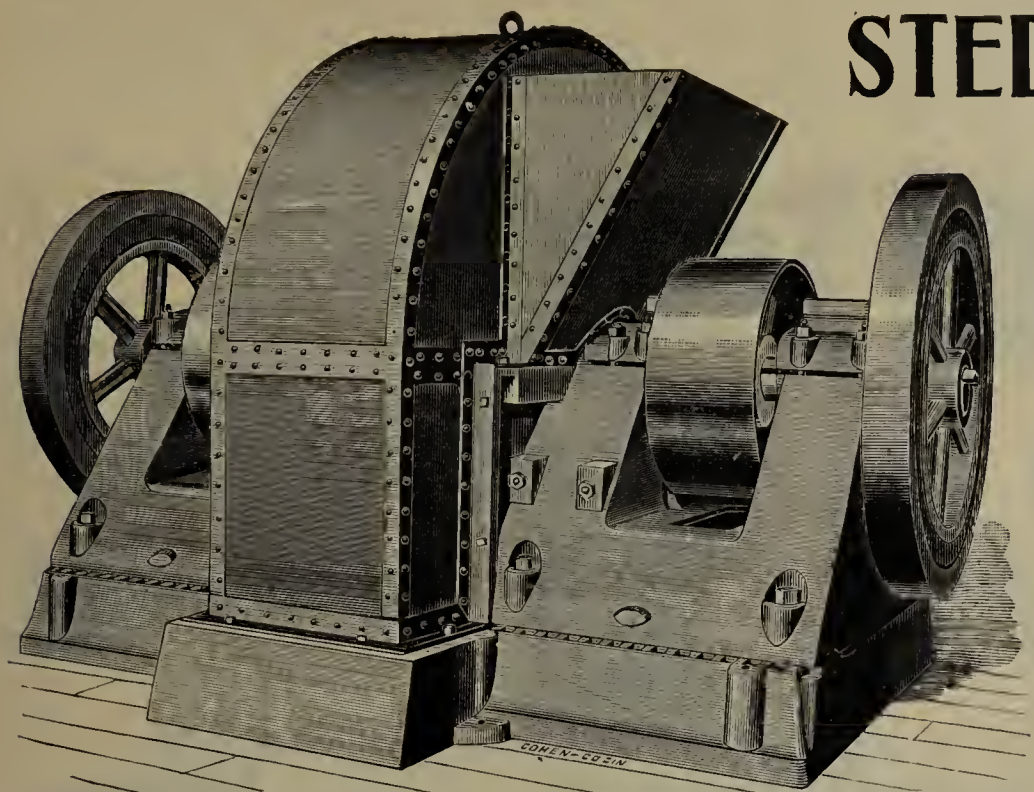
Fire and Red Brick Presses all sizes.

....Machinists and Engineers.

Manufacturer of all kinds of Machinery used in the manufacture of Fire and Red
Brick.



These Tempering Machines can be driven either by Steam or Horse Power. The latest improvement requires less power to run than the old style Steam Gearing, and fitted up 10 per cent. cheaper.



STEDMAN'S IMPROVED CLAY DISINTEGRATOR

For Thoroughly
Pulverizing Clay in a
Dry, Semi-Dry or
Damp Condition

Its construction is such that it will not clog in pulverizing damp clay, and the journal bearings are constructed dust proof.

Write for catalogue, giving full description, references and testimonials. Address,

Stedman's Foundry & Machine Works,

Aurora, Ind.

THE STANDARD BRICK MACHINES

MANUFACTURED BY

A. M. & W. H. WILES,

Grassy Point, Rockland County, New York.

These Molding Machines have been in constant use for over 40 years and are the original of all machines now made that use a Pug Mill and Square Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country.

[Mention the Clay-Worker.]

CORRESPONDENCE SOLICITED.



BRICK

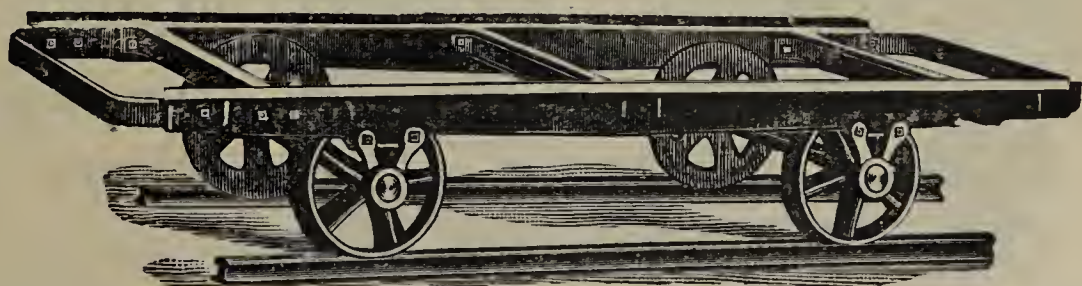
48 Styles.

Also
Turn Tables,
Transfers
Kiln Doors,
Grate Bars,
T Rails and
Iron Pipe.



CARS

Send For Price List.



STYLE 28.

THE WALWORTH RUN FOUNDRY & MFG. CO.,

Cleveland, O.

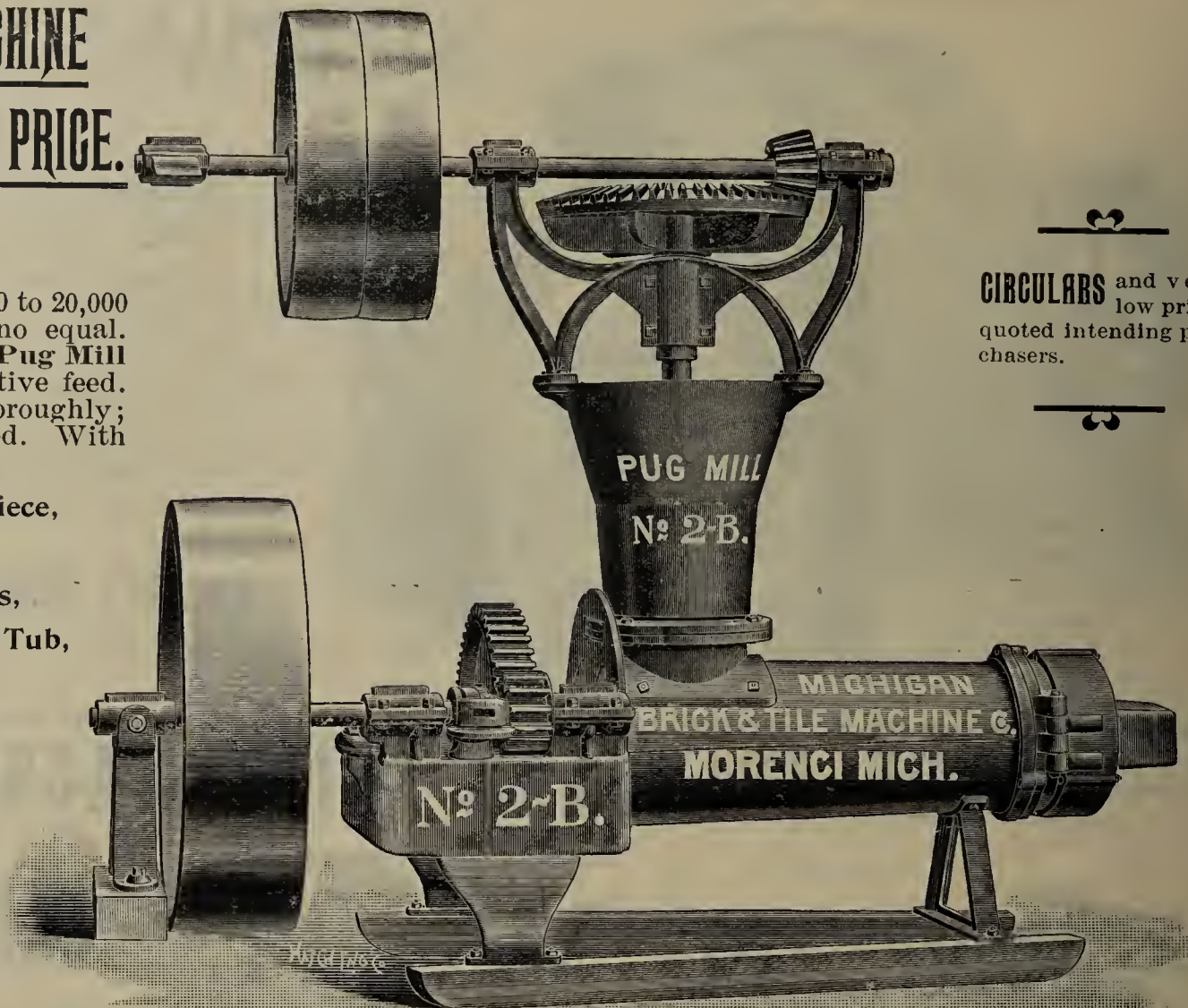
A SMALL SIZED MACHINE AT A VERY LOW PRICE.

FOR a daily output of 12,000 to 20,000 first class brick it has no equal. For tile it is superior. With Pug Mill as shown in cut it has a positive feed. Mixes and pugs the clay thoroughly; making the output unexcelled. With

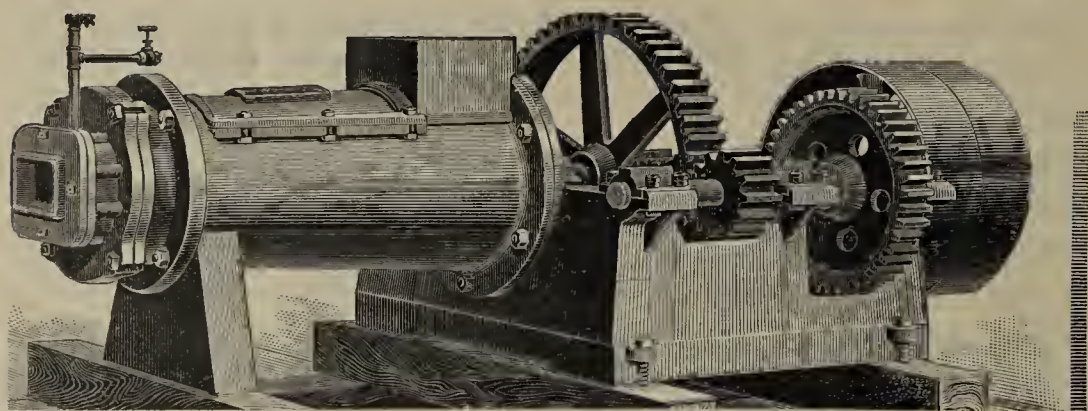
Safety Hinged Nose Piece,
Steel Shafts,
Extra Long Bearings,
Solid Main Frame and Tub,

And many other important improvements; it is a very desirable machine to have. Address the Manufacturers,

MICHIGAN BRICK AND
TILE MACHINE CO.,
Morenci, Mich.

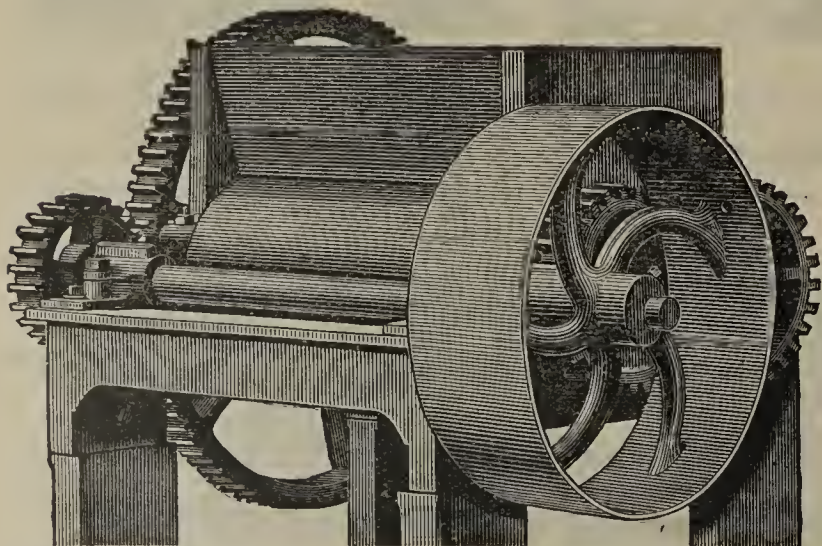
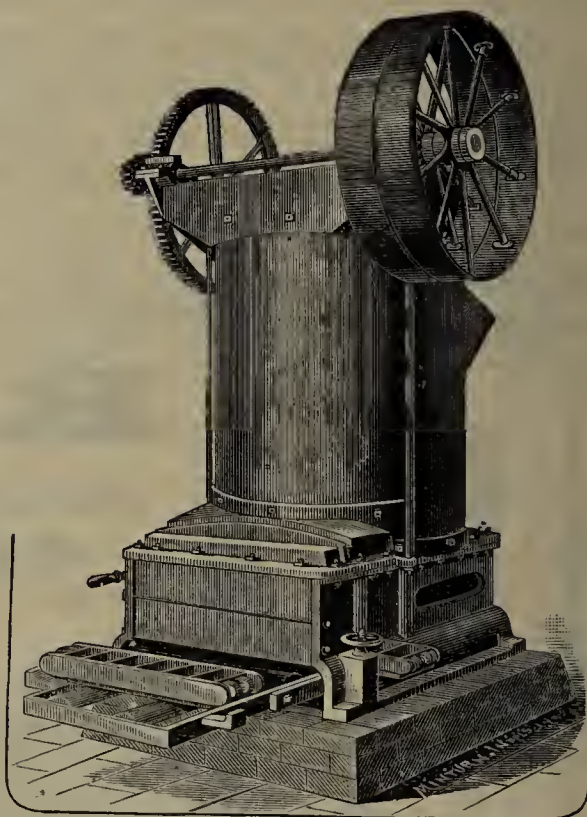


CIRCULARS and very low prices quoted intending purchasers.



WE have a number of 5, 6 and 7 Machines, with tile or brick dies, that we are going to sell at once. Write for prices and particulars.

BRICK MACHINERY.



SEND for prices on the best Crusher and Disintegrator made.

Nolan,
Madden
& Co.,

E. D. Pugh,
Receiver,

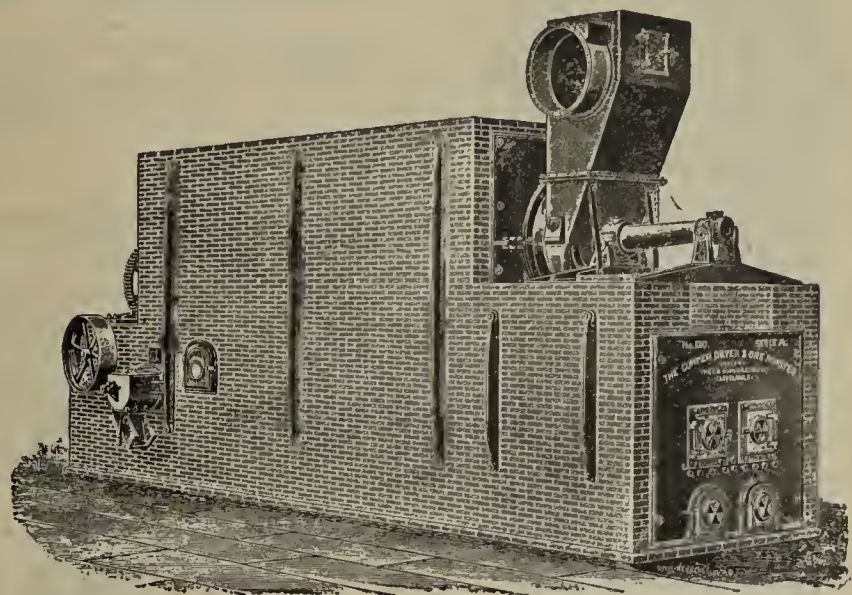
Rushville,
Ind.

WE have six of these Machines for horse-power and six for steam-power. These we will sell regardless of cost.

Write for prices and particulars.

LABOR DISPENSED WITH; VERY LITTLE FUEL USED; NO BREAK DOWNS; SUPERIOR PRODUCT OBTAINED: CLAY DRIED SUMMER AND WINTER, RAIN OR SHINE, ARE A FEW OF THE SPECIAL ADVANTAGES OBTAINED BY USING THE

Cummer Clay Dryer



SIX SIZES MADE.

Prepares from 3 to 20 tons of clay per hour for dry pan or pulverizer. The clay is handled mechanically (without men) from bank to press or other machines.

NEW METHODS.

DRIES

Phosphate, Sand, Earths, Paint Stocks, Peat, Coal, Salt, Marl and Clay for Cement making, Chalk, Cereals of all kinds, Tankage, Night Soils, Animal Manure, etc., etc.

CALCINING AND ROASTING MACHINERY

for Gypsum, Ores of all kinds, Phosphate, Paint Stocks, etc., etc.

THE F. D. CUMMER & SON CO.,

613-616 Arcade,

CLEVELAND, OHIO, U. S. A.

SEND FOR
OUR NEW CATALOGUE.

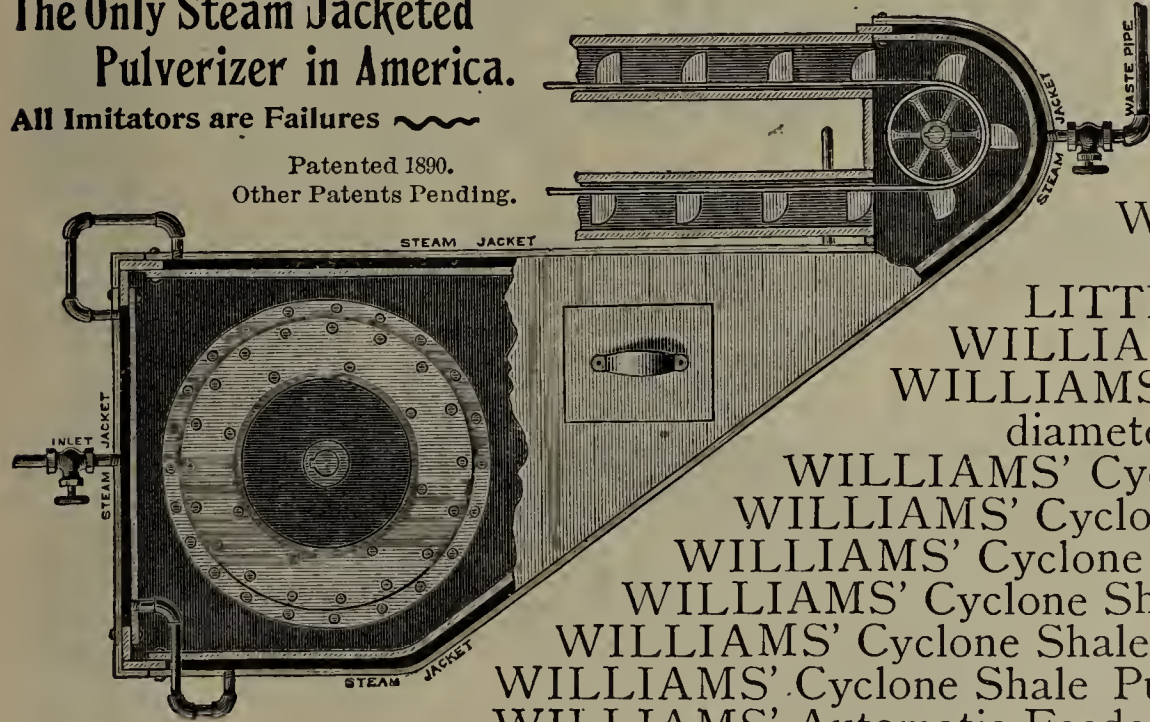
CHARLES ERITH & CO., No. 70 Grace Church St., London, E. C.

WILLIAMS' CLAYWORKING MACHINERY.

The Only Steam Jacketed
Pulverizer in America.

All Imitators are Failures

Patented 1890.
Other Patents Pending.



WILLIAMS' Clay Elevators.
WILLIAMS' Triple Roll Clay
Crushers.
WILLIAMS' Brick Trucks,
Three sizes.
WILLIAMS' Revolving Clay
Screen.

LITTLE'S Steam Jacket for Pulverizers
WILLIAMS' Clutch Pulleys and Couplings.
WILLIAMS' Cyclone Clay Pulverizer 30 in.
diameter.

WILLIAMS' Cyclone Clay Pulverizer 36 in. diam.
WILLIAMS' Cyclone Clay Pulverizer 40 in. diam.
WILLIAMS' Cyclone Clay Pulverizer 48 in. diameter.
WILLIAMS' Cyclone Shale Pulverizer, 36 in. diameter.
WILLIAMS' Cyclone Shale Pulverizer, 40 in. diameter.
WILLIAMS' Cyclone Shale Pulverizer, 48 in. diameter.
WILLIAMS' Automatic Feeder for Dry Presses.

WILLIAMS' Automatic Feeder for Pulverizers.
WILLIAMS' & LITTLE'S Patent Steam Clay Screen.
WILLIAMS' Pony Pulverizer for Testing Clay and Shale.
WILLIAMS' Sizing Machine for Radial or Angular Brick.

WILLIAMS' Clay Cultivators.
WILLIAMS' Clay Bunchers.
WILLIAMS' Brick Barrows.
WILLIAMS' Complete Outfits for Dry Press Brickmakers.

WRITE TO **M. F. WILLIAMS & CO.,** 2705 and 2707 N. Broadway. **ST. LOUIS, MO.**

"Leviathan"

The only Belt for Brick and Tile Machinery.

Will outwear any three Belts of other makes in the Market.

Runs in heat, steam and water without injury.

Unequalled for Strength and Traction Power.

Office of Fort Scott Steam Brick Works Co., W. H. Ashwell, Proprietor. 712 National Avenue, Fort Scott, Kan.

February 28, 1890.

Messrs. Main Belting Co., Chicago.

GENTLEMEN:—I am in receipt of yours, and have great pleasure in speaking of the highly satisfactory results obtained from the "Leviathan" Belting supplied by you to these works last season. We had, as you are aware, several widths from 9-inch to 18-inch and all have proved uniformly good alike. I have during the last 25 years used every description of belting, leather, rubber and composition of various kinds, but no belting has given the satisfactory results to be obtained from yours. I watched their working carefully from the commencement until we closed down for the season and I found the wear and tear to be very slight, while the adhesion of the belt to the pulleys gave us less slip when a heavy load was on, and consequently we got more work through with these belts; but what is of great importance in our clats of work, we found the weather had little or no effect on these belts. You are at liberty to make what use you please of this letter, and I shall have very great pleasure in communicating with any one wishing information on this class of belting.

Yours faithfully,

THE FT. SCOTT STEAM BRICK WORKS,
WM. H. ASHWELL.

MAIN BELTING CO.,

SOLE MANUFACTURERS,

1219 Carpenter St., Philadelphia, Pa. }
120 Pearl Street, Boston, Mass. }

248 Randolph St., CHICAGO, ILL.

We always Prove it in

Thompson's Water-Proof Belt Dressing for

Leather, Rubber and Canvas Belting.

No user of Belting can afford to be without it.



the End.



MANUFACTURERS OF
IMPROVED

CLAY WORKING MACHINERY

OF EVERY DESCRIPTION

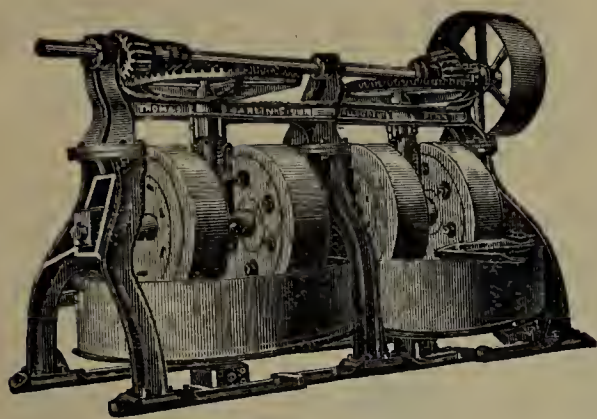
TAPLIN RICE & CO.

(CLAY MILLS,
STEAM SEWER PIPE PRESS,
DRY & WET PANS, DIES, CLAY BLOCKERS,
POTTERS' WHEELS AND
MACHINERY OF ALL KINDS.)

AKRON, OHIO, U.S.A.

PROMPT ATTENTION
& DISPATCH GIVEN
TO ORDERS

SEND FOR
CATALOGUE
A



OUR SPECIALTY.

GRINDING AND MIXING PANS

Of Every Description.

Our all steel and iron Grinding Pans are the Oldest, Strongest and Heaviest on the Market.

PUG MILLS, REVOLVING SCREENS, CONVEYORS,
 ENGINES AND BOILERS, HOISTING ENGINES,
 DERRICKS AND DUMP CARS.



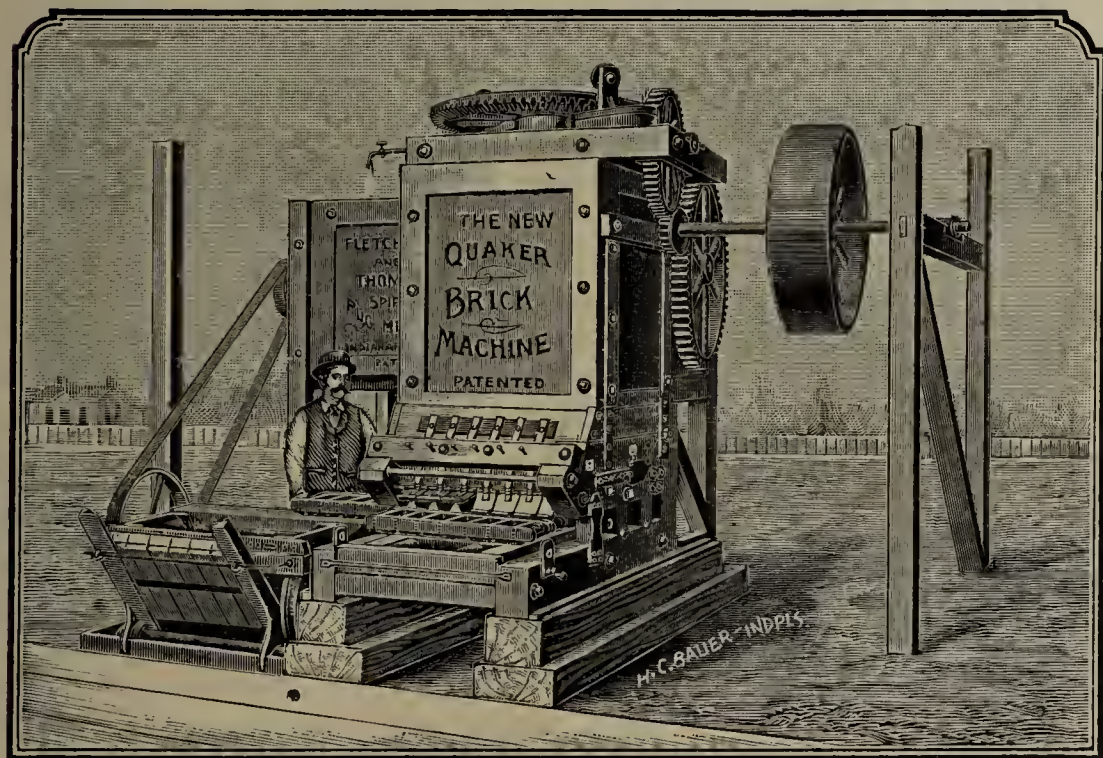
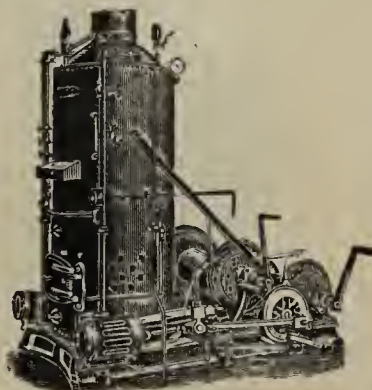
Thomas Carlin's Sons,

ALLEGHENY, PA.

One 1½ yard Marion Steam Shovel.
 One 1½ yard Bucyrus " "
 One ¾ yd. Little Giant " "

IN STOCK:

Twenty-one Dump Cars.
 Seven Standard and Narrow Gauge
 Locomotives.



EXTRA HEAVY, COMBINED OUTFIT CAPACITY 40,000 TO 50,000 PER DAY.

LATEST IMPROVED

Brick Machinery and... Brickmakers' Supplies.

SPECIALTIES:

The NEW QUAKER and MONARCH

Tempered Mud Machines and

The NEW DAYTONIAN

Stiff Mud Brick and Tile Machines.

Paving Brick, Fire Brick, Building Brick,
 Repress Machines, Disintegrators, Pug Mills, Mold
 Sanding Machines, Molds, Barrows, Trucks, Engines,
 Boilers, Shafting, Pulleys, Belting, etc., Dump Brick
 Wagons, Clay Carts, Kiln Doors, Grate Bars, Steam
 Pumps.

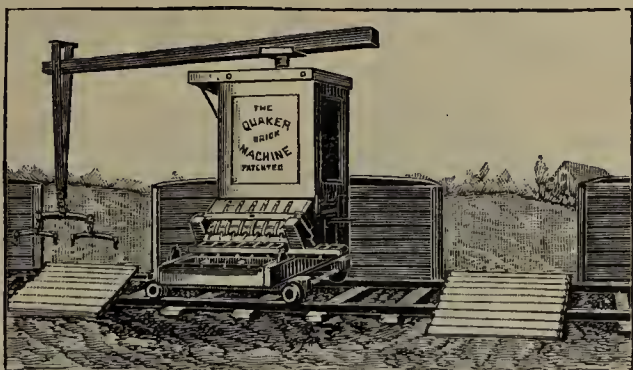
THE NEW MODEL

QUAKER

HORSE POWER.

The best machine for
 the man of moderate
 means ever used.

Capacity 15,000 to
 20,000 per day.



WE CONTRACT TO ERECT AND EQUIP

PLANTS COMPLETE IN EVERY DETAIL.

Send for Illustrated Catalogue and Special prices before placing
 your order, as we can save you money.

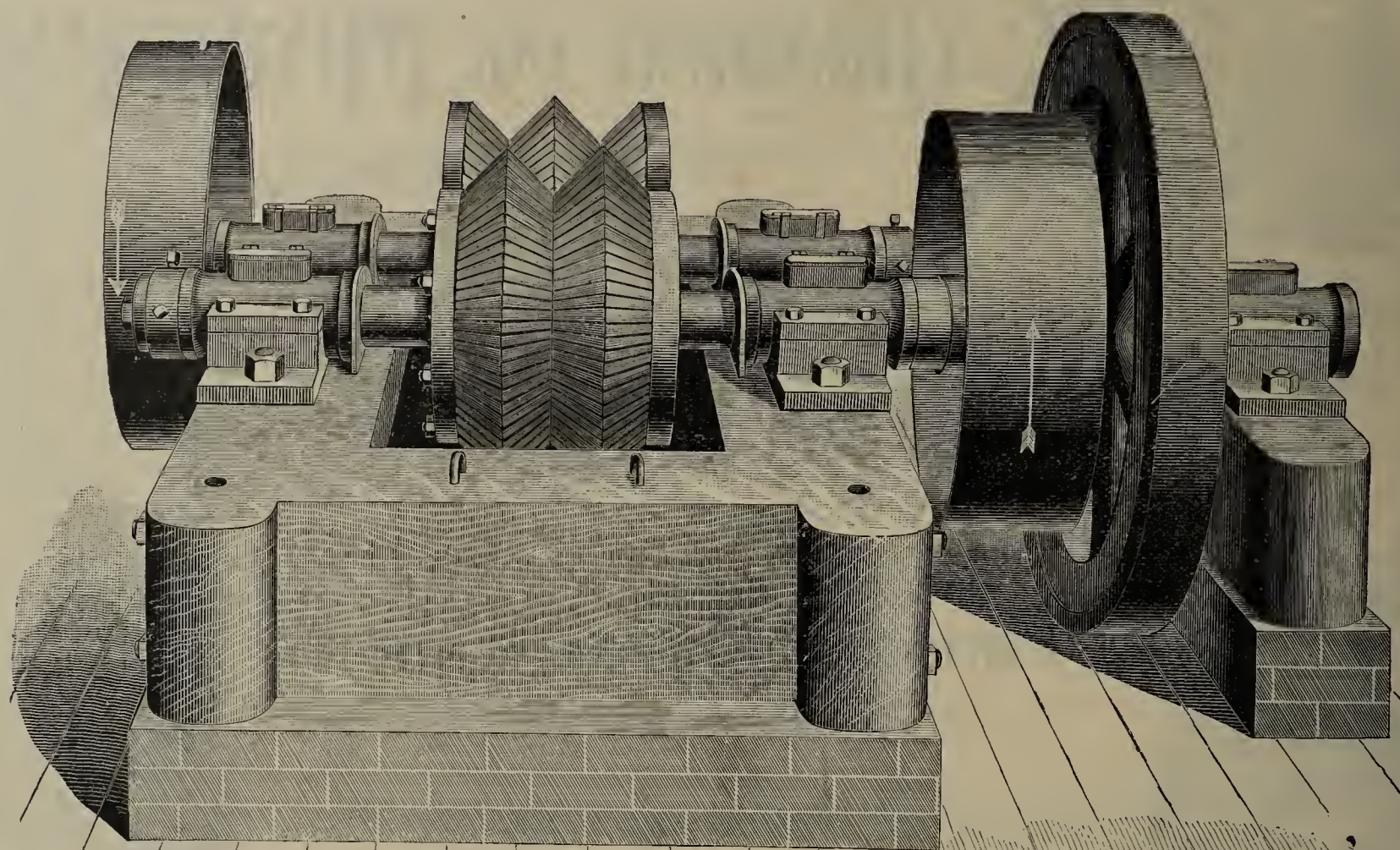
S. K. FLETCHER, General Agent,

Successor to FLETCHER & THOMAS,

INDIANAPOLIS, IND.

NEWELL IMPROVED CLAY PULVERIZER

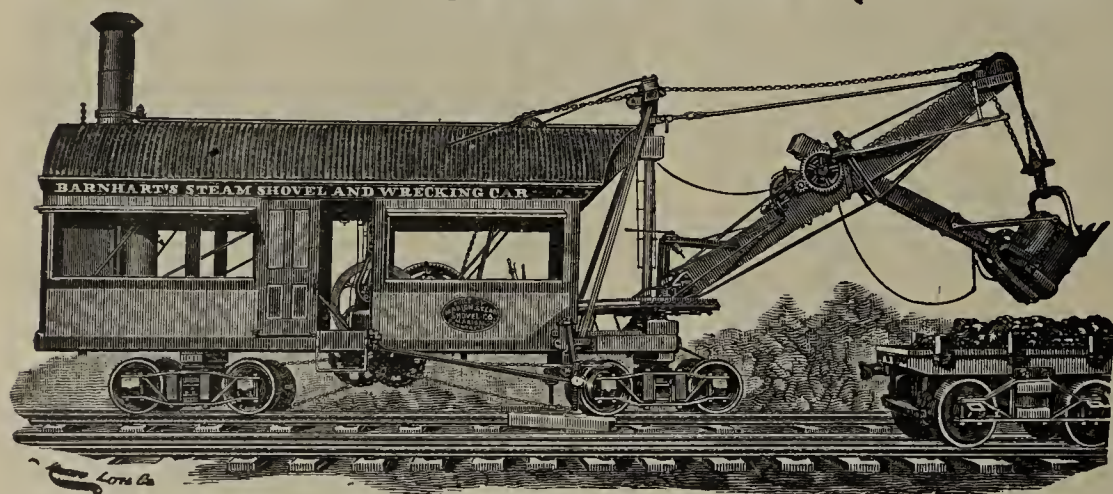
Heavy Cold Rolled Shafts Running in Best Anti-Friction Metal Bearings protected from dirt.



Our Clay Pulverizer grinds and prepares all clays used for manufacturing purposes thoroughly and economically, and is the only Mill in the market that will crush successfully clay containing stones, clay dogs, sulphur balls and other foreign substances, thus enabling manufacturers to make a first-class brick and saving the wastage of brick where these foreign substances are not ground. We also manufacture special Mills which thoroughly crush slate, which is being largely used for making bricks. Correspondence solicited.

NEWELL UNIVERSAL MILL CO., Room 710, Haremeyer Building, New York, U.S.A.
26 Cortland and 21 Dey Streets,

STEAM SHOVELS FOR BRICKYARDS.



STYLE A-1 1/2 YD.

yards of Chicago. We have in and around Chicago, about twenty of these machines of different sizes. The accompanying cut represents our style "A" (1 1/2 yd.) with a capacity from 700 to 1500 cubic yards per day, and our style "C" (3/4 yd.) with a capacity of 350 to 700 yards per day. Our machines are simple and easy of operation and are a great saving to brickmakers and also enables them to make a better quality of brick, and they are always ready for work. Write for testimonials and illustrated catalogue to

The Marion Steam Shovel Co.,
603 West Center Street,
MARION, OHIO.

Our large size steam shovels have a capacity equal to anything of this kind ever offered to the public and embody all the improvements to be found in excavating machinery. They are self-propelling and are particularly adapted for use in the larger brickyards. By the use of these machines, a much better brick can be made from the same material, beginning as it does, at the bottom and working up the bank until dipper is full. The different stratas of clay are thoroughly mixed which, in most yards, is an important feature. Our Excavators are no experiment, being used in all the principal brick



STYLE C-3/4 YD

ALSIP'S



LATEST IMPROVED DOWN AND UP DRAFT KILN

It Has Been Thoroughly Tested, and Every Kiln is Giving Perfect Satisfaction.



Why take any chances when you can buy a kiln that will burn the ware uniform from top to bottom, from side to side, and from end to end? This is just what the Alsip Kiln does.

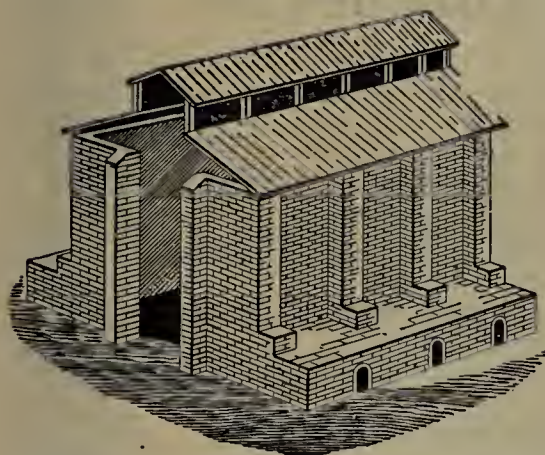
It will save **time, labor and money**, if you will thoroughly investigate our Latest Improved Kiln before deciding on any kiln.

For descriptive circular and further information, address

Wm. & S. H. Alsip,

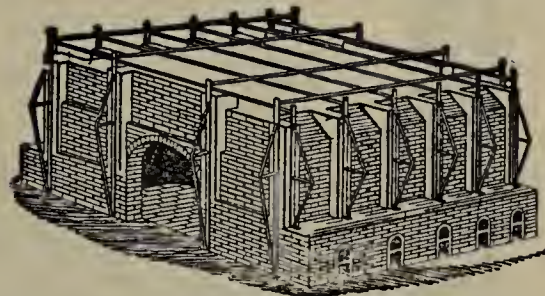
MENARD, ILL.

[Mention the CLAY-WORKER.]



LOUIS H. REPELL'S IMPROVED - KILNS

For Burning all Kinds of Wares.



Having had years of practical experience in the management and actual burning of all kinds of kilns, I claim it to be **THE BEST KILN IN THE MARKET.**

The above cut represents Up-Draft Kiln, being a furnace kiln well constructed to do all the work required of it. Perfect combustion is attained in my furnace. The gases are carried to all parts of the kiln alike, all parts being constantly under perfect control of the burner. I especially recommend this kiln for general brickyard use. It will burn brick of all kinds, from the commonest to the finest face, molded and ornamental, all having perfect faces, containing no streaked or flashed edges. For the saving of fuel and money it is unexcelled. I kindly refer you to the testimonials below, and ask your correspondence with them as to the merits of the kilns.

The above cut represents my recently patented Down-Draft Kilns, in which I have combined all the points of merit that have been found necessary and valuable in my years of experience in the burning of the above style kilns. I do not hesitate in offering it as the

MOST DURABLE, COMPLETE AND EASILY MANAGED

of its kind. I can construct them singly or in batteries, and so connected that the heat can be utilized to dry the green brick in the other kilns. I have given especial thought in construction to the burning of

∴ ∴ **VITRIFIED PAVING BRICK.** ∴ ∴

It will burn successfully Sewer Pipe, Drain Tile, Fire Brick, Roofing Tiles, and all grades of Building Bricks, fine fronts and ornamental, at a cost less than any other kiln of its kind.

TESTIMONIALS.

OFFICE OF J. A. DALY, BRICK MANUFACTURER AND CONTRACTOR. }
NEVADA, MO., July 17, 1892. }

H. REPELL, Esq., Kansas City, Mo.,

DEAR SIR: I succeeded in getting my new kiln opened up to-day. I am satisfied. The best pleased man you ever saw. I know I have got the only "kiln of brick" I ever had. I got one eye out this evening. The kiln shows up good, hard, red bricks from bottom to top. Eye-bricks all whole. I have the second kiln about built, and I intend to order the fire-brick for the third one to-morrow.

Yours very truly,

J. A. DALY.

COTE BRILLIANT PRESSED BRICK Co., Office, 5,218 St. Louis Ave. }
St. Louis, Mo., October 18, 1892. }

MR. LOUIS H. REPELL, Kansas City, Mo.

DEAR SIR: I delayed writing you until we had examined this kiln, which we are now emptying. We have good reason to be satisfied, well satisfied, with your kiln. It has proven entirely satisfactory. We shall be pleased at all times to have you refer your customers to us, and we promise you the reputation of your kiln shall not suffer at our hands.

Yours very truly,
COTE BRILLIANT PRESSED BRICK CO.,
M. J. REILY, Superintendent.

For further particulars and full explanation, please address me, and oblige

LOUIS H. REPELL,

1,913 Indiana Ave.



KANSAS CITY, MO.

HOLDS FIRST PLACE EIGHT YEARS.

Morrison's Improved ➤ Kiln,

WITH LATE IMPROVEMENTS, &c.

The Best Up-draft Kiln in Use.

Who says so?

Let us see what W. H. Perot, the largest manufacturer of fine pressed and ornamental bricks and terra cotta in the City of Baltimore, Md., who has used them eight years, says about our kiln. In a letter received from him under date September 15, 1894, asking for plans with which to put up a new kiln, he closes as follows:

"Your plan of kiln is the only one I use, as I like it better than any I know of."

Will you not write us and learn more about a kiln that wears so well.

✍ No stamp required.

Address **R. B. MORRISON & CO.,**

P. O. Box 335.

ROME, GA., U. S. A.



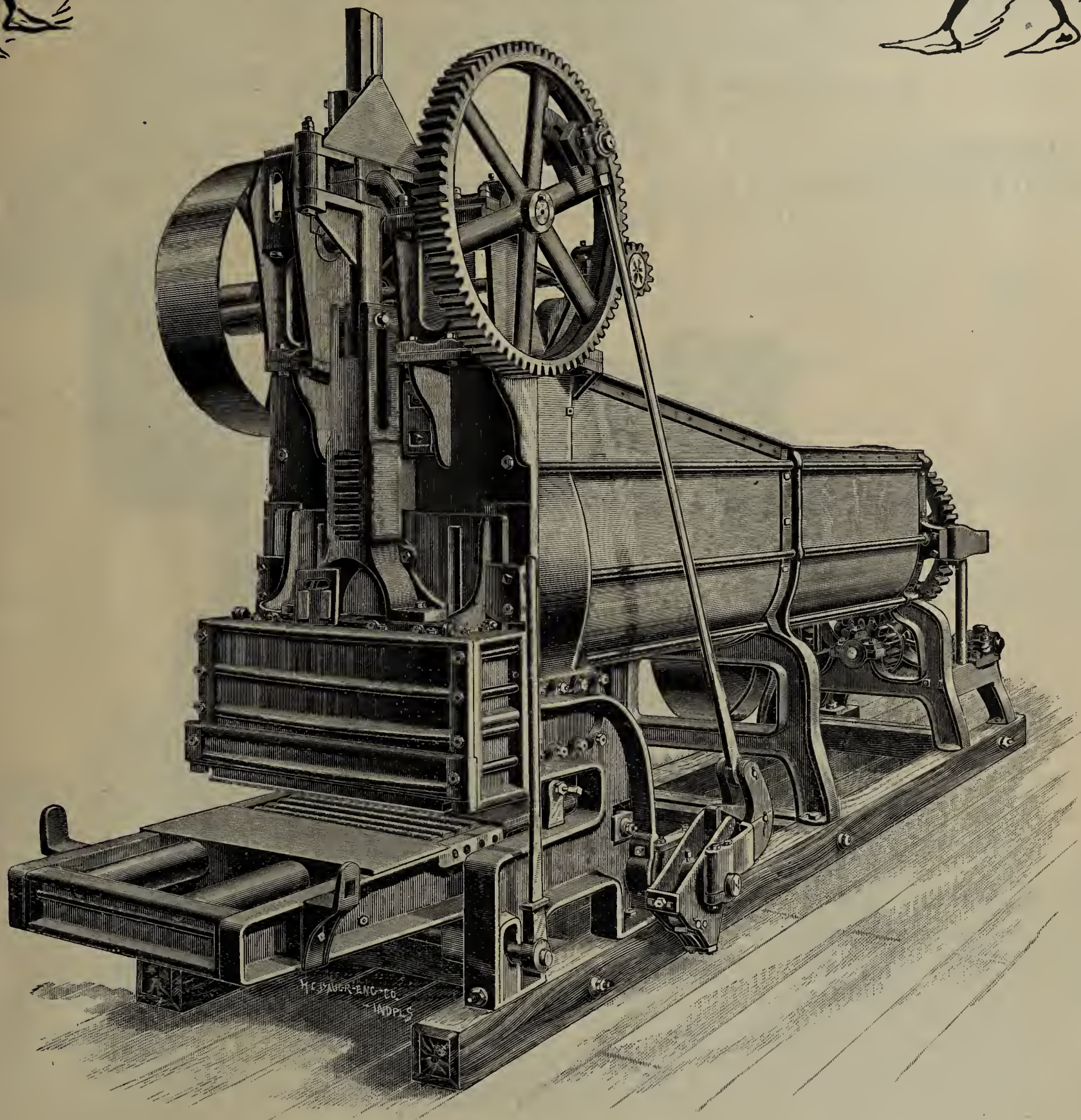
YOU CAN'T MISS IT!

.....WHEN YOU PURCHASE A.....

POTTS HORIZONTAL STOCK BRICK MACHINE

They Do All Claimed For Them

You Take No Chances of an Experiment.



⇒ WE NEVER FOLLOW, WE ARE ALWAYS LEADERS ⇐

The POTT'S IRON HORIZONTAL STOCK BRICK MACHINE does not differ in principle from the wood machine. It is a high grade machine. One that is well and strongly built. We know you will be pleased with it. Try one.

~~~~~ FOR PRICES AND TERMS, WRITE ~~~~~

**C. & A. POTTS & CO.,** 420 W. Washington St. **INDIANAPOLIS, IND.**



STANDARD DRY GRINDING PANS,    ❖❖❖  
 ❖❖❖    STANDARD WET GRINDING PANS,  
 REVOLVING AND STATIONARY.

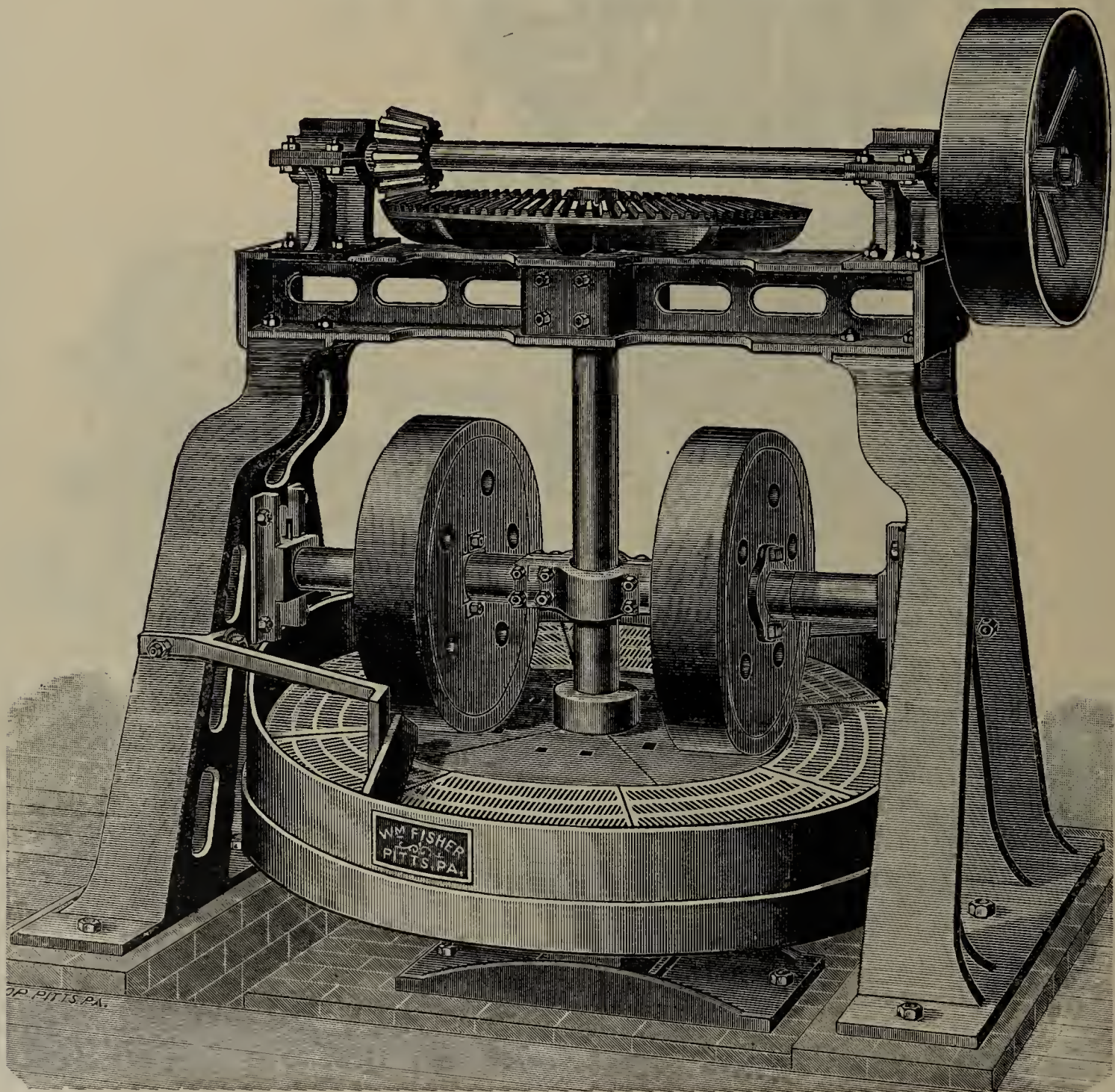
IRON AND WOOD FRAMES.    OVER AND UNDERGEAR.

# Fisher Engine, Foundry and Machine Works,

*Established 1857. WM. FISHER, Proprietor,*

23d, 24th and Smallman Streets, PITTSBURGH, PA.

FOR FIRE CLAY, SHALE, GRAVEL, LIMESTONE, LIME, SAND, CEMENT.  
 FERTILIZERS, BUILDING BRICK, PAVING BRICK, FIRE BRICK, STEEL WORKS,  
 GLASS WORKS, PAINT WORKS, ETC.



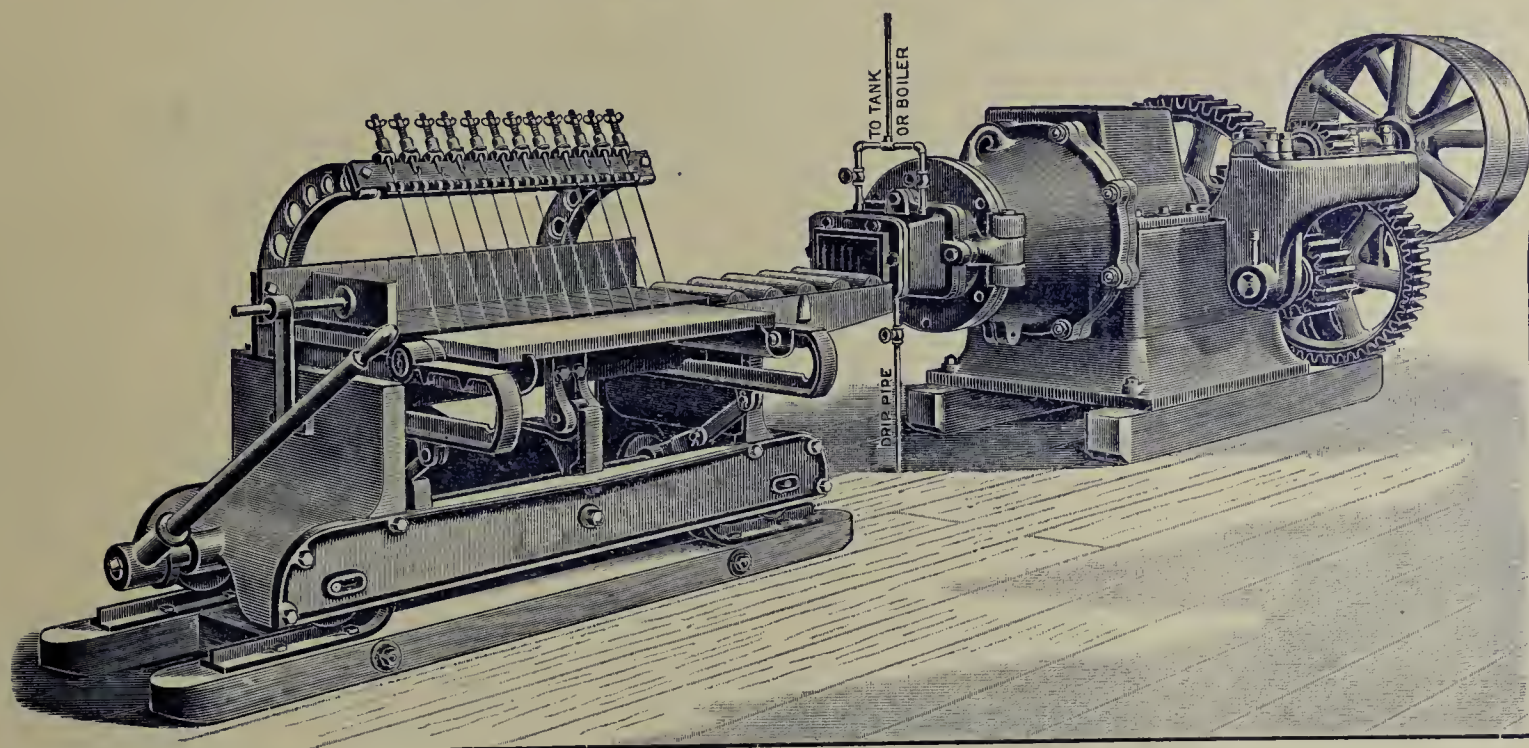
We make Pans from 4 to 12 feet Diameter; also Pug Mills, Brick Presses and Moulds.

## Roll Lathes, Shears, Engines and Special Machinery.

When writing for Prices, state kind of Clay or Material to be ground and capacity required.



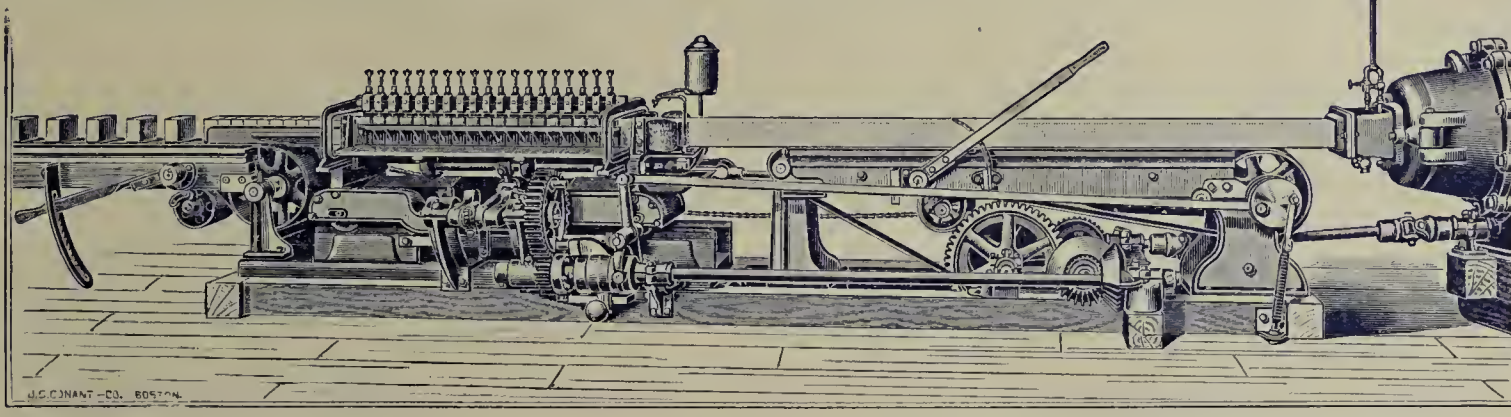
# New Brick Machinery



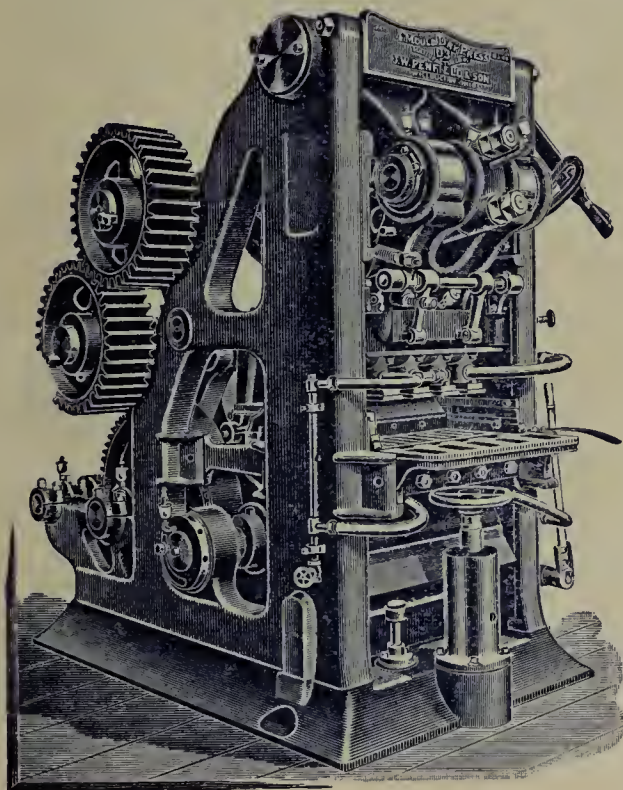
For  
**1894**  
and  
**1895.**

(Penfield No. 6 Auger Brick Machine and No. 8 Down Cutting Board Delivery Table.)

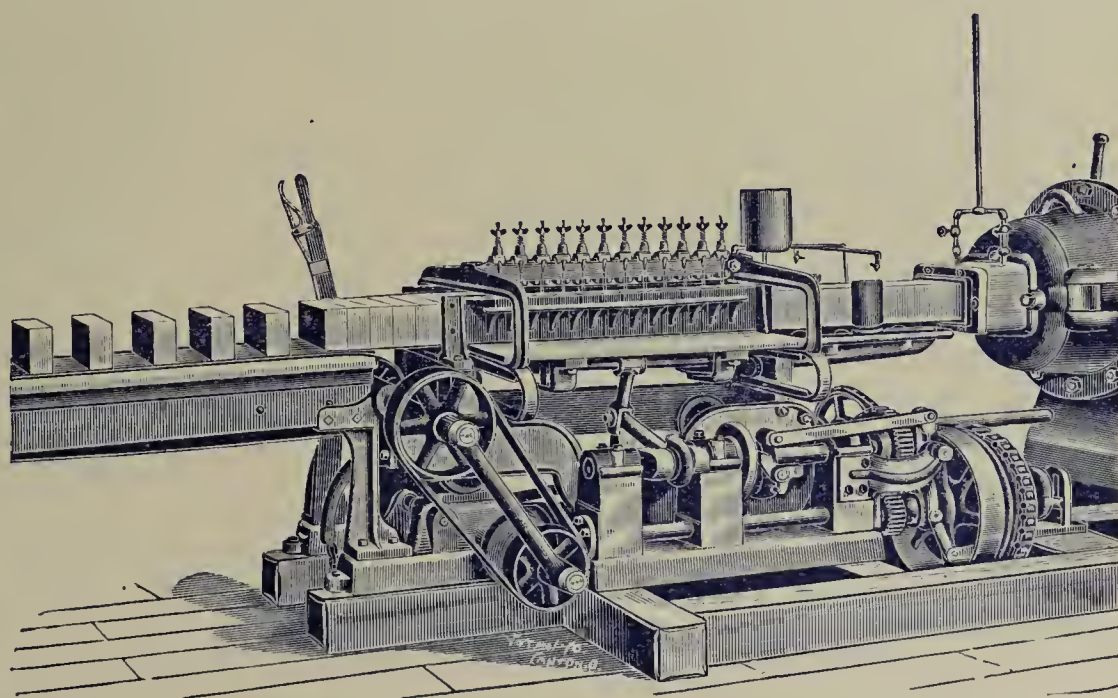
Send  
For  
Details.



(Penfield Automatic Cutter and Separator for Side Cut Brick.)



(Penfield 4-Mold Dry Press Brick Machine.)  
(D-3 Model.)



(Penfield Semi-Automatic Power Cutter for Side Cut Brick.)

FOR FULL PARTICULARS, ADDRESS

**J. W. PENFIELD & SON,**

Clay Working Machinery  
of all Kinds.

**Willoughby, Ohio, U. S. A.**



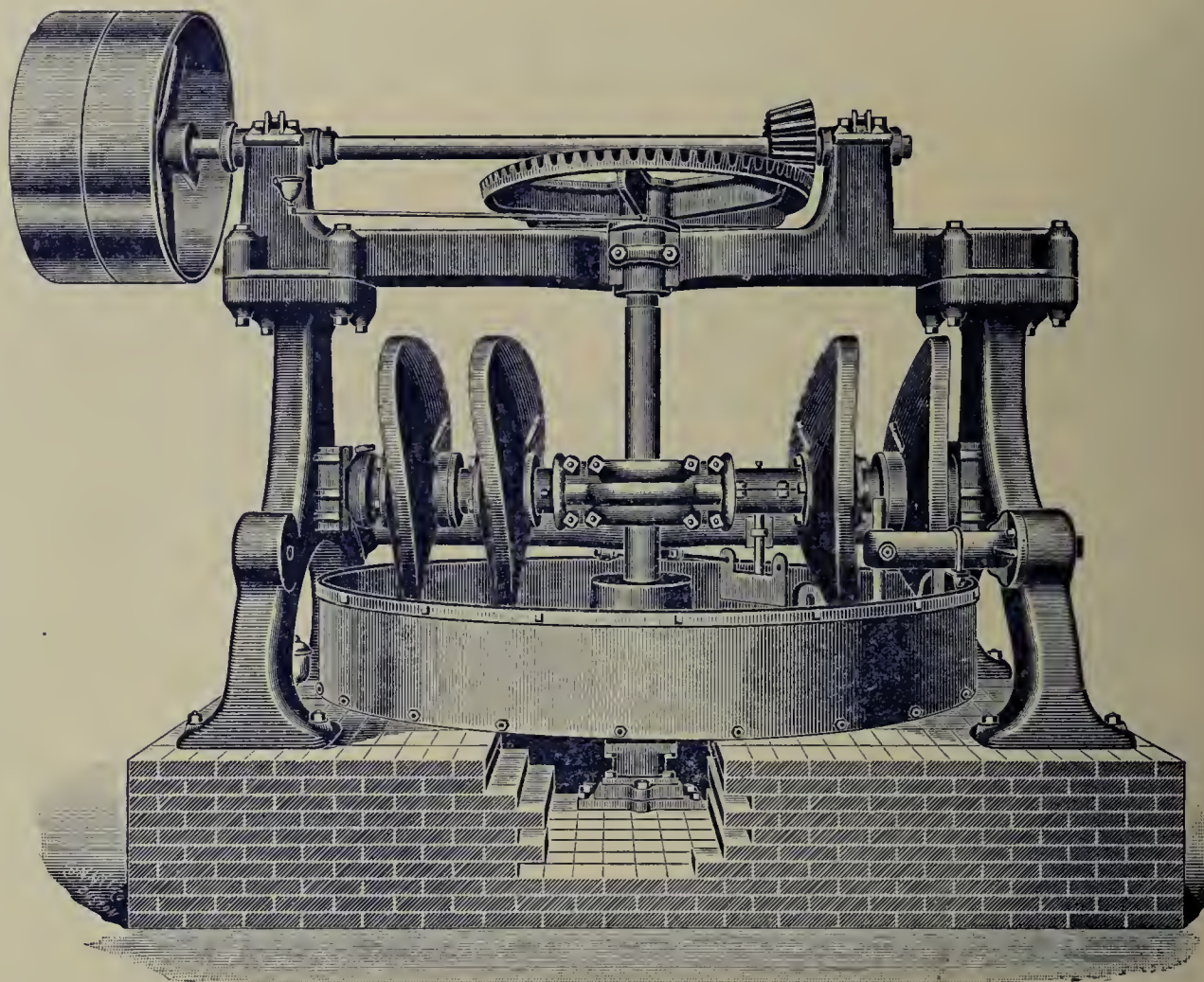
# The March of... Progress,

We don't follow it;  
We LEAD the van!

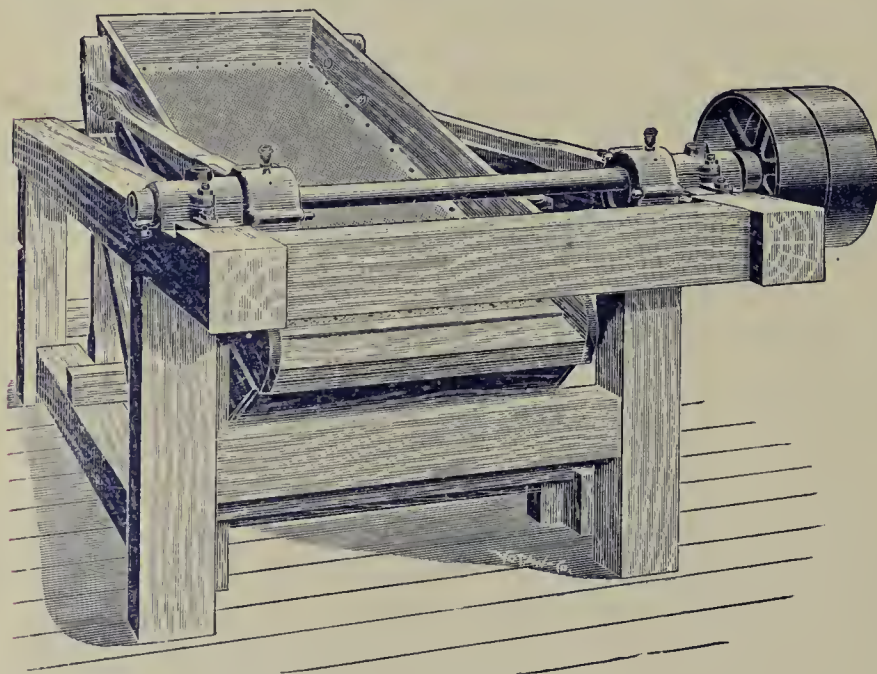
**D**URING the past year, we have added to our list more new and improved Clayworking Machinery than any other concern in existence. Furthermore, we expect to continue enlarging our list from time to time, as improvements may suggest themselves or the demands of the trade require.

## Our Aim

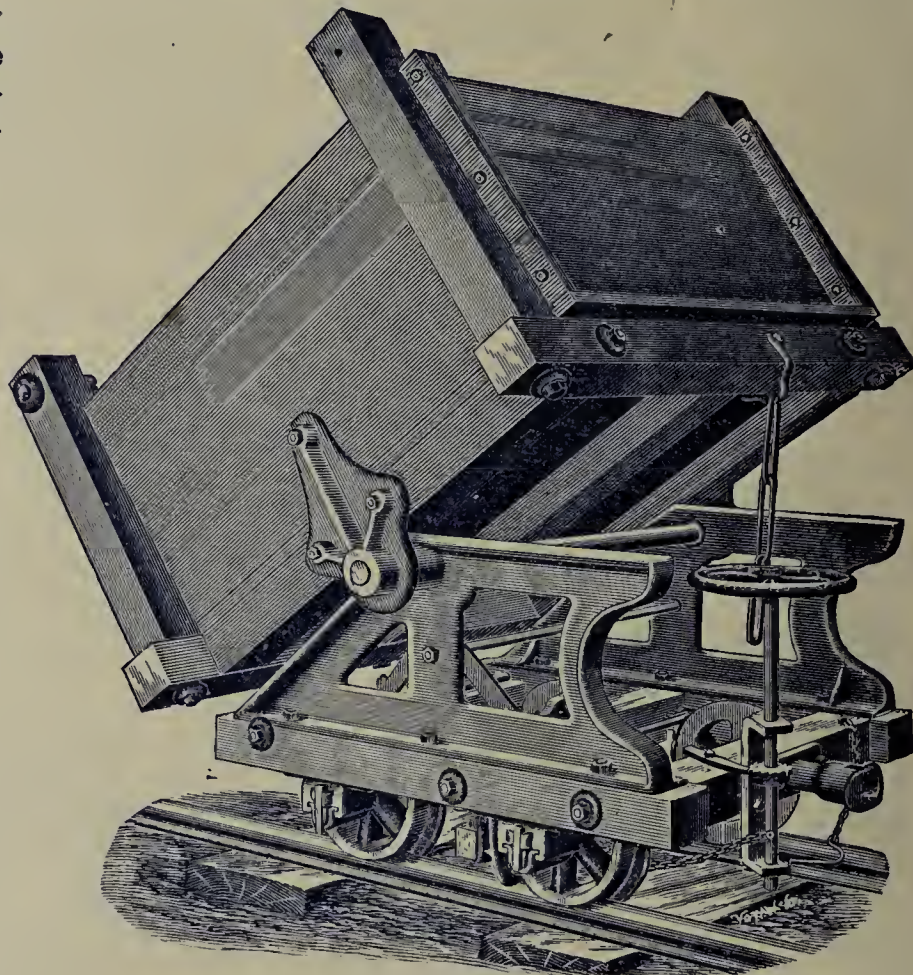
Is to be able to equip any clayworker with anything and everything required for the manufacture of brick from any kind of clay suitable for brickmaking purposes. The large number of complete plants we have equipped for brick-making by the different processes is one of the best evidences of our success in realizing this object.



(Penfield Special Clay Grinding Mill.)



(Penfield Vibrating Screen.)



(No. 3 End Dumping Clay Car.)

IF YOU WANT

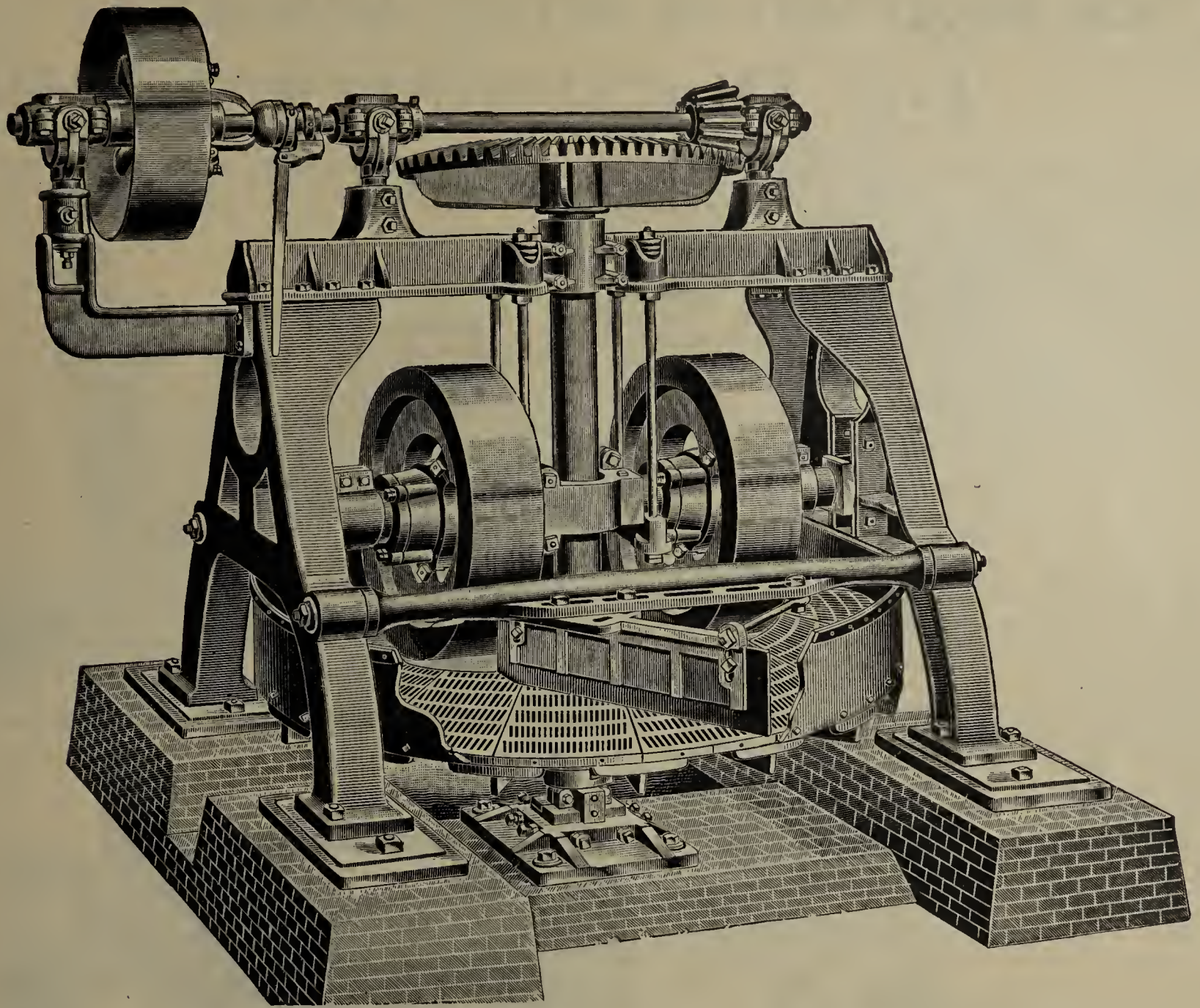
Unprejudiced advice and first class goods, the latest and best, address, for particulars,

**J. W. PENFIELD & SON,**

Send for Catalogue.

WILLOUGHBY, OHIO, U. S. A.



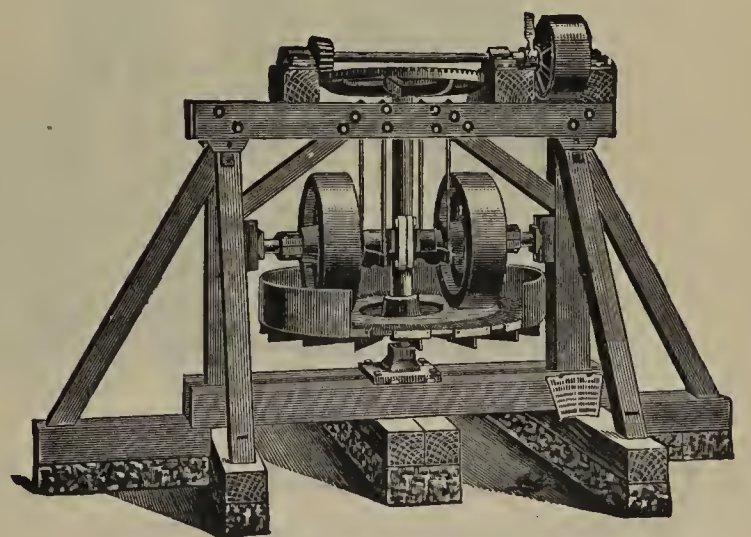
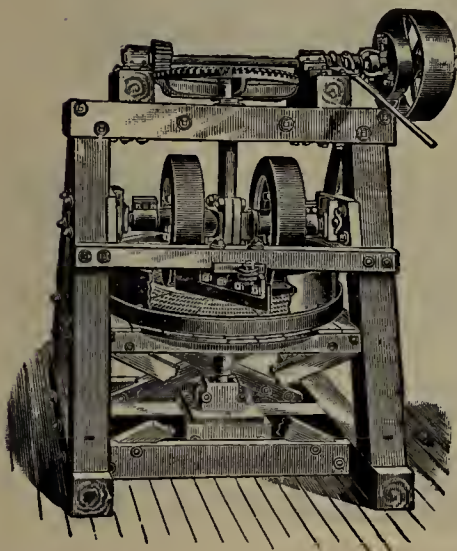


OUR SPECIALTY IS

DRY PANS.

IRON FRAMES,  
WOOD FRAMES.

~~~~~  
All Sizes and Price
to suit
Any Size Plant.
~~~~~



.....SEND FOR NEW ILLUSTRATED CATALOGUE.....

FROST ENGINE CO., Galesburg, Ill.,  
U. S. A.

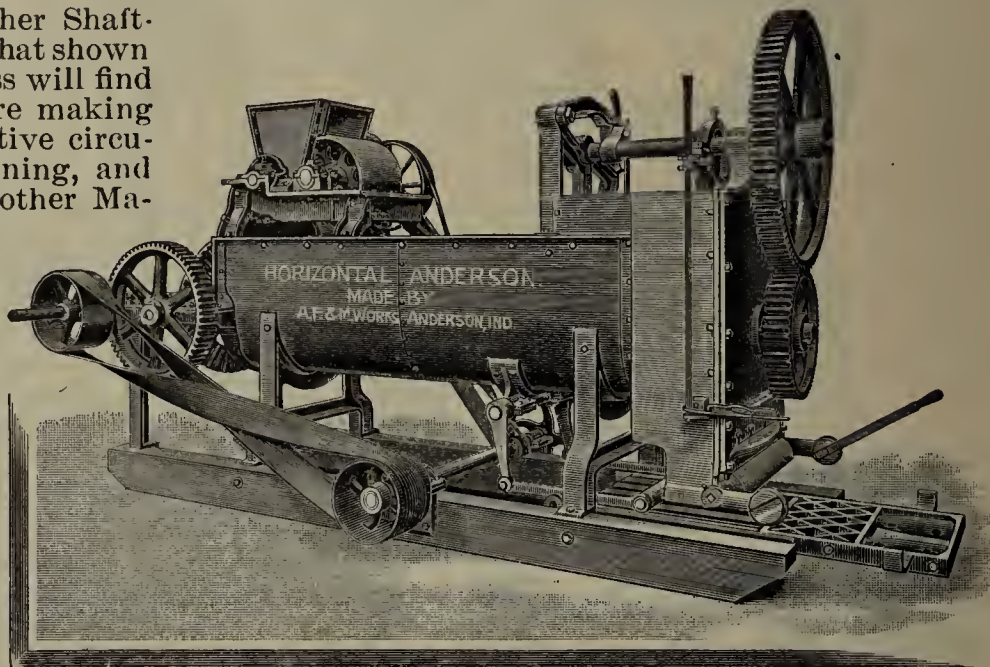


# A New Departure in Brick Machinery

## THE HORIZONTAL ANDERSON

OUR latest and most complete combination of Brick Machine, Pug Mill and Disintegrator for the price of one Machine. No outside Plunger with bothersome Gibs and Plates. A Machine that will run for years without requiring any adjustment and never leak. **UNEXCELLED** for **GRINDING** and **PUGGING CAPACITY**; simple in construction and durable.

This Machine is self-contained and requires no other Shafting, Pulleys, Hangers or even Foundation, other than that shown in cut. Manufacturers of Brick by the soft mud process will find it to their interest to investigate this Machine before making their contracts for new Machinery. Write for descriptive circular, prices, etc. We can save you money in the beginning, and make you happy in the end. Capacity equal to any other Machine on the market. We extend a cordial invitation to all prospective purchasers to pay us a visit and allow us to show them the Machine in operation.



INDIANAPOLIS, IND., March 20, 1894.

ANDERSON FOUNDRY AND MACHINE WORKS,

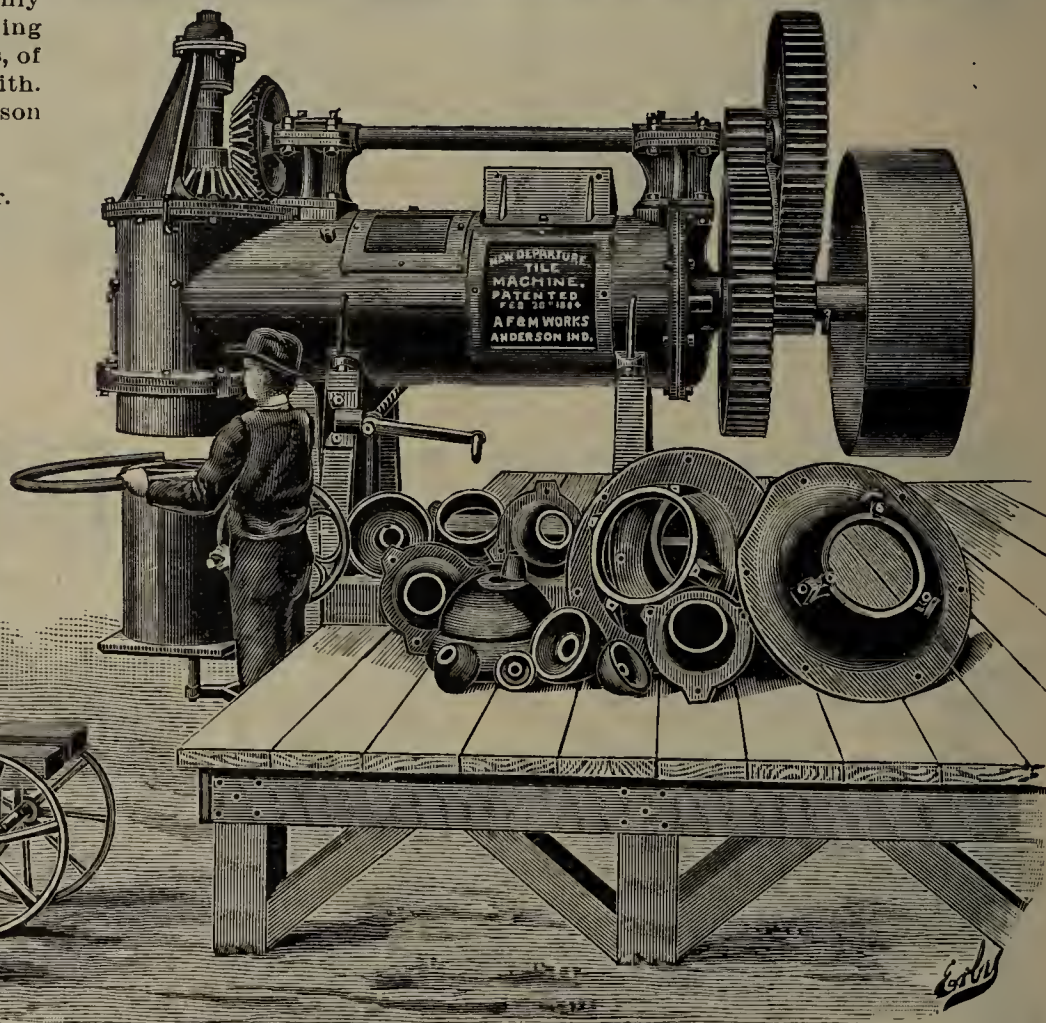
Anderson, Ind.

GENTLEMEN:—It affords us much pleasure to state that the Horizontal Anderson Brick Machine purchased of you last season has given us the best of satisfaction. We have owned and operated eight different Brick Machines previous to this one, and we do not hesitate to pronounce the Horizontal Anderson superior to any and all of them.

We operated the machine during the extremely dry weather of last season and found that no matter how dry and hard the clay was when taken from the bank, the machine thoroughly pulverized and pugged it to the proper consistency for making first-class brick, and at the same time dispose of all stones, of which, unfortunately for us, we have a great many to contend with.

We are willing at all times to show the Horizontal Anderson to our competitors who are in the market for new machinery.

A. BRUNER & CO.,  
Willis Privett, Manager.



## THE GREATEST ON EARTH

We have imitators but no competitors. The **NEW DEPARTURE** makes all sizes of tile from 3 inches to 24 inches in diameter in a manner that defies competition.

DOWN DELIVERY FOR LARGE TILE.

SIDE DELIVERY FOR SMALL TILE.

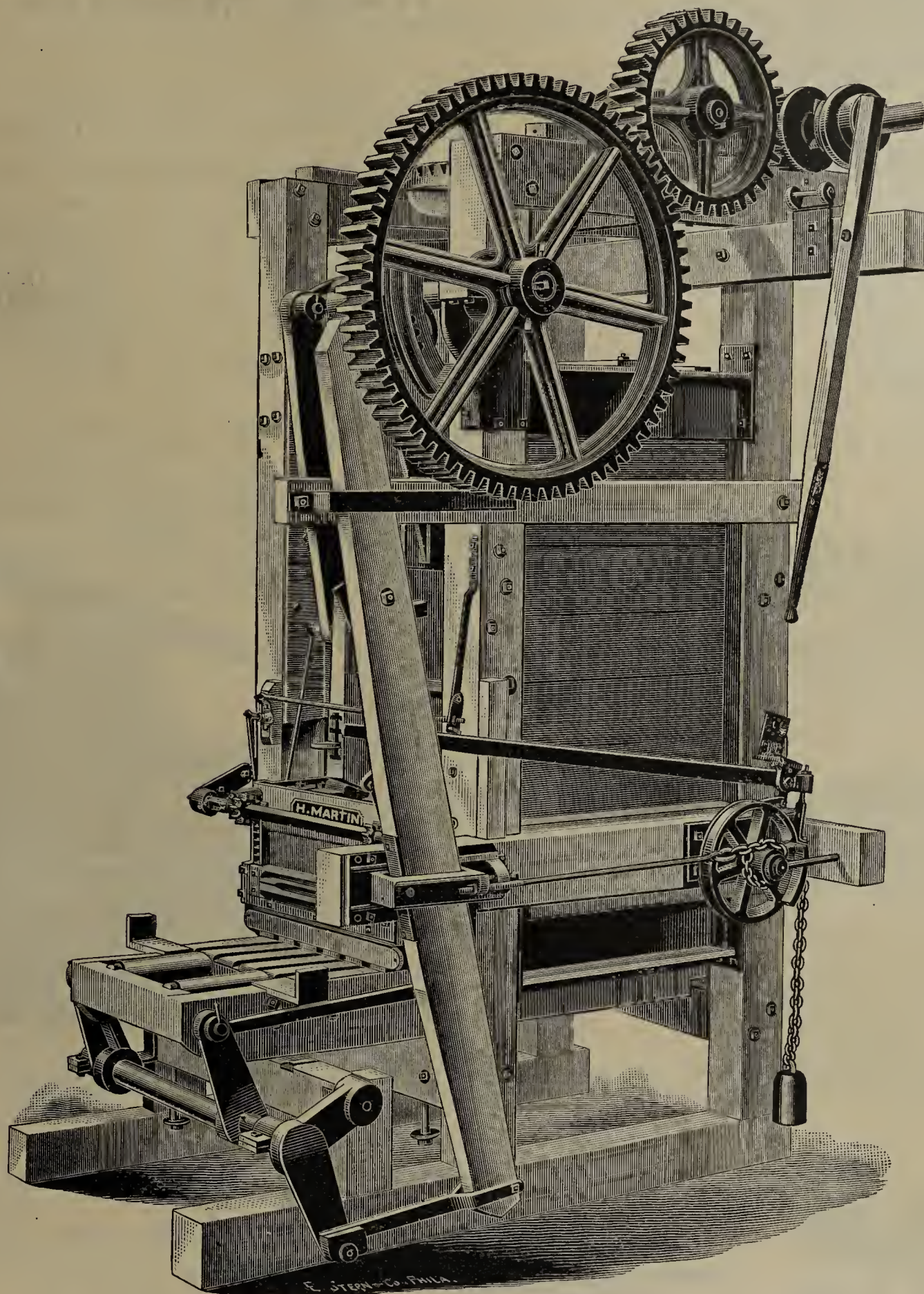
THE ANDERSON FOUNDRY & MACHINE WORKS, - - Anderson, Indiana



# REMEMBER

That the Martin  
....Machinery is Reliable

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*Practical Brickmakers Pronounce Our Letter "A" a Perfect Success.*

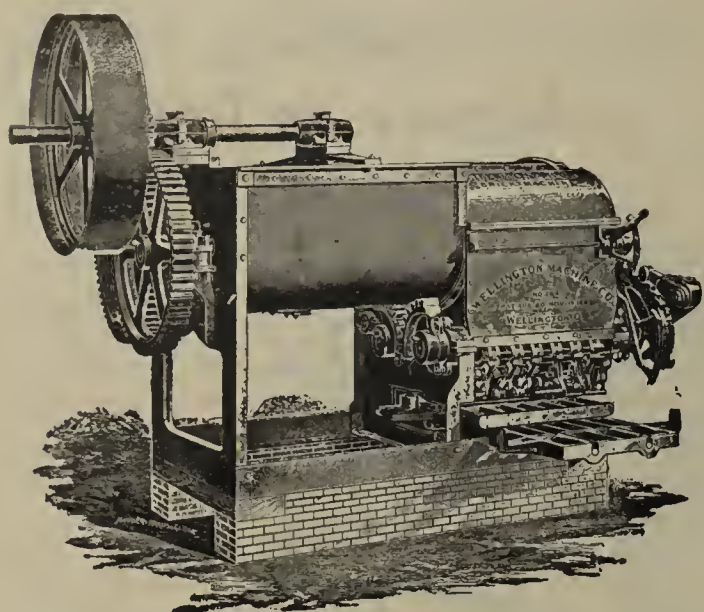
FULL INFORMATION ON APPLICATION

## THE HENRY MARTIN BRICK MACHINE MFG. CO.,

INCORPORATED.....

LANCASTER, PA.





# THE "MONARCH"

## Brick Machine.

ALL iron and steel. Takes clay from the bank. Double pug mills. 14 feet. "Up one side and down the other." Most thorough tempering. Presses are entirely "in the mud;" this is the greatest idea of all, for all wear, leakage and friction in the press box is entirely done away with. All bearings outside and "stuffed." Only four gears and none bevel. The acme of simplicity. Runs with much less power than any other of its class. Four years in use and thoroughly proven. Used by 50 of the very best manufacturers. Send for list and "go and see."

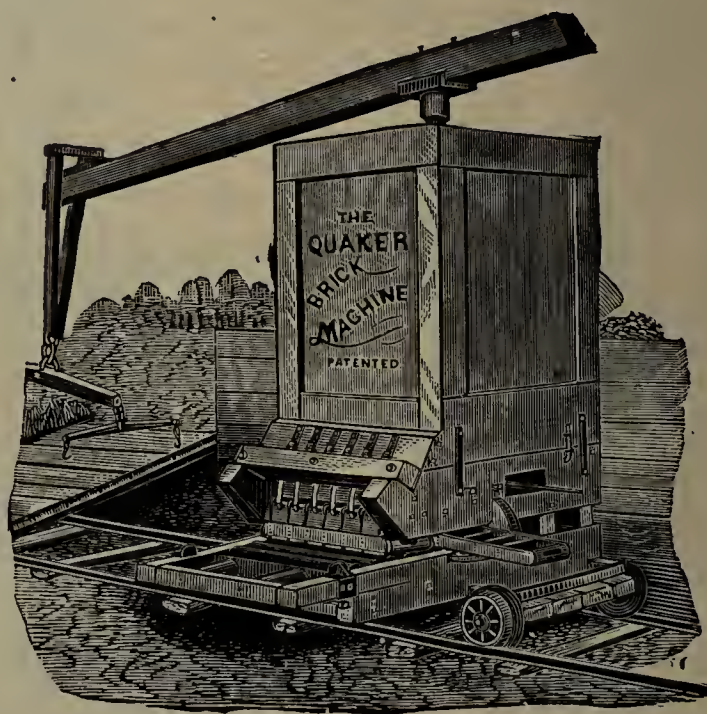
THE MOST ECONOMICAL and LONGEST LIVED MACHINE MADE.

# THE "QUAKER"

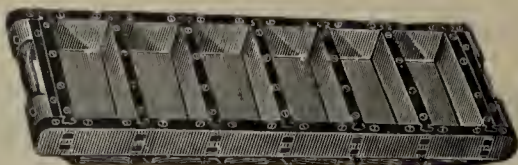
Family of Machines, are the Most Used of Any Single Make of Machine.

## The "New Model Quaker" Horse-Power Machine.

Low in price. A remodeled improvement of the old pattern. No other approaches it in value for small and average sized yards. Now has 3½ inch steel main shaft. Much heavier gears. Light draft grinders. Will mould pallet brick by Horse-power.



## Two Sizes of Steam Power "Quaker" Machines.



Our Trucks and Barrows are made from Bone-Dry Buggy Stock. This tells in the end. Don't buy cheap ones. Quality pays.

Moulds, Dump Tables, Dryer Cars, Kiln Doors and Frames and Grates, and all other supplies.

**The Wellington Machine Co.**

*Wellington, Ohio.*

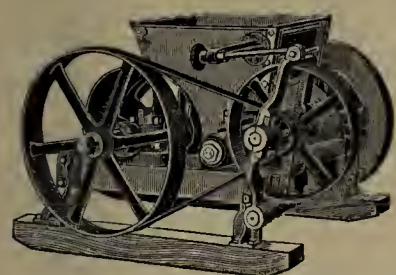
FOUNDERS AND MACHINISTS.)



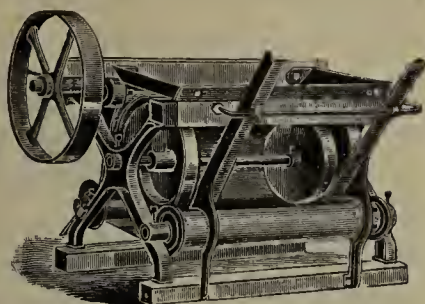
# WE ARE YOU.

## AFTER

We make every thing used on the brick yard. We can save you money. No commissions to be paid. We are manufacturers.



DISINTEGRATORS and STONE SEPARATORS. 12 Sizes.



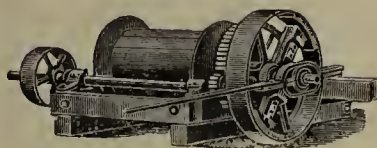
MOULD SANDERS.



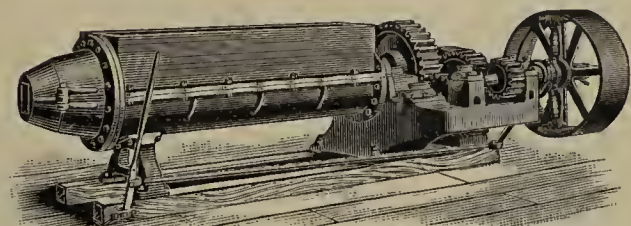
ELEVATORS and CONVEYORS.



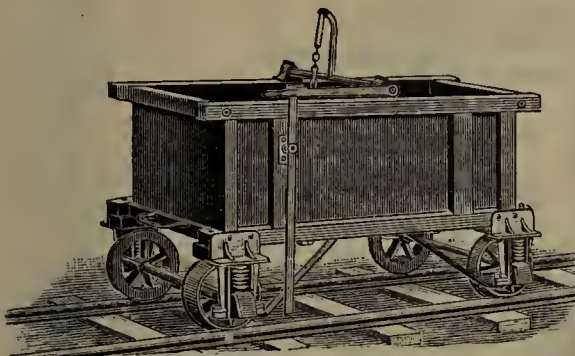
AUGER BRICK and TILE MACHINES.



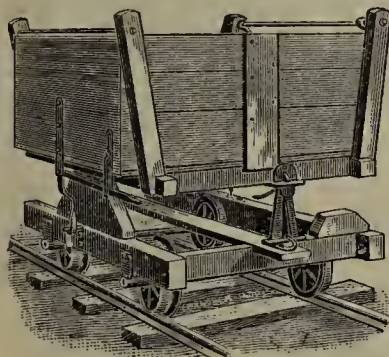
WINDING DRUMS.



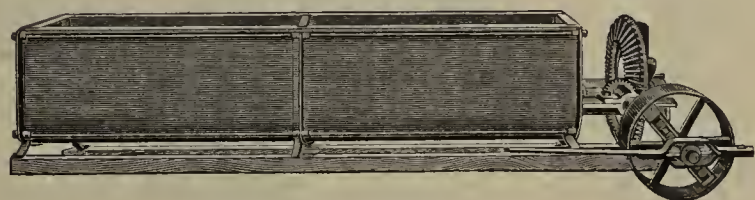
EXTRA HEAVY PUG MILLS and GRANULATORS.  
Capacity 50,000 to 125,000 Brick.



AUTOMATIC BOTTOM DUMP CARS.  
Having Chilled Wheels.



SIDE DUMP CAR.  
Having Chilled Wheels.



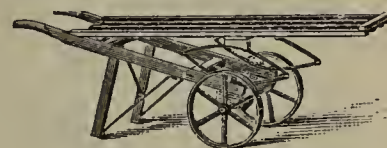
PUG MILLS For Soft Clay.



BARROWS For Brick or Tile.



BRICK MOULDS,  
For Either Machine or Hand.



TRUCKS, One or Two Wheels,  
For Brick or Tile.

WE will be pleased to hear from you and to quote prices.  
We are prepared to make estimates on complete plants of any desired capacity.

## C. & A. Potts & Co.,

420 West Washington St., - INDIANAPOLIS, IND.

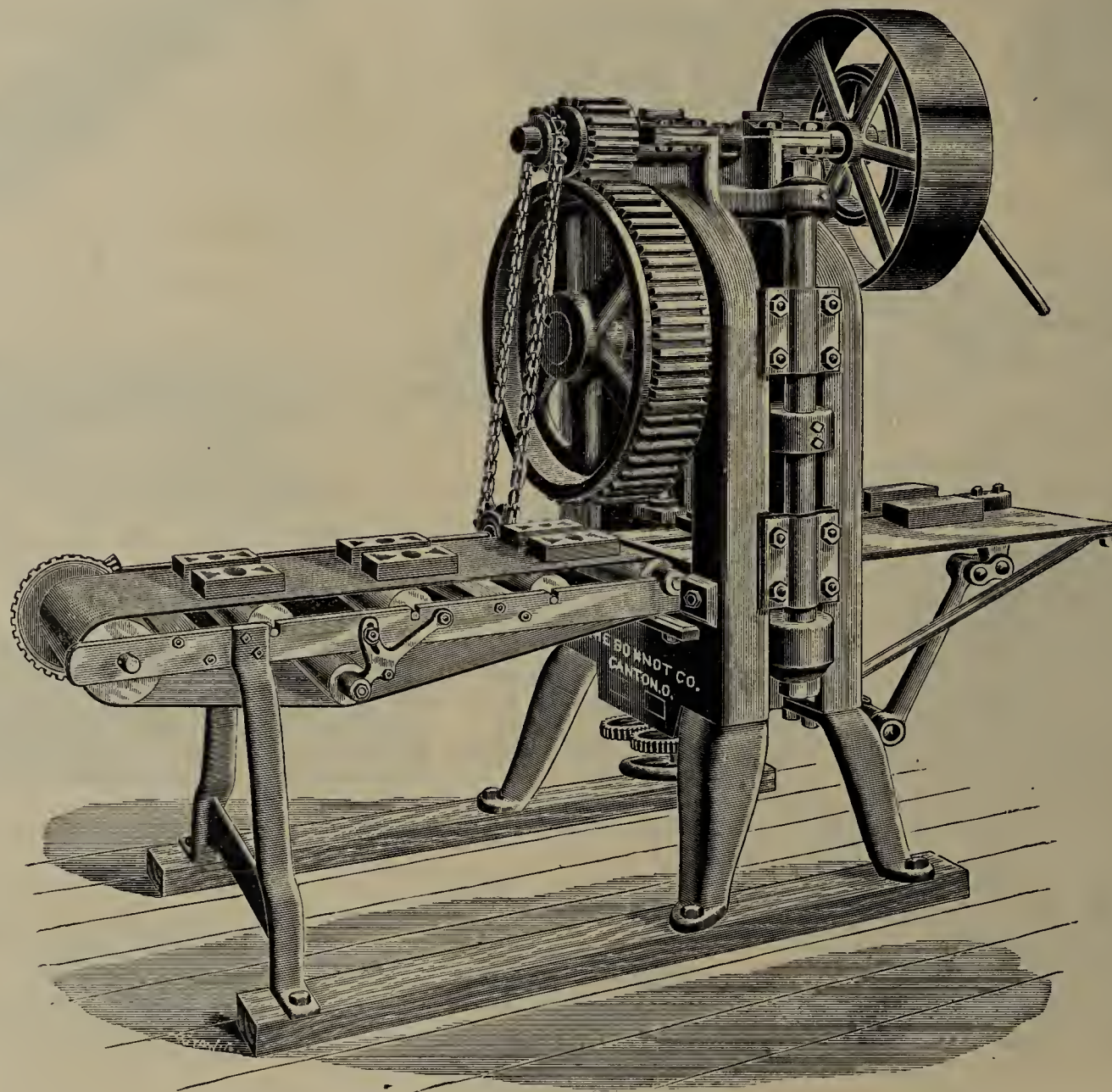




# A Re-press Simple in Mechanism.

POWERFUL THE LATEST AND BEST DURABLE

*Possesses The Greatest Convenience.*



**T**HIS Machine will do what no other Re-press has been able to accomplish. It will **ACTUALLY REPRESS THE SIGH** that rises in the bosom of weary brickmakers, caused by inferior machinery. These machines are fully guaranteed. Address,

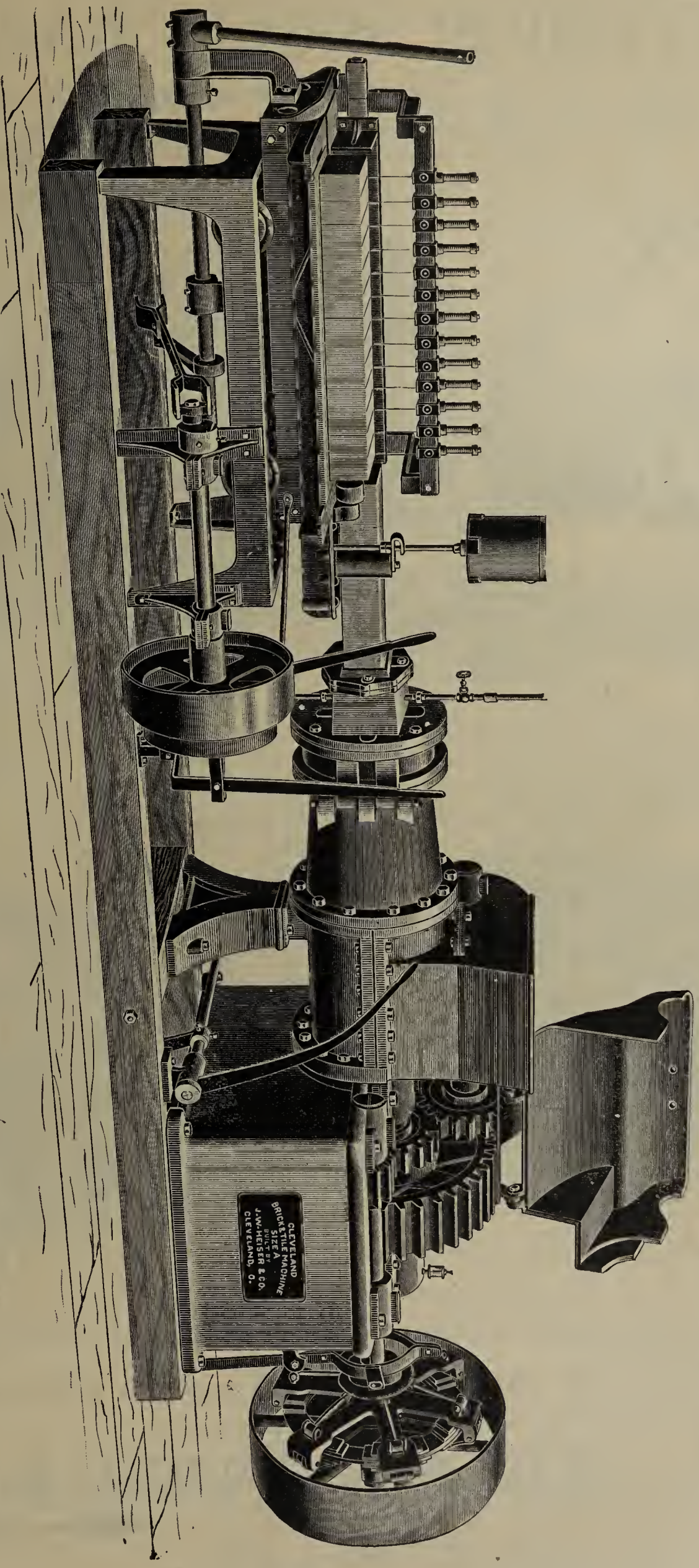
**THE BONNOT CO.,**

*Canton, Ohio.*

[Mention the CLAY-WORKER.]



# The "CLEVELAND" CLAY WORKING ..:.. MACHINERY.



Size "A" Machine with Patent Board Delivery Power Cutting Table. Capacity from 25,000 to 40,000 Brick per day.

ALL OF OUR MACHINERY IS BALL AND PIN BEARING AND....  
GUARANTEED FOR ONE YEAR AGAINST WEAR OR BREAKAGE.

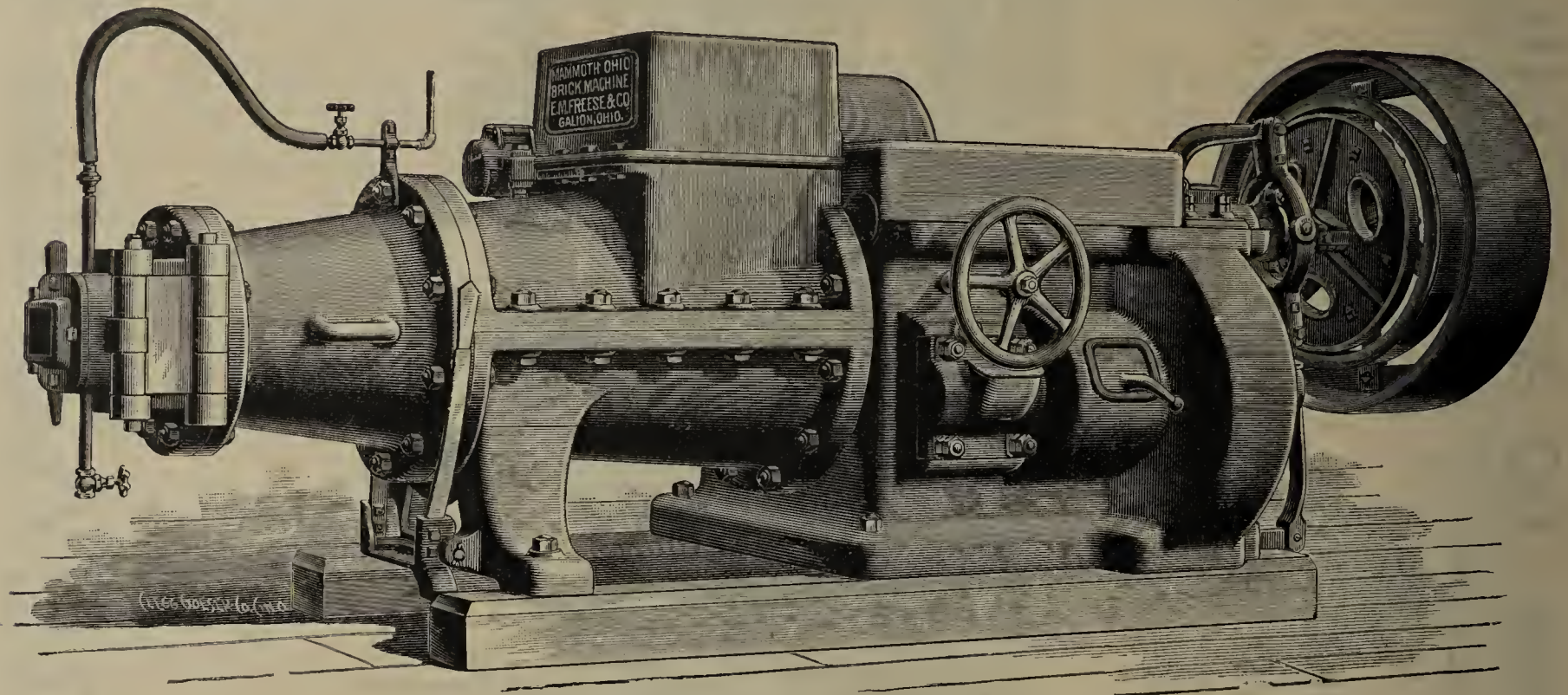
If you want superior machinery, improve your product, save money and have a balance on the right hand side of your Ledger, write to us for Catalogue and description of our machinery.

J. W. HEISER & CO., Manufacturers of CLAYWORKING MACHINERY, Cleveland, Ohio.



# SUPERIOR BRICK MACHINERY.

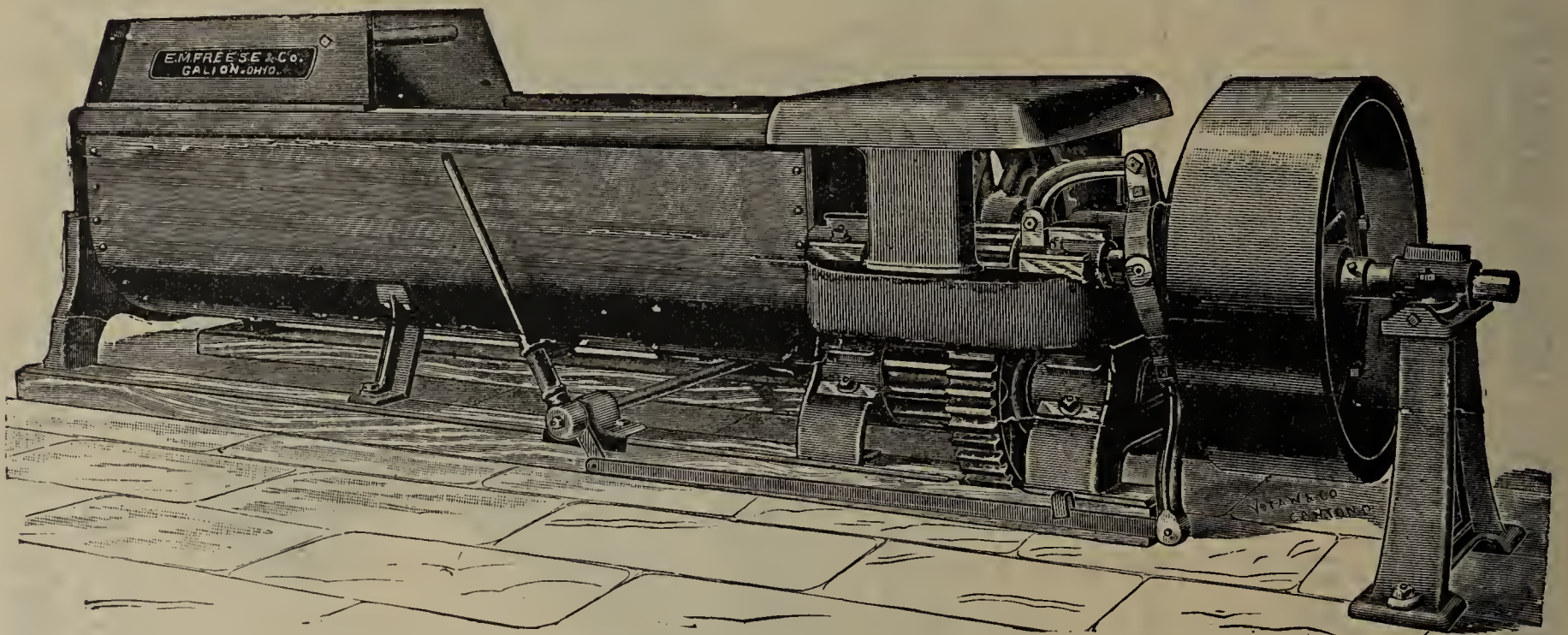
*For Paving, Building and Fire Brick.  
Substantial, Simple, Practical.  
Best Material and Workmanship.  
In short our Machinery is made for everyday use.*



MAMMOTH OHIO BRICK MACHINE.

Don't fail to see it or get particulars. We make Brick Machines of all capacities.

## *PUG MILLS THAT PUG THE CLAY.*

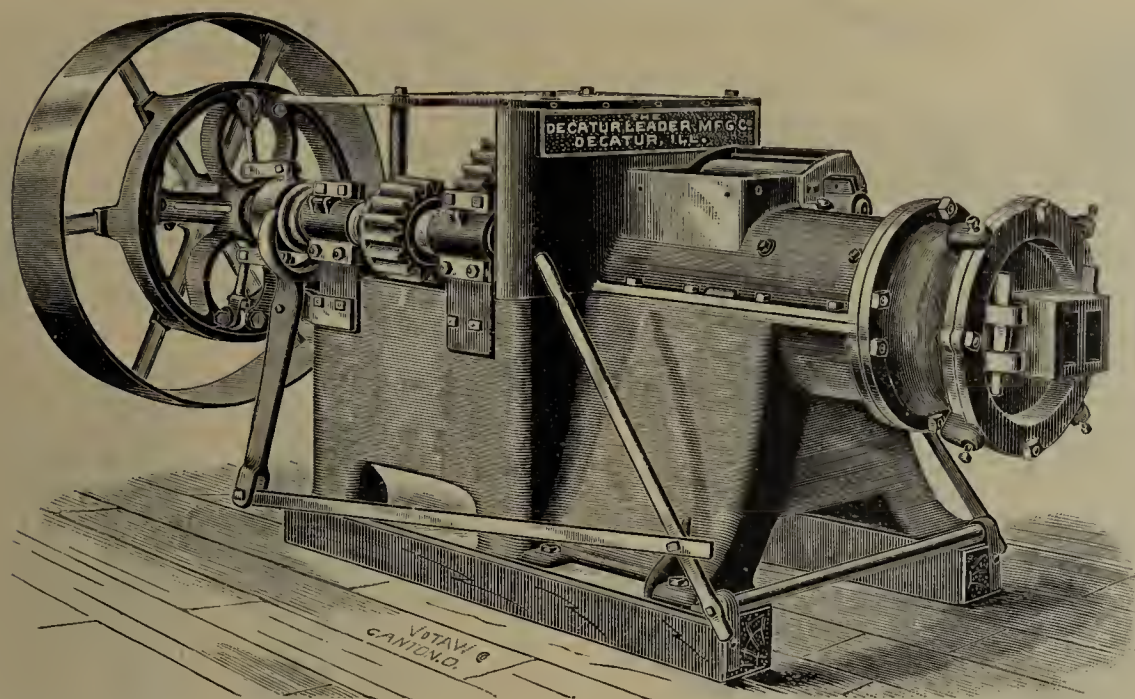


These Pug Mills are made in various sizes. If you want to improve the quality of your brick try one.

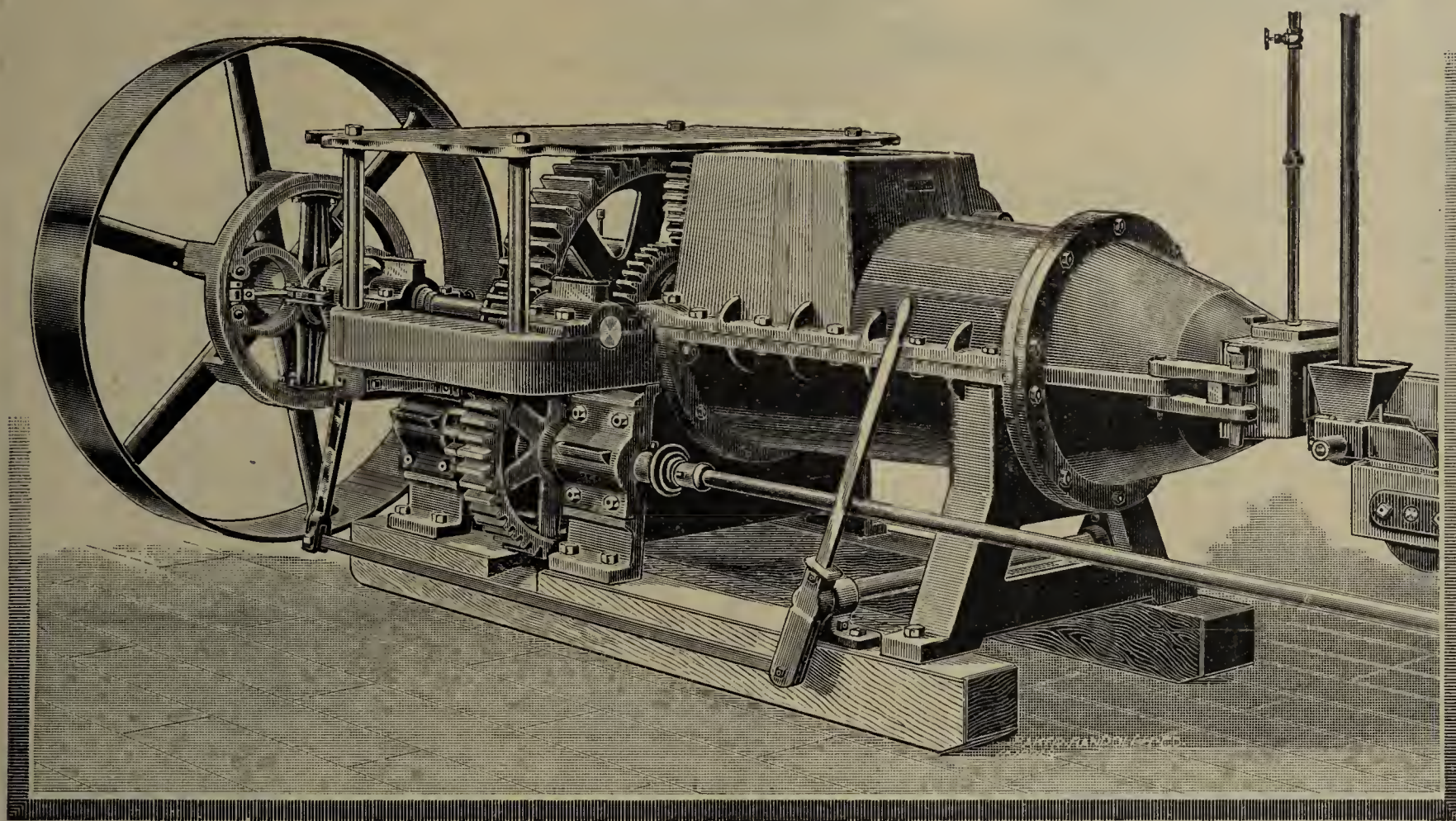
Don't fail to look up our very complete line of Clay Working Machinery.

IT WILL PAY~~~~~

ADDRESS **E. M. FREESE & CO.,**  
~~~~~**GALION, OHIO.**

Several
Sizes.



Auger Brick Machine.

*Brick Machines,
Crushers,
Complete Outfits,*

*Automatic Cutters,
Pug Mills,
Disintegrators.*

—Circulars Free.—

THE DECATUR LEADER MFG. CO.,

Decatur, Ill., U. S. A.

[Mention the Clay-Worker.]

NO. 9 MACHINE WITH STEAM LUBRICATING DIE AND BOARD DELIVERY CUTTER.

The attention of Brickmakers is called to our No. 9 Machine, a cut of which appears below. It is the most perfect machine of its class now offered to the public. It thoroughly grinds and mixes the clay. Its capacity is equal to the wants of an ordinary manufacturer, and the quality of the brick is unsurpassed. The column of clay issues with a smooth surface and perfect corners. The Cutter is easily operated, the cutting accurately done and the brick delivered on pallets ready for removal.

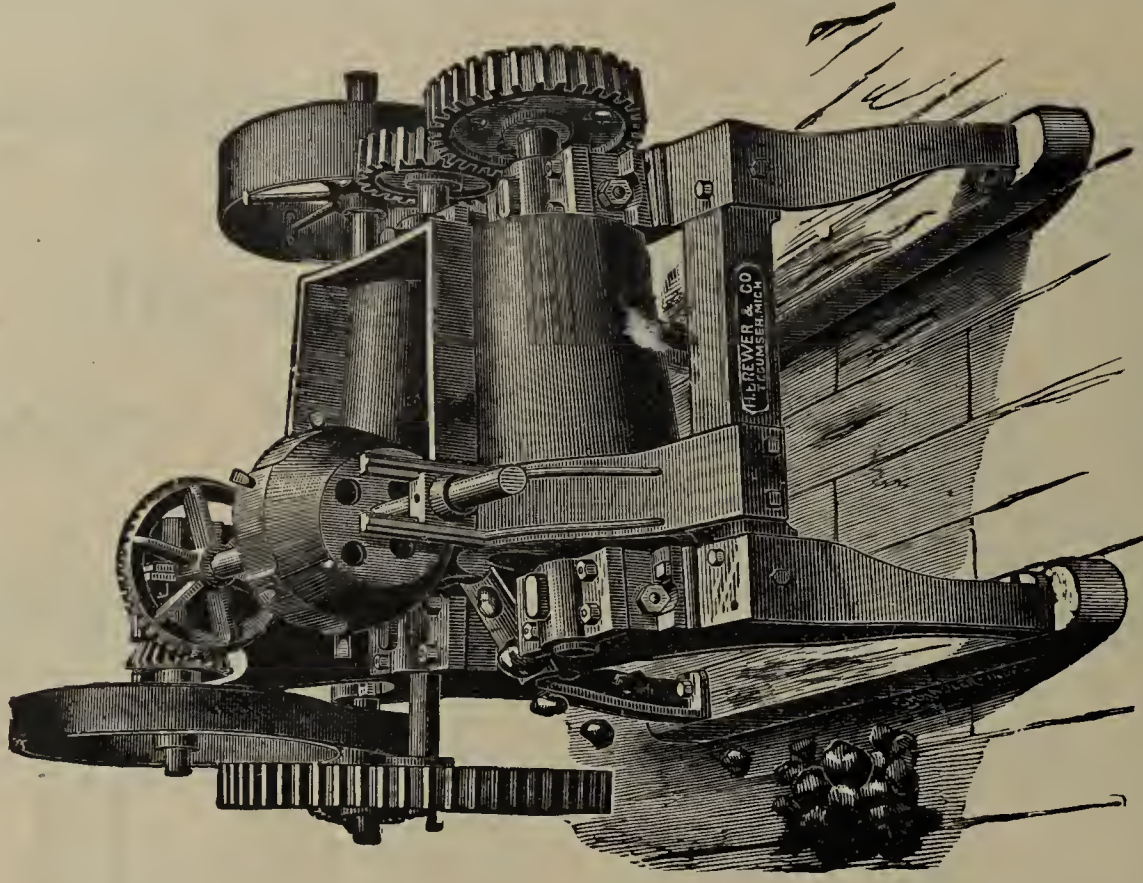
All sizes of tile from 3-inch to 15-inch are successfully made on this machine, and the tile attachments can be procured at moderate cost.

For full information address

H. BREWER & CO.,

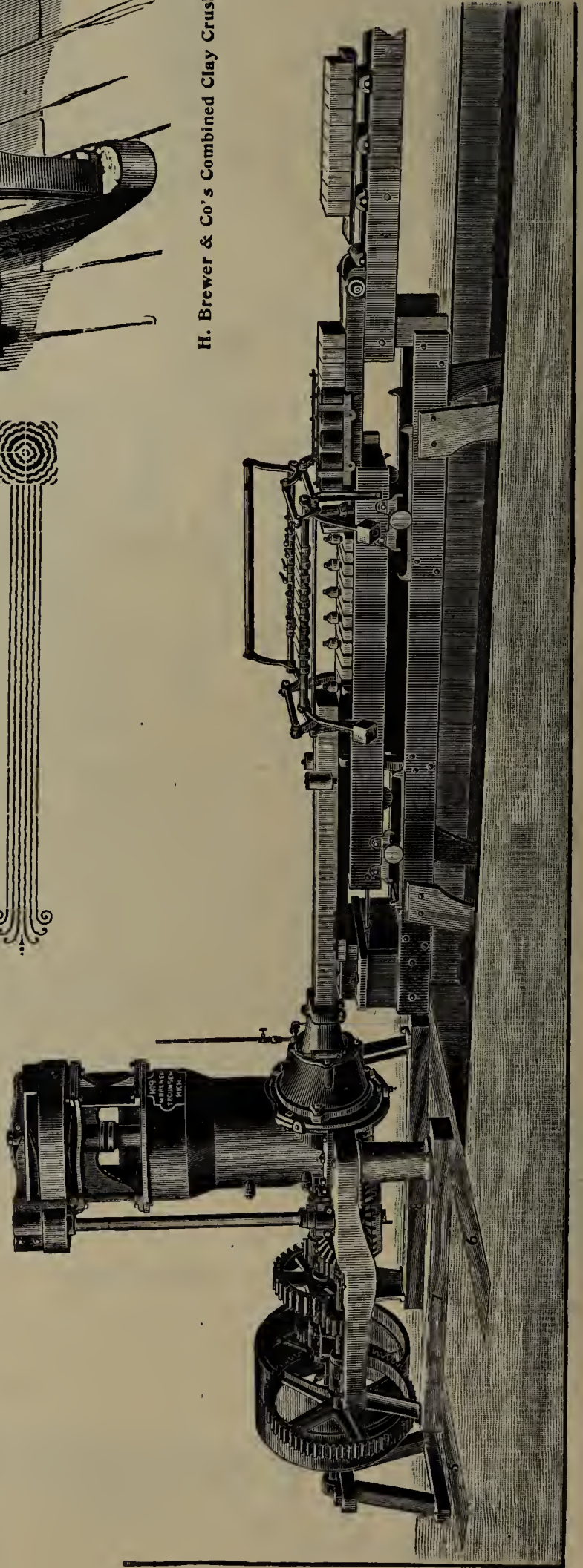
Tecumseh, Mich.

[Mention the CLAY-WORKER]



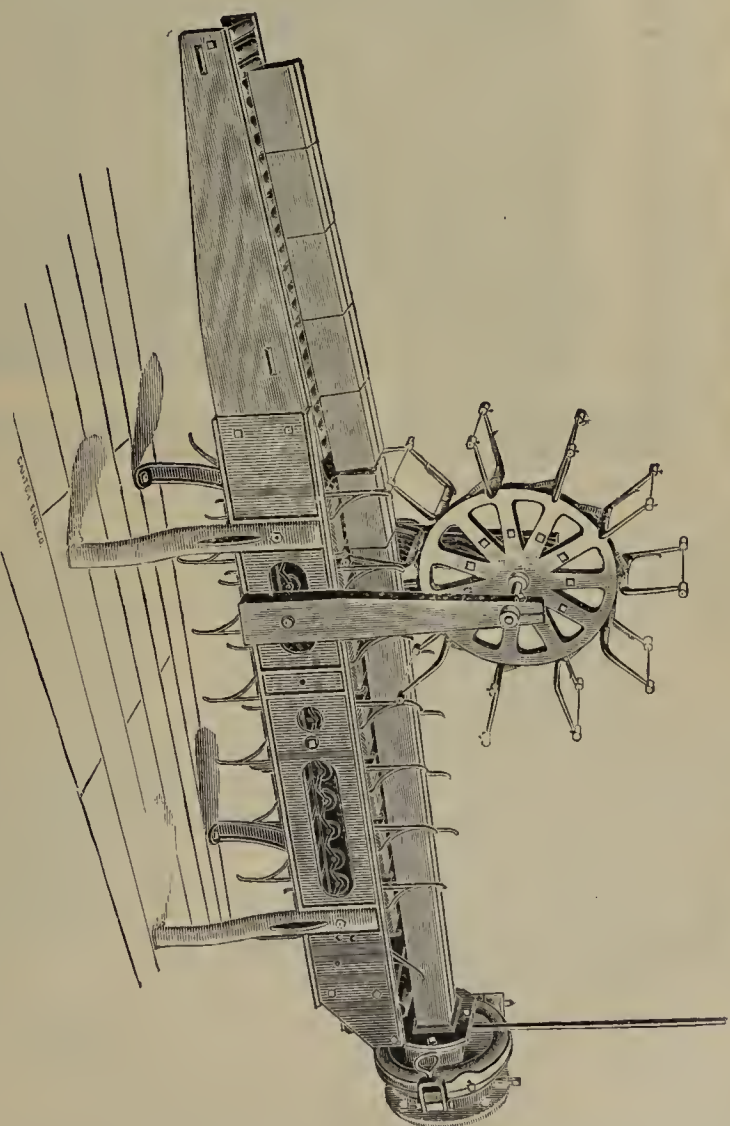
H. Brewer & Co's Combined Clay Crusher and Stone Separator.

The prominent feature in this Crusher is the combination of two smooth, tapering crushing rolls running at different speeds, in connection with an adjustable transverse roll which is of irregular form and provided with teeth or spurs whereby the clay is rapidly broken up and crushed and the stone separated therefrom.



“PLYMOUTH”

Look at it!
You can rely on it!
Many have tried it!
Operates perfectly!
Until worn out!
Try one yourself!
How soon shall we ship?



New Automatic End Cut Brick Table.

• • **SUCCESS** • •

“Nothing Succeeds Like Success.”

Correct in principle
Strong in construction
Easy of Operation

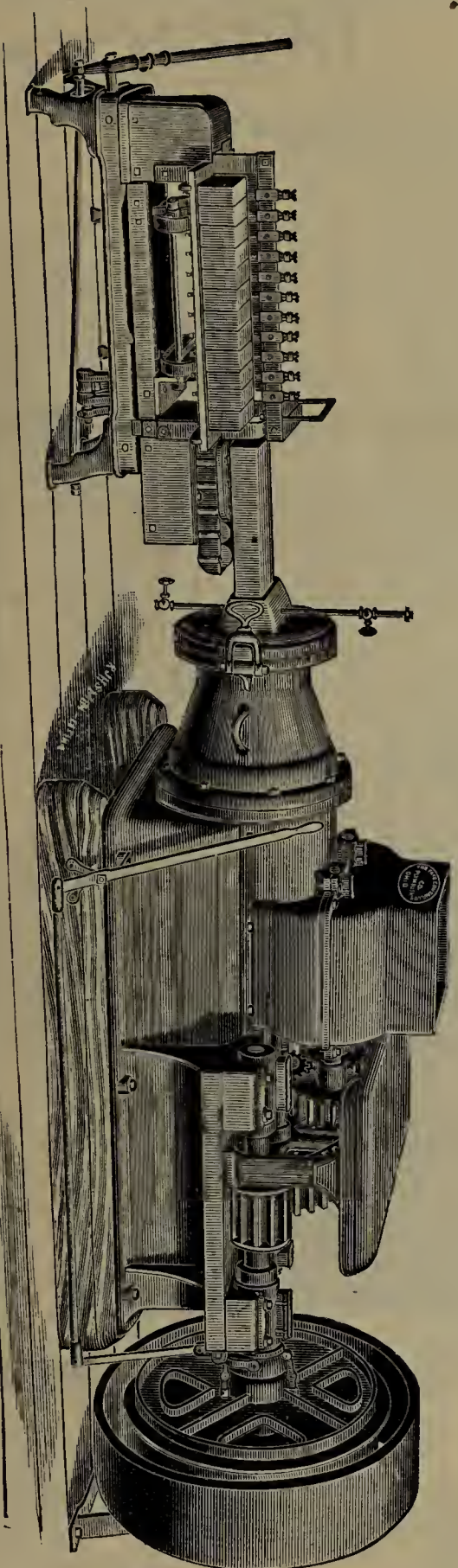
Let us hear from you.

THE FATE=
GUNSAULLUS
COMPANY,

Plymouth,

Richland Co., Ohio.

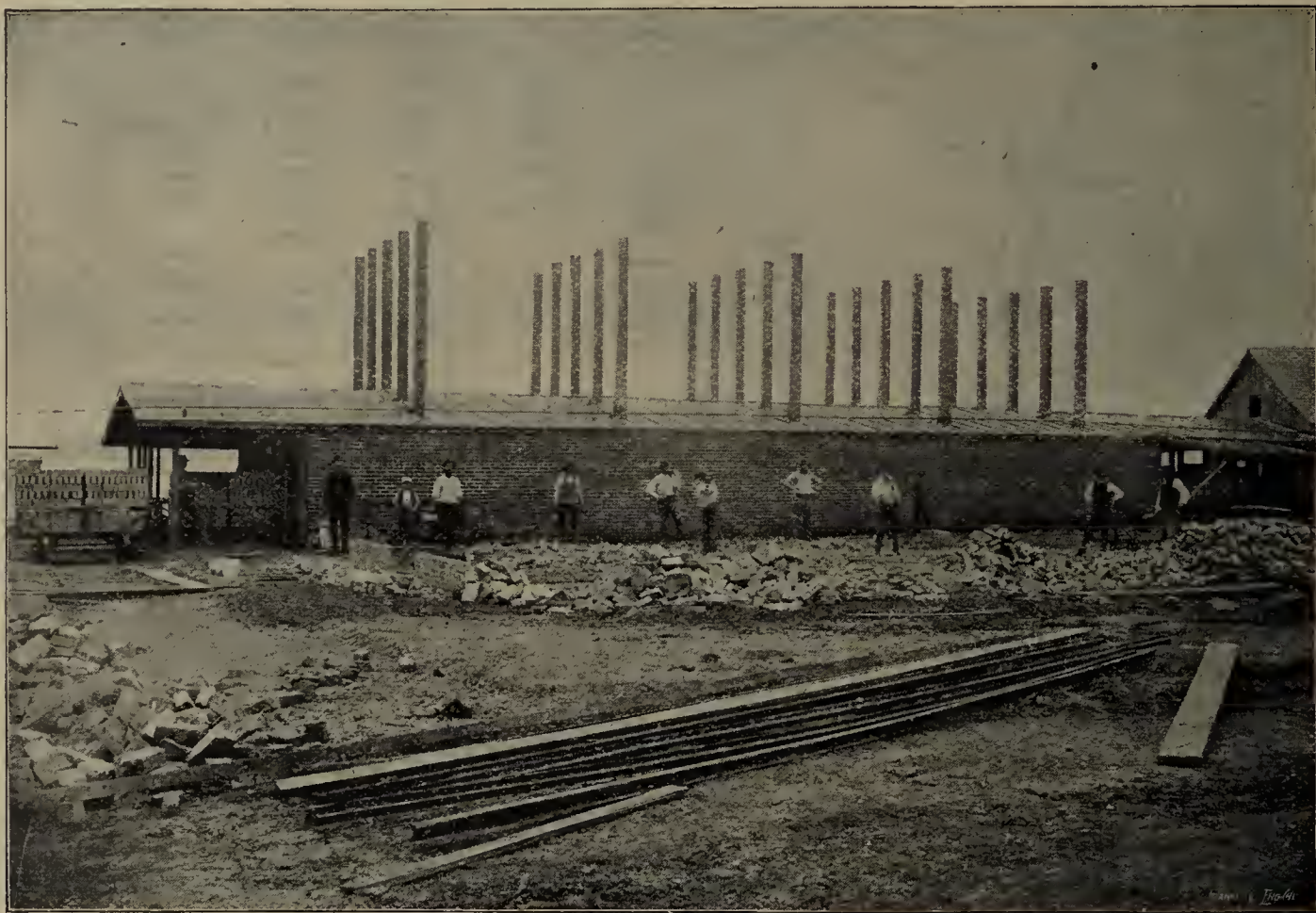
“A” size Brick Machine, with Board Delivery Cutting Table.



The BUCYRUS STEAM TUNNEL DRIER

It Has Never Failed, Nor Never Will!

WHY? Because it distributes its radiation with the same uniformity as the sun's rays. It only differs from the heat of the solar body in its intensity. This is the principle upon which we construct the Bucyrus Steam Tunnel Drier, and it is useless to argue that it is not the correct principle, for no experienced clayworker can or will deny that the sun's rays, direct or indirect, is not the best mode of drying clays. Its only weakness is its inability to do the work rapidly. We substitute the Bucyrus Steam Tunnel Drier, using natural principles only, adding thereto sufficient heat to do the work in the minimum amount of time.



THE FREY-SHECKLER CO., BUCYRUS, OHIO.

GENTLEMEN:—I have been endeavoring to write you for some time as to the satisfactory results of the Tunnel Dryer you put in for me about two years ago. It does all I could expect of it. It makes 15,000 brick per day (that is the capacity of my dryer). I have not stopped one hour on account of my brick not being dry. I think the cost of drying by it is cheaper than any other process I have seen.

Yours truly,

M. S. MARQUIS.

NEW CASTLE, PA., December 26, 1893.

THE FREY-SHECKLER CO., BUCYRUS, OHIO.

GENTLEMEN:—The Dry House at our works, put up for us last June, has been another of those perfect things constructed by the Frey-Sheckler Co. Constructed and adapted to the use of our exhaust steam during the day time and live steam during the night, it has been a perfect dryer. Contemplated to hold our brick forty-eight hours, it has been the very best dryer in the country, and made a saving in cost of fuel to us of 50 cents to 60 cents per 1,000, paying the cost of Dryer in one year. With addition of extra steam for daytime we can dry 125,000 in twenty-four hours. We take pleasure in testifying to the virtues of the Dryer.

With respect,

GALESBURG BRICK & TERRA COTTA CO.

Per Albert Warren, Sup't.

GALESBURG, ILL., January 10, 1894.

We Solicit Correspondence From All Brickmakers

THE FREY-SHECKLER CO.,

— BUILDERS —

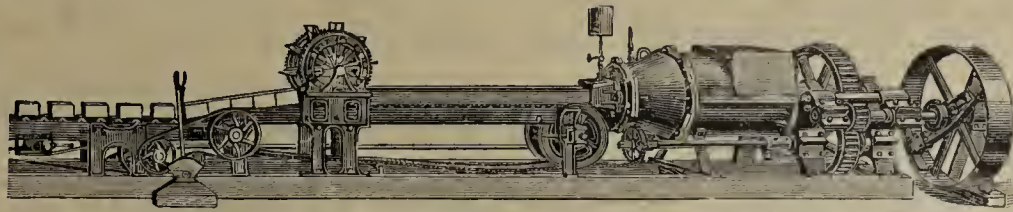
Send for Catalogue.....



Bucyrus, Ohio, U. S. A.

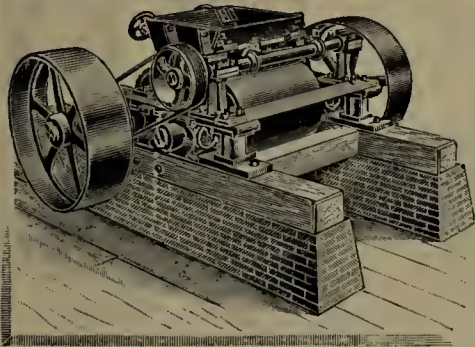
WE STUDY TO PLEASE.

A FEW SAMPLES

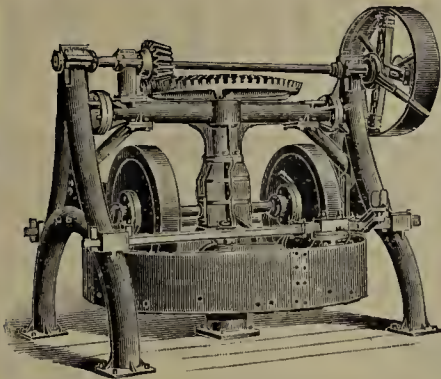


No. 1 Giant Machine and Automatic Table.

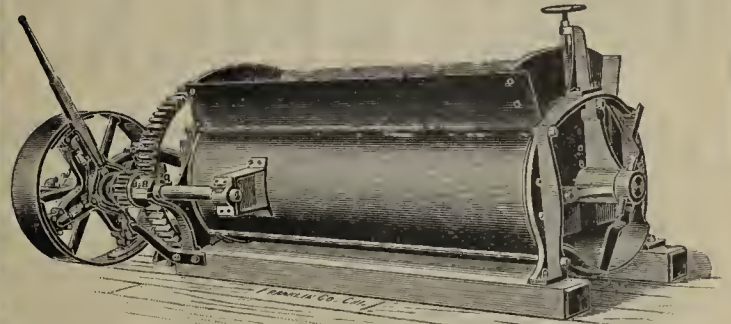
Just to give you
an idea. That's
All.



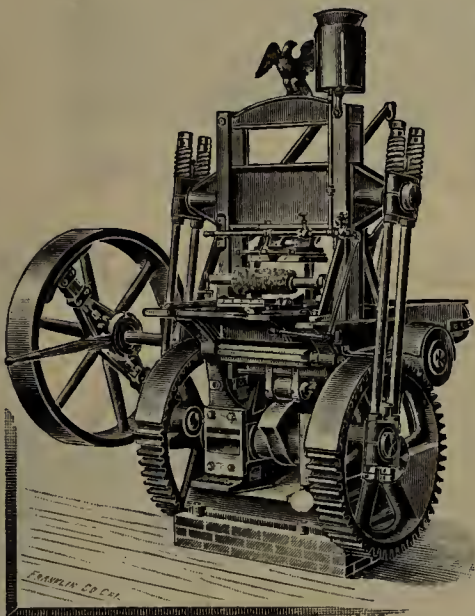
Improved Tailings Crusher.



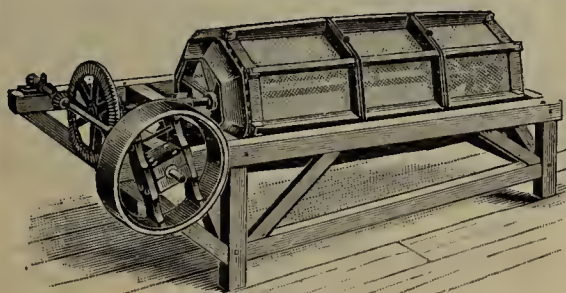
Dry and Wet Pans.



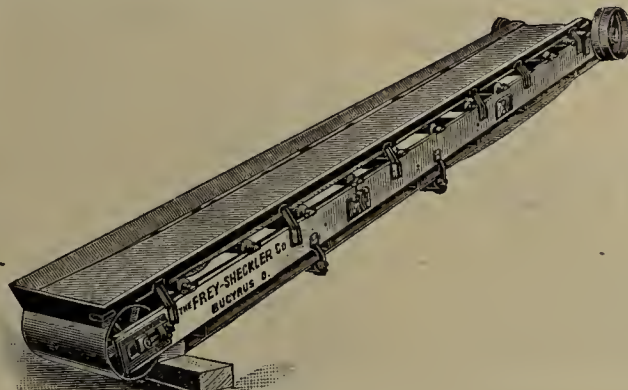
Pug Mills and Granulators.



Eagle Steam Power Re-Press.



Octagon Revolving Clay Screens.



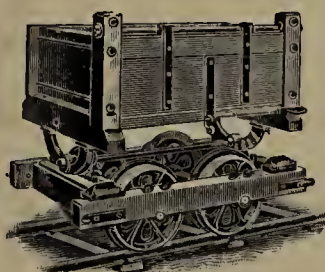
Clay Conveyors.



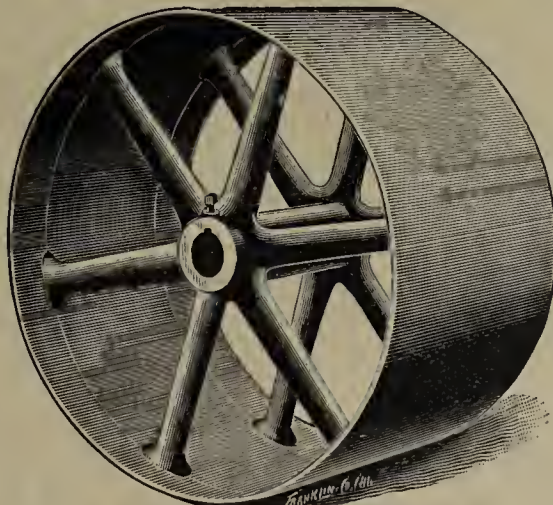
Clay Elevators.



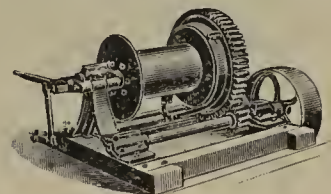
Reduction Mill.



Dump Cars.



Pulleys, Shafting and Belting.



Winding Drums.



Couplings, Hangers, Etc.

The FREY-SHECKLER CO., - Bucyrus, Ohio, U. S. A.

Manufacturers of a Complete Line of Clayworking Machinery. Also builders of the Celebrated Bucyrus Steam Tunnel Dryer.

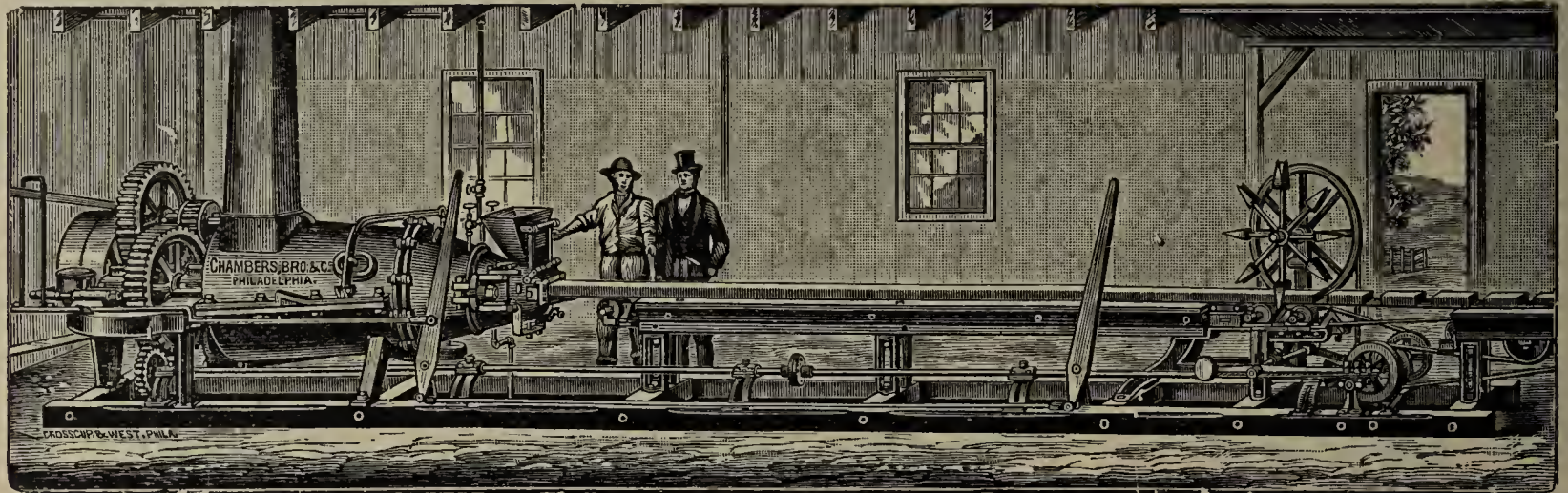
Send for Catalogues.

CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

••• PHILADELPHIA, PENN. •••

IMPROVED BRICKMAKING MACHINERY.



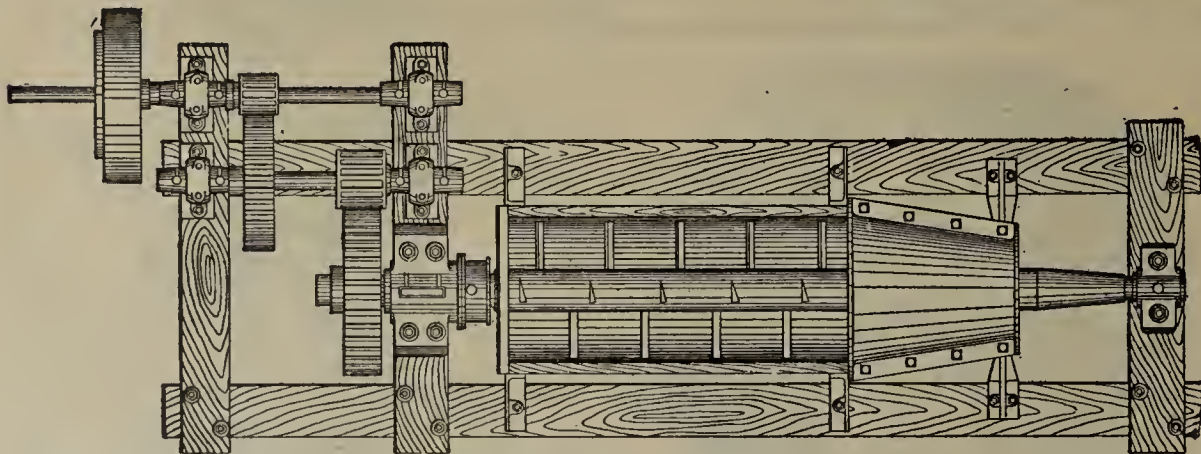
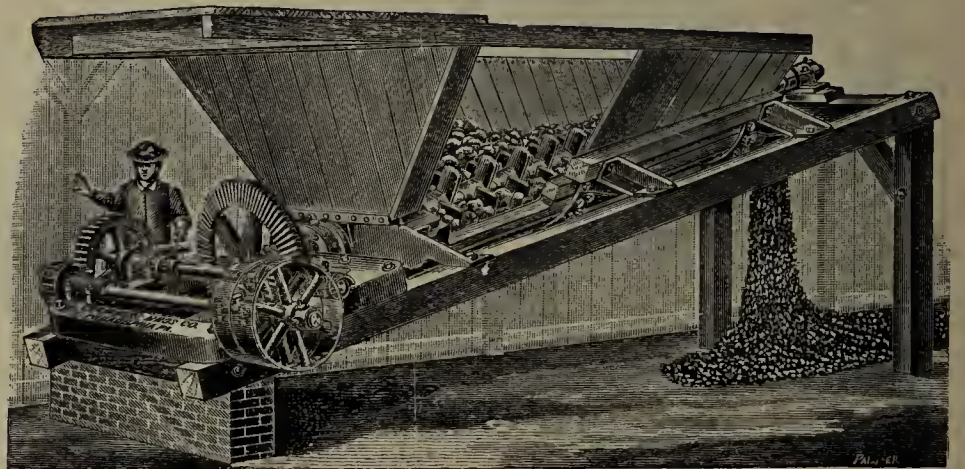
Three Sizes of Automatic Brick Machines.

CLAY GRANULATORS

—AND—

MIXING MACHINES

Of Any Desired Capacity.



HORIZONTAL
PUG MILLS

Of Six Sizes and Styles.

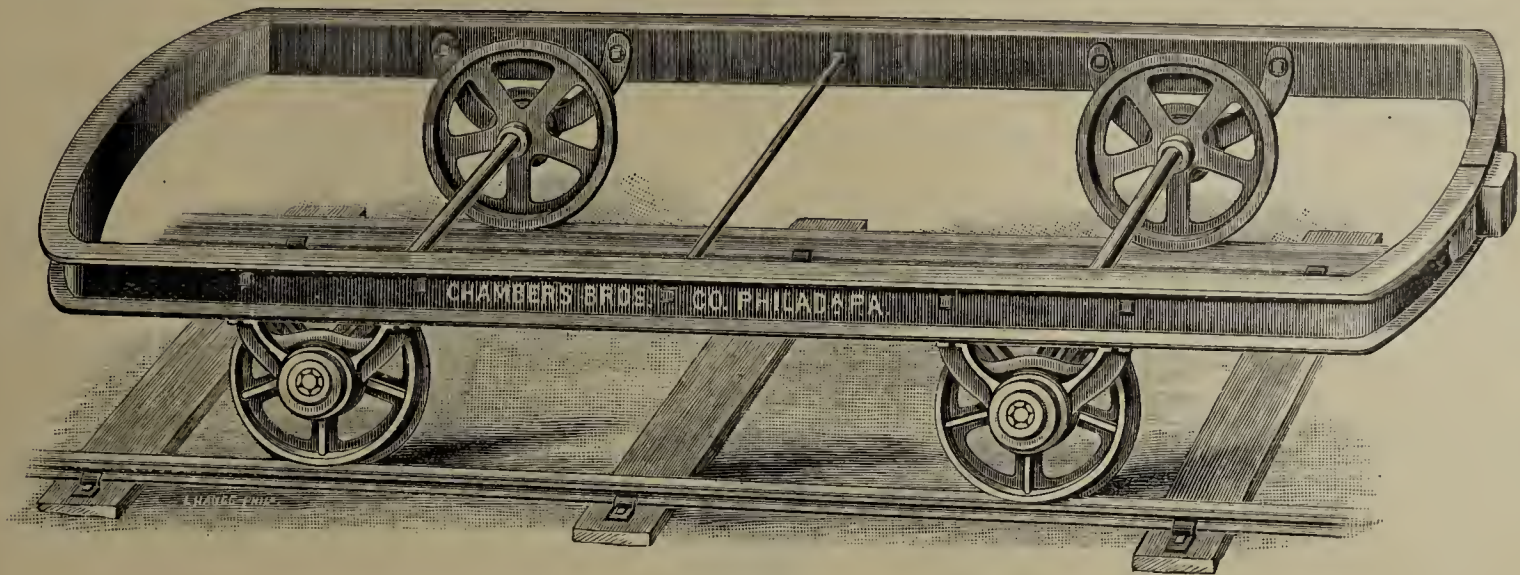
VERTICAL PUG MILLS, ••• CRUSHING ROLLERS,
CLAY ELEVATORS.

KILN CASTINGS OF ALL DESCRIPTIONS.

See ad. on first cover page

[Mention the Clay-Worker.]

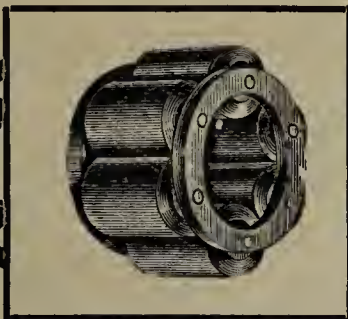
❖ DRYER CARS. ❖



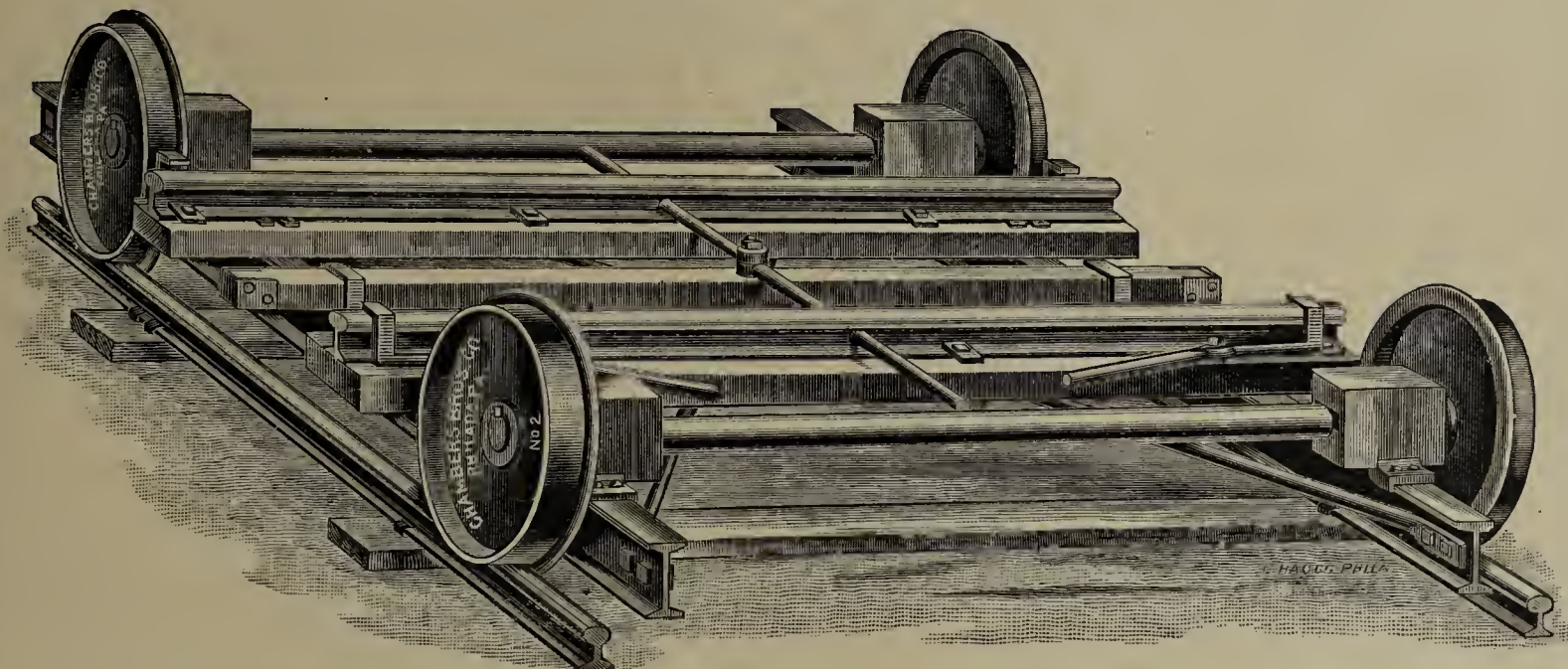
This STEEL CHANNEL FRAME CAR is Without an Equal.

We are prepared to make it of different dimensions, and of gauge to suit customers requirements. The channel section is much stiffer than angle, and being in one piece there are no weakening joints as where cross rails and bumpers are bolted to side frames.

The Anti-friction Cage Roller



Bearing used on our Cars.



WROUGHT IRON BEAM TRANSFER CARS.

We guarantee these to give satisfaction.

CHAMBERS BROTHERS CO.,

Fifty-Second St., Below Lancaster Ave.,

❖ PHILADELPHIA, PENN. ❖

Clipped from

The Berlin News.



The Berlin Brick Co., Marcus E. Jacobs, proprietor, have again beaten their record for a single machine brick making yard. April 16th, they began brick making and during the season, which closed October 29th, they made 7,050,000 brick, beating their own record of last year by 207,000. The machine used on the yard is the New Haven horizontal, made by the McLagon Foundry Co., New Haven. There was not a single hour's lost time on account of breakage, during the whole season's work.

Mr. and Mrs. N. Albert Hooker
observe the twenty-fifth (25)

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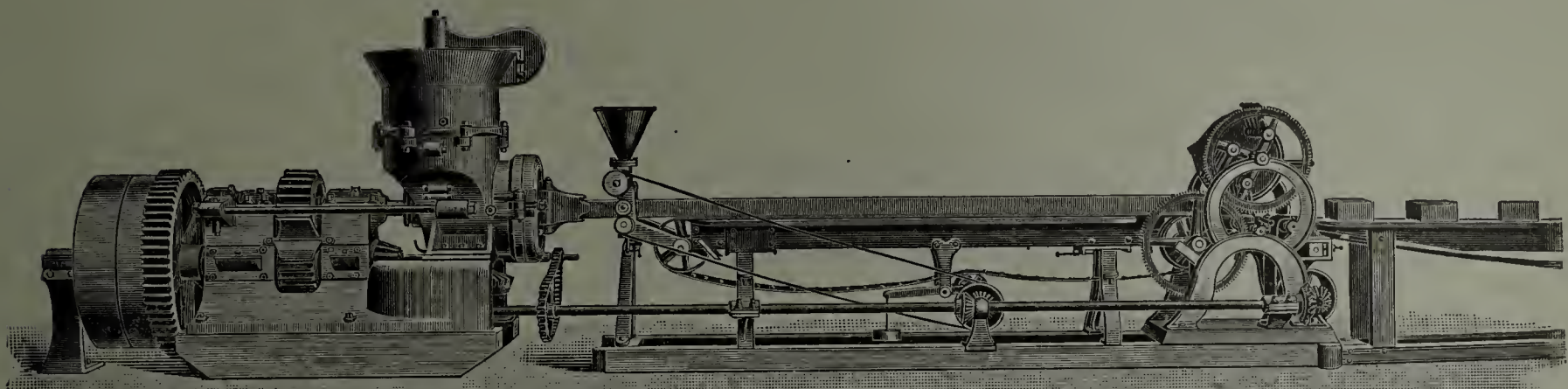
With this one Machine only, over 37,000,000 pallet brick have been made in the past six seasons.

For other reports, write

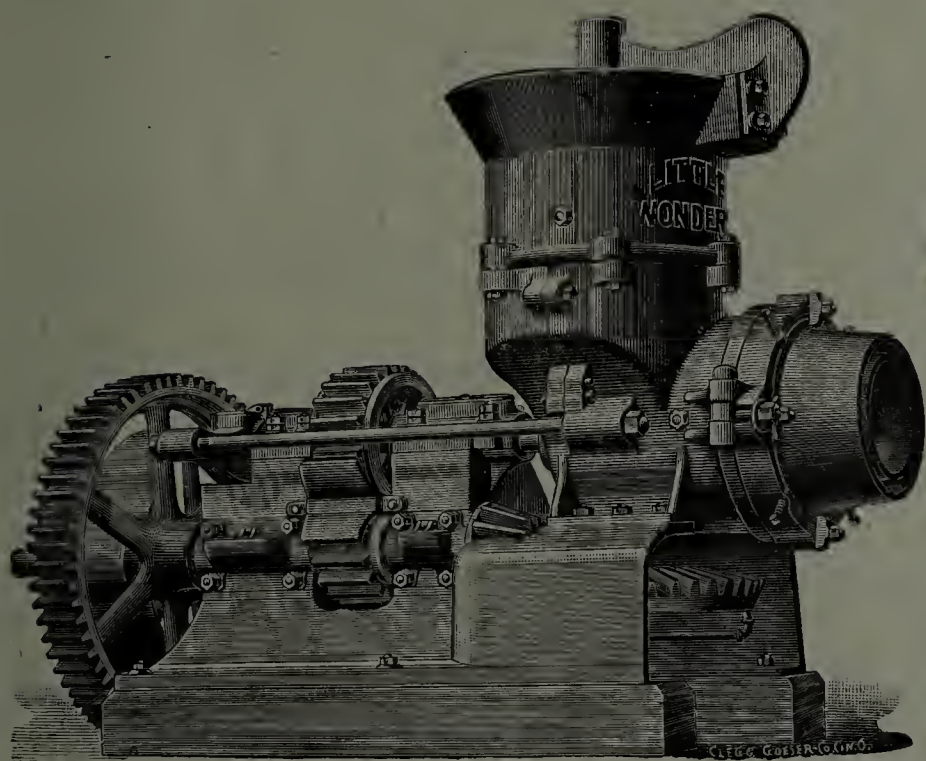
The McLagon Foundry Co.,

NEW HAVEN, CONN.

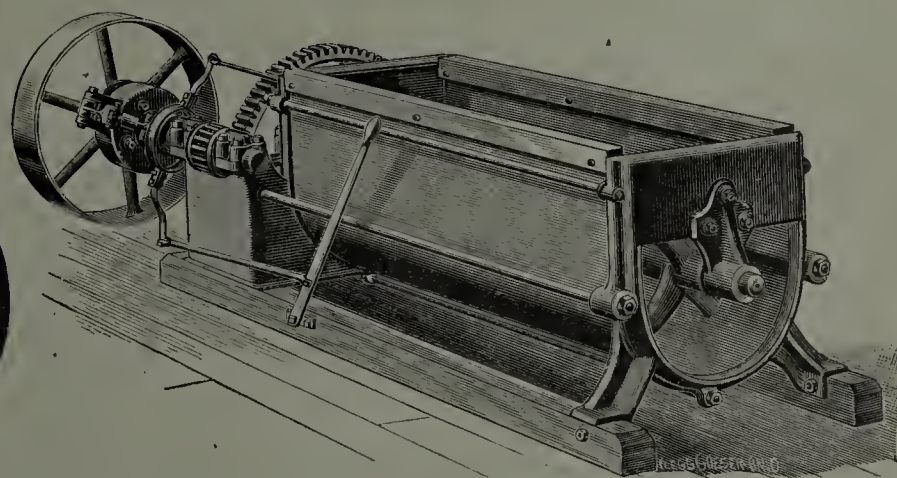
Wonder Machinery.



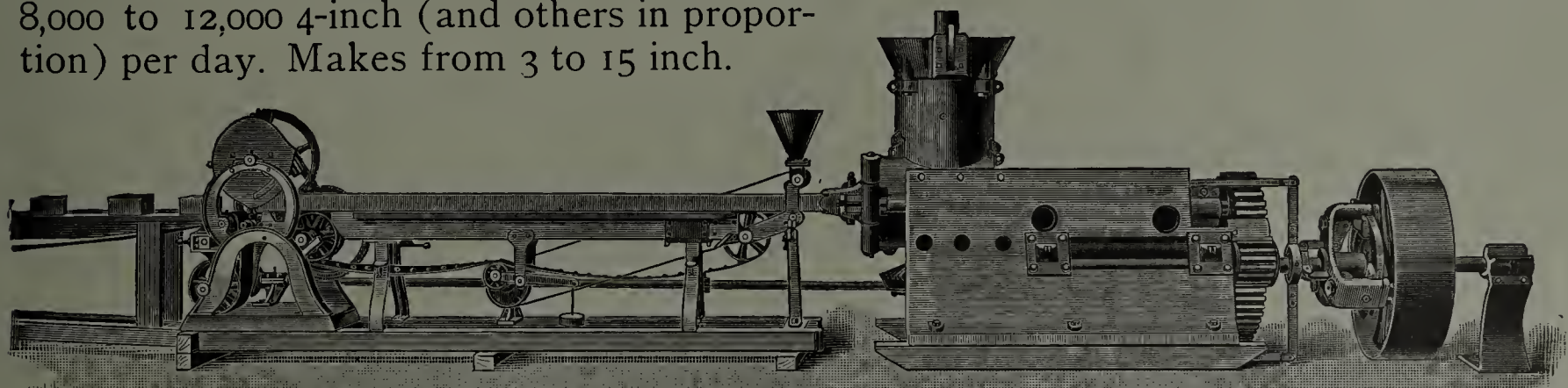
Little Wonder Brick Machine, with Cunningham Automatic Brick Cutter and Sander ; capacity, 25,000 Brick Per Day.



Little Wonder Drain Tile Machine ; capacity 8,000 to 12,000 4-inch (and others in proportion) per day. Makes from 3 to 15 inch.



No. 1 Open Top Pug Mill, Single Geared, 25,000 to 35,000 Brick Daily Capacity.



Big Wonder Brick Machine with Cunningham Automatic Brick Cutter and Sander ; capacity 60,000 to 75,000 Brick Per Day.

AS MANUFACTURED BY ~~~

The Wallace Manufacturing Co.,

Send for No. 14 Catalogue for further particulars.

FRANKFORT, IND.

The LATEST IMPROVED



Brick Dryer.

ADAM J. WECKLER,
TELEPHONE. DIVERSY AND CLYBOURN AVES.

WECKLER BRICK CO.,
TELEPHONE. WESTERN AND ADDISON AVES.

WECKLER-PRUSSING BRICK CO.
TELEPHONE. BLUE ISLAND, ILL.

MAIN OFFICE:
517 OGDEN BUILDING, 34 CLARK ST.
TELEPHONE 5044.

DRYING SAND MOLD BRICK.

C. HENNEKE, PRESIDENT.
F. VOGT, SECRETARY.

TELEPHONE 737-2.

STANDARD BRICK CO.,

MANUFACTURERS OF THE CELEBRATED

Milwaukee Cream Colored Brick.

OFFICE AND YARDS: 496-510 Clement Ave., 17th Ward.

Milwaukee, Wis., Sept. 30, 1893.

WOLFF DRYER CO., Chicago, Ill.

Gentlemen:—In regard to your inquiry, how we like the exhaust pump put in for our dryer last Spring, we are glad to say, that same works to our entire satisfaction; in fact could work no better and what is more, has saved us a great deal of fuel. It gives us also great satisfaction to say on this occasion, that your dryer, after using same three seasons, works as nicely as ever and we are fully convinced that we have the best dryer in the market to-day. Last year we felt a little doubtful as to whether we really had the best dryer, for other parties, who tried to sell their dryers here, made such high claims for same in every respect, that, if realized, they would put your dryer in the shade. Since then two dryers of different makes, were put in different yards here, just those dryers, for which these claims were made. One of them proved a complete failure, drying about 20,000 brick per day, instead of 60,000, and it will have to be torn down to make room for some other dryer, and the second did not work until same was materially changed, and we have all reasons to congratulate ourselves to have hit on the right dryer in the first place. We shall be glad to show your dryer to any interested parties who may visit our yards. Yours very truly, STANDARD BRICK CO., F. Vogt, Sec'y.

WOLFF DRYER CO., Chicago,

Chicago, July 18, 1894.

Gentlemen:—We have had one of your twelve track dryers in use for nearly two years and two six track dryers for more than one year. Since you have improved these dryers by means of the receiving tank and pump system, we are drying 175 to 180 M bricks per day, with a saving of 20 to 25 per cent. of steam used under the old system. It is possible to dry up to 200 M brick every 24 hours, without injury to the ware, and we have done this on several occasions when we were compelled to run over time.

Our experience with other dryers formerly used on our plant and the results obtained by other manufacturers in this neighborhood with hot air and fire dryers, compels us to say that in our estimation your dryers are more economical and show better results than any we have seen. We use two boilers 5x18 feet for these dryers and at times have to reduce the quantity of steam used to prevent getting the bricks too dry. Pressure carried 85 pounds.

Yours respectfully,

WECKLER-PRUSSING BRICK CO.,
Alexander Prussing, Secretary

TENNESSEE

PAVING BRICK CO.,

GENERAL OFFICES:—MONTAGUE BLOCK

W. M. LASLEY, GENERAL MANAGER.

ROOMS 1 & 3.

Chattanooga, Tenn., September 3, 1894.

The WOLFF DRYER COMPANY, Chicago, Ills.,

Gentlemen:—We have thoroughly tested your Iron Clad Dryer put in for us recently, consisting of three (3) tunnels of three (3) tracks each; tunnels being eight-three (83) feet long, and it is giving us entire satisfaction. We are drying forty thousand (40,000) paving blocks per day, in size $2\frac{3}{4} \times 4\frac{7}{8} \times 9\frac{1}{4}$. Our brick come from the dryer perfectly dry, without checks, warp or twist.

It is a decided improvement over our old method of direct heat flue dryer and we are drying more and better brick with it than we did with our old system, nine (9) tunnels, three (3) tracks in each tunnel.

We adopted your system after investigating others and can recommend it.

Yours truly,

TENNESSEE PAVING BRICK COMPANY,
W. M. Lasley, Gen. Man.

Labahn Brick Company,

MANUFACTURERS OF

BUILDING BRICK.

YARD:—LANSING, ILL., PANHANDLE R. R.

TELEPHONE:—MAIN 4132.

OFFICE:—159 LA SALLE ST., ROOM 97.

Box 408, BUILDERS' AND TRADERS' EXCHANGE.

Chicago, Ill., September 7, 1894.

WOLFF DRYER CO., Chicago, Ill.,

Gentlemen:—The four tunnel dryer, sixteen tracks, which you built for us to dry 90 M bricks daily, did the work in a very satisfactory manner. Recently we concluded to increase our capacity which we could do with very little expense, providing we could dry the extra quantity.

We are pleased to state that you mastered the situation by adding your late improvements which cost very little extra, and we are now enabled to dry 112 M bricks as easily and with no more expense than the cost of drying 90 M, and we feel confident that if we were to run 10 hours daily, instead of eight as we are now doing, that the drying capacity is ample to thoroughly dry the entire output. We therefore take pleasure in commending your dryer to all brick manufacturers in need of an economical system of drying their clay product.

Yours respectfully

LABAHN BRICK CO.,
John F. Labahn, Pres.

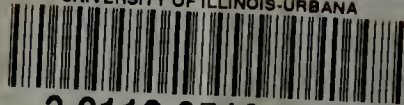
Information, Estimates, Catalogues fully furnished.

WOLFF DRYER CO., 358 Dearborn St. Chicago, Ill.
Room 304.





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